



THE
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THE UNIVERSITY OF
VERMONT

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THE UNIVERSITY OF VERMONT

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§ Burlington, the largest city in the State, with a population of 35,000, is 95 miles from Montreal, 230 miles from Boston, and 300 miles from New York City. The city has daily plane and bus service to these points.

§ Chartered in 1791, the University is the twentieth oldest institution of higher learning in the United States authorized to grant degrees and the second institution founded by state legislative action to offer instruction at the university level.

§ Although its legal title is the University of Vermont and State Agricultural College, the University is known to its students and alumni as UVM. This popular abbreviation is derived from the Latin *Universitas Viridis Montis*.

§ Within the nine divisions of the University, instruction is offered in more than fifty programs leading to twenty-five different degrees.

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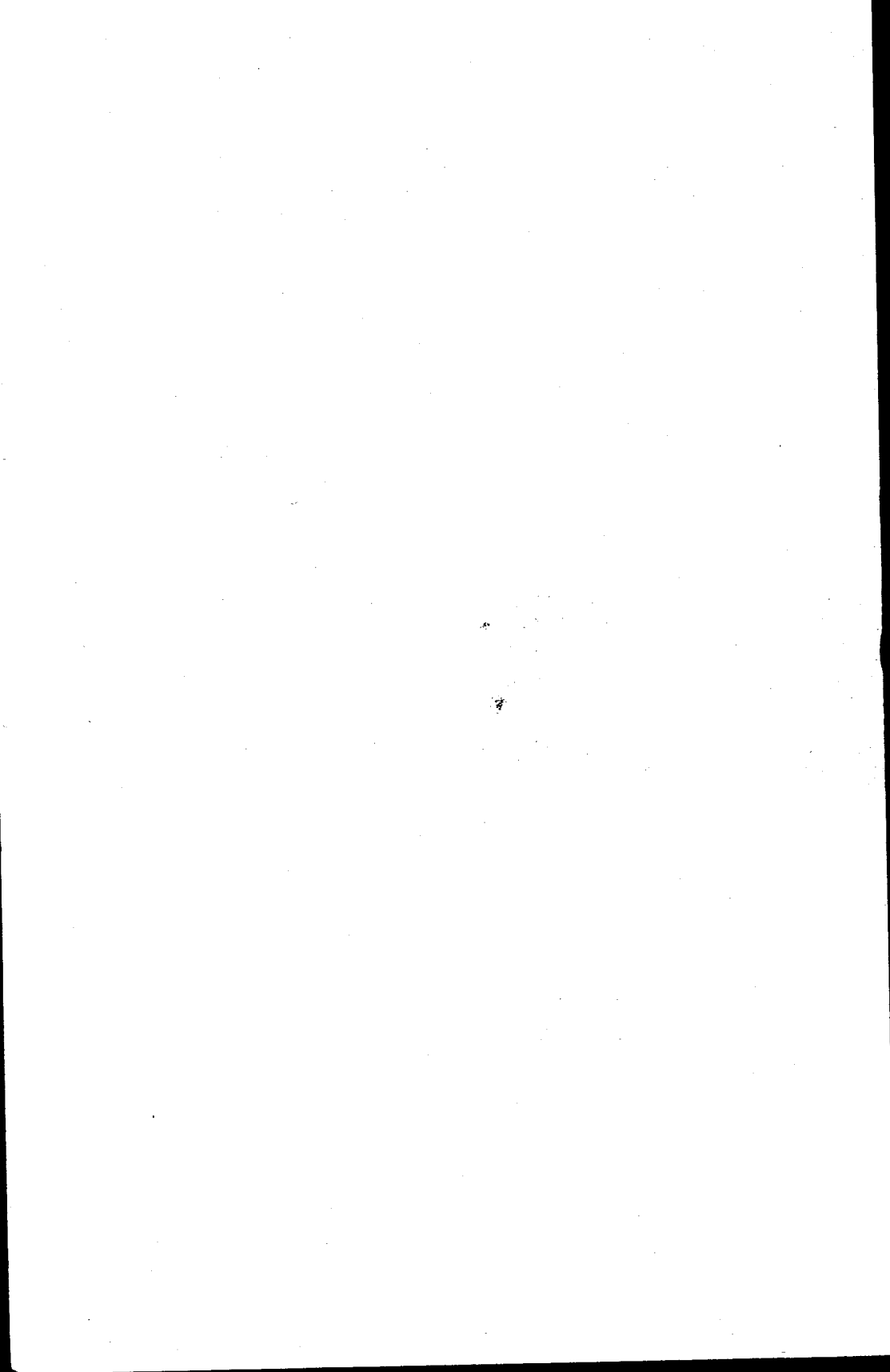
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 JOHN HAMILTON COONS, M.S. (1962) *Instructor in Physical Education for Men*
 REX DEE COUCH, M.D. (1962) *Assistant Professor of Pathology*
 GEORGE DUNMORE CRAM, JR., B.S., Captain U. S. Army (1960) *Assistant Professor of Military Science*
 ALBERT JAMES CRANDALL, M.D. (1939) *Instructor in Clinical Surgery*
 EDWARD BYINGTON CRANE, M.D. (1961) *Instructor in Epidemiology and Community Medicine (General Practice)*
 CECIL M. CRISS, Ph.D. (1961) *Assistant Professor of Chemistry*
 GEORGE CHAPMAN CROOKS, Ph.D. (1930) *Associate Professor of Chemistry*
 *ALBERT DARY CROWELL, Ph.D. (1955) *Professor of Physics*
 JAMES OWEN CULVER, M.D. (1959) *Assistant Professor of Epidemiology and Community Medicine*
 JOHN CHARLES CUNNINGHAM, M.D. (1946) *Shipman Professor of Ophthalmology*
 *MALCOLM DANIEL DAGGETT, Ph.D. (1945)³ *Professor of Romance Languages*
 JOHN FIDLAR DALY, M.D. (1949) *Professor of Dermatology*
 ANNE ISABELLE DAMI, LIC. es LTRES (Feb., 1963) *Instructor in Romance Languages*
 *ROBERT VINCENT DANIELS, Ph.D. (1958) *Associate Professor of History*
 CLARK DANIELSON, A.M. (1962) *Instructor in Romance Languages*
 KATHERINE DAVIS, M.P.H. (1959) *Assistant Professor of Pediatric Nursing*
 PHILIP HOVEY DAVIS, M.D. (1958) *Instructor in Clinical Orthopedic Surgery*
 *JEAN MARGARET DAVISON, Ph.D. (1955) *Assistant Professor of Classical Languages and History*
 WILLIAM NELSON DEANE, Ph.D. (1960) *Instructor in Social Psychiatry*
 *LUBOMIR A. D. DELLIN, J.S.D. (1957) *Associate Professor of Economics*
 ALINE LOUISE DEMERS, M.S. (1960) *Assistant Professor of Nursing*

¹ On leave 1962-63.² Sabbatical leave 1962-63.³ Sabbatical leave second semester 1962-63.

- GINO ALDO DENTE, M.D. (1950) *Assistant Professor of Clinical Anesthesia*
 EUGENE JOSEPH DESAUTELS, M.D. (1958) *Assistant Professor of Clinical Medicine*
 *CHARLES GEORGE DOLL, Ph.D. (1927) *Professor of Geology and Mineralogy*
 RAYMOND MADIFORD PEARDON DONAGHY, M.D. (1946) *Professor of Neurosurgery*
 JOHN EDWARD DONNELLY, M.A. (1952) *Associate Professor of Physical Education for Men*
 GERALD ALTON DONOVAN, Ph.D. (1960) *Associate Professor of Poultry Science*
 *ROBERT KINGSLAND DOTEN, Ph.D. (1951) *Associate Professor of Geology*
 THOMAS WHITFIELD DOWE, Ph.D. (1962) *Professor of Animal and Dairy Science*
 HOWARD DUCHACEK, M.S.A.E. (1949) *Associate Professor of Mechanical Engineering*
 WILFRID G. DUDEVOIR, M.S. (Feb., 1958) *Assistant Professor of Electrical Engineering*
 *FRED WILLIAMS DUNIHUE, Ph.D. (1936)¹ *Professor of Anatomy*
 HERBERT ASHLEY DURFEE, JR., M.D. (1957) *Assistant Professor of Clinical Obstetrics and Gynecology*
 *WINFIELD BOOTH DURRELL, D.V.M. (1949)² *Associate Professor of Animal Pathology*
 *JULIUS SOLOMON DWORK, Ph.D. (1954) *Associate Professor of Mathematics*
 MICHAEL HUME DYKES, M.D. (Jan., 1961)³ *Instructor in Clinical Surgery (Anesthesiology)*
 *GEORGE DYKHUIZEN, Ph.D. (1926) *Marsh Professor of Intellectual and Moral Philosophy*
 OLIVER ROLFE EASTMAN, M.D. (1948) *Associate Professor of Clinical Obstetrics and Gynecology*
 ROBERT WEBSTER EASTMAN, LL.B. (1953) *Instructor in Political Science*
 EILEEN THERESA ECKHARDT, Ph.D. (1962) *Instructor in Pharmacology*
 WINSTON MILO EDDY, M.D. (1960) *Instructor in Clinical Medicine*
 DONALD MERRITT ELDRED, M.A. (1949) *Instructor in Clinical Psychology*
 PHILIP NORCROSS ELDRED, B.S. (1958) *Instructor in Civil Engineering*
 RODNEY WALTER ELDRIDGE, M.A. (1957-59; 1961) *Instructor in Economics*
 PAUL DAVID ELLNER, Ph.D. (1960) *Assistant Professor of Medical Microbiology*
 FAITH GRISCOM EMERSON, M.A. (1959) *Assistant Professor of Public Health Nursing*
 ROBERT RICHARD ENGISCH, M.D. (1961) *Instructor in Clinical Neurology*
 LOUIS WILLIAM ESPOSITO, M.D. (1954) *Instructor in Clinical Urology*
 WARREN ORVEL ESSLER, Ph.D. (1961) *Professor of Electrical Engineering*
 JOHN CLIFFORD EVANS, B.S. (1937) *Associate Professor of Physical Education for Men*
 RODNEY WARREN EVERHART, Ph.D. (1961) *Associate Professor of Speech*
 WILLIAM THOMAS FAGAN, JR., M.D. (1953) *Assistant Professor of Clinical Urology*
 DAVID S. FAIGEL, D.D.S. (1954) *Instructor in Dental Hygiene*
 FRANK JAMES FALCK, Ph.D. (1957) *Assistant Professor of Speech Therapy (Epidemiology and Community Medicine)*
 VILMA T. FALCK (MRS. F. J.), Ph.D. (1960) *Assistant Professor of Audiology*
 SANDRA MORTON FARRELL, M.S. (1962) *Instructor in Physical Education for Women*
 HELEN ELIZABETH FARRINGTON, M.P.H. (1962) *Instructor in Nursing*
 DOUGLAS PATTEN FAY, M.S. (1953) *Associate Professor of Civil Engineering*
 EDWARD JOSEPH FEIDNER, M.F.A. (1958) *Assistant Professor of Speech*
 JEREMY POLLARD FELT, Ph.D. (1957) *Assistant Professor of History*
 WILLIAM RICHARD FENE, B.S., Captain U. S. Army (1962) *Assistant Professor of Military Science*
 KENNETH D. FISHER, Ph.D. (Jan., 1963) *Assistant Professor of Botany*
 JOHN RICHARD FITZGERALD, M.D. (1961) *Instructor in Clinical Medicine*
 ROBERT FITZSIMMONS, M.S. (1949) *Assistant Professor of Animal and Dairy Science*
 MARTIN EDWARD FLANAGAN, M.D. (1962) *Instructor in Clinical Neurosurgery*
 TED BENJAMIN FLANAGAN, Ph.D. (1961) *Assistant Professor of Chemistry*
 THEODORE ROSS FLANAGAN, Ph.D. (1953) *Assistant Professor of Agronomy*
 WILLIAM SHOEMAKER FLASH, Ph.D. (1962) *Associate Professor of Political Science*
 ARTHUR HOWARD FLOWER, JR., M.D. (1950) *Associate Professor of Clinical Dermatology*
 EDWARD LEO FOLEY, Ph.D. (1962) *Assistant Professor of Physics*
 JOSEPH CLAYTON FOLEY, M.D. (1954) *Associate Professor of Clinical Radiology*
 *MURRAY WILBUR FOOTE, Ph.D. (1947-51; 1953) *Associate Professor of Biochemistry (Agriculture)*

¹ Sabbatical leave 1963-64.

² Sabbatical leave second semester 1963-64.

³ Resigned, January 1, 1963.

FACULTY

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- JOHN LOUIS PHILIPPE FOREST, M.D. (1942) *Instructor in Clinical Psychiatry*
 DOYLE RICHARD FOSSO, A.M. (1960) *Instructor in English*
 *FRED WILLIAM GALLAGHER, Ph.D. (1944) *Professor of Medical Microbiology*
 ALBERT HENDERSON GARDNER, B.S. (1962) *Instructor in Education*
 BRUCE ARTHUR GAYLORD, Ed.D. (Feb., 1960) *Associate Professor of Agricultural Education*
 STOKES GENTRY, M.D. (1962) *Instructor in Clinical Pediatrics*
 *ALEXANDER GERSHOY, Ph.D. (1923) *Professor of Botany*
 SOM NATH GHEI, Ph.D. (1962) *Assistant Professor of Psychology*
 THOMAS CHOMETON GIBSON, M.B., B.Chir. (1962) *Assistant Professor of Epidemiology and Community Medicine*
 *BRADY BLACKFORD GILLELAND, Ph.D. (1957) *Associate Professor of Classical Languages*
 *ERLAND CHENEY GJESSING, Ph.D. (1954) *Associate Professor of Biochemistry*
 RICHARD WILLIAM GLADE, Ph.D. (1958) *Associate Professor of Zoology*
 ARTHUR GLADSTONE, M.D. (1936) *Associate Professor of Clinical Surgery*
 RICHARD HERRON GOLDSBOROUGH, M.D. (1961) *Instructor in Clinical Otolaryngology*
 *LYMAN JAY GOULD, Ph.D. (1953) *Associate Professor of Political Science*
 ROBERT DAVID GRANT, M.P.E. (1962) *Instructor in Physical Education for Men*
 DAVID HENRY GRAY, M.D. (1962) *Clinical Instructor in Epidemiology and Community Medicine*
 MARY JANE GRAY, M.D. (1960) *Associate Professor of Obstetrics and Gynecology*
 GENE MARIE GREEN (1962) *Temporary Instructor in Music*
 GEORGE GREEN, M.Mus. (1962) *Assistant Professor of Music*
 *DONALD CROWTHER GREGG, Ph.D. (1946)¹ *Professor of Chemistry*
 *EDWIN CHARLES GREIF, M.S. (1950) *Professor of Economics*
 HAROLD ALFRED GREIG, B.S. (1962) *Instructor in Physical Education for Men*
 JOAN SLOANE GRENTHOT, M.A. (1962) *Instructor in English*
 HOWARD THEODORE GUARE, M.D. (1952) *Assistant Professor of Clinical Radiology*
 CARLETON RAYMOND HAINES, M.D. (1950-52; 1954) *Assistant Professor of Clinical Surgery (Oncology)*
 MARY STARRITT HALL (MRS. R. W.), M.A. (1960) *Instructor in English*
 *ROBERT WILLIAM HALL, Ph.D. (1957) *Assistant Professor of Philosophy and Religion*
 HARRISON HAMPEL, M.F.A. (1962) *Assistant Professor of Art*
 SAMUEL B. HAND, Ph.D. (Feb., 1961) *Assistant Professor of History*
 MARJORIE HANLINE, M.A. (1959)² *Instructor in Home Management*
 JOHN SHERWOOD HANSON, M.D. (1958) *Assistant Professor of Medicine*
 WILLIAM FRANCIS HARDIN, M.A. (1962) *Assistant Professor of Romance Languages*
 JOHN BACON HARRINGTON, LL.B. (1962) *Instructor in Speech*
 *ROLF NORDAHL BRUN HAUGEN, Ph.D. (1947) *Professor of Political Science*
 MOSES ALFRED HAYNES, M.D. (1959) *Assistant Professor of Epidemiology and Community Medicine, and Director of the Family Care Unit*
 MARGARET HECKMAN, M.D. (1961) *Assistant Professor of Pathology*
 MARY CATHERINE HEININGER (MRS. P. L.), R.N. (1951) *Instructor in Dental Hygiene*
 PAUL LEHMANN HEININGER, D.D.S. (1950) *Instructor in Dental Hygiene*
 JOHN WILBUR HEISSE, JR., M.D. (1956) *Assistant Professor of Clinical Ophthalmology and Otolaryngology*
 PETER PAUL HELLER, B.F.A. (1961) *Instructor in Romance Languages*
 DONALD CEDRIC HENDERSON, M.S. (1944) *Associate Professor of Poultry Science*
 *RAUL HILBERG, Ph.D. (Feb., 1956) *Associate Professor of Political Science*
 *CHARLES WILLIAM HOILMAN, M.S. (1949)³ *Associate Professor of Electrical Engineering*
 GUELMA BROWN HOPKINS (MRS. R. R.), M.A. (1962) *Instructor in English*
 ROBERTO REYES HOPKINS, B.A. (1961) *Instructor in Romance Languages*
 *RICHARD JOHN HOPP, M.S. (1947) *Professor of Horticulture*
 GEORGE RICHARD HOWE, Ph.D. (1962) *Instructor in Physiology*
 NEWTON E. HOWE, D.D.S., M.P.H. (Feb., 1959) *Instructor in Public Health*

¹ Sabbatical leave 1962-63.

² Resigned, August 31, 1962.

³ Sabbatical leave second semester 1962-63.

- ROBERT BRUCE HUBER, Ph.D. (1946) Professor of Speech
 *JOHN CHARLES HUDEN, Ph.D. (1950) Professor of Education
 HANS ROSENSTOCK HUESSEY, M.D. (1960) Instructor in Clinical Psychiatry
 *MURIEL JOY HUGHES, Ph.D. (1942-44; 1945)¹ Professor of English
 ALLEN STANDISH HUNT, M.S. (Feb., 1961) Assistant Professor of Geology
 ROBERT JACOB HUNZIKER, M.D. (Jan., 1963) Assistant Professor of Clinical Radiology
 *A. M. Md. MOAZZAMUL HUQ, Ph.D. (1956) Associate Professor of Economics
 JOHN WILLIAM HUSSEY, B.S., Major U. S. Army (1961) Assistant Professor of Military Science
 EDWARD SUTER IRWIN, M.D. (Jan., 1963) Instructor in Ophthalmology
 *JOSEPH ANTHONY IZZO, JR., Ph.D. (1956) Associate Professor of Mathematics
 JULIAN JOSEPH JAFFE, Ph.D. (1961) Associate Professor of Pharmacology
 CLINTON DALES JANNEY, Ph.D. (1959) Associate Professor of Radiologic Physics
 RICHARD HARRY JANSON, Ph.D. (1958) Associate Professor of Art
 ELBRIDGE EUGENE JOHNSTON, M.D. (1951) Assistant Professor of Clinical Medicine
 *STUART LYNDE JOHNSTON, Ph.D. (1940-44; 1946) Professor of Romance Languages
 WILLIAM HERBERT JOHNSTON, M.D. (1952) Instructor in Clinical Radiology
 *DONALD BOYES JOHNSTONE, Ph.D. (1948) Professor of Microbiology
 *LEONIDAS MONROE JONES, Ph.D. (1951) Associate Professor of English
 ROY GEORGE JULOW, Ph.D. (1957) Associate Professor of Romance Languages
 *HARRY HELMUTH KAHN, M.A. (1950-53; 1954) Assistant Professor of German
 JAY EDGAR KELLER, M.D. (1950) Assistant Professor of Clinical Surgery
 *JOHN HARVEY KENT, Ph.D. (1950)² Roberts Professor of Classical Languages and Literature
 *ANN MARIE KEPPEL, Ph.D. (1958) Assistant Professor of Education
 GEORGE VINCENT KIDDER, Ph.D. (1922) Professor of Classical Languages and Literature
 THOMAS CLAIR KING, Ed.D. (1951) Professor of Education
 *DAVID LESLIE KINSEY, Ph.D. (1950) Associate Professor of Music
 FLORA KINSEY (1962) Temporary Instructor in Music
 FRIEDRICH WILHELM KLEMPERER, M.D. (1955) Assistant Professor of Clinical Medicine
 STEPHEN CECIL KNIGHT, JR., M.S. (1952) Associate Professor of Civil Engineering
 ESTHER LUCILE KNOWLES, M.S. (1945)² Associate Professor of Home Economics
 *ROY KORSON, M.D. (1951-52; 1954) Associate Professor of Pathology
 ANDREW PAUL KRAPCHO, Ph.D. (1960) Assistant Professor of Chemistry
 HANS KRAUS, M.D. (1961) Consultant in Experimental Medicine
 JOHN ERNEST KRIZAN, Ph.D. (1962) Assistant Professor of Physics
 MARTIN ERIC KUEHNE, Ph.D. (1961) Assistant Professor of Chemistry
 RAYMOND FRANK KUHLMANN, M.D. (1951) Assistant Professor of Clinical Orthopedic Surgery
 ARTHUR SAUL KUNIN, M.D. (1957) Assistant Professor of Medicine and Clinical Biochemistry
 BERT KARL KUSSEROW, M.D. (1959) Assistant Professor of Pathology
 ANTHONY JOSEPH LAMB, A.B. (1961) Instructor in Romance Languages
 MORRIS WILLIAMS LAMBIE, M.D. (1955) Assistant Professor of Clinical Medicine
 *MERTON PHILIP LAMDEN, Ph.D. (1947) Associate Professor of Biochemistry
 JOHN CLIFFORD LANTMAN, M.D. (1957) Instructor in Epidemiology and Community Medicine (General Practice)
 RALPH ROBERT LAPOINTE, M.Ed. (1951) Assistant Professor of Physical Education for Men
 LESLIE RAYMOND LEGGETT, D.P.E. (1962) Assistant Professor of Physical Education for Men
 EUGENE LEPESCHKIN, M.D. (1947) Professor of Experimental Medicine
 JULIA LEPESCHKIN (MRS. E.), M.A. (1962) Instructor in Home Economics
 *DAVID ALLEN LESOURD, Ph.D. (1952) Associate Professor of Economics
 HYMAN BERNARD LEVINE, M.D. (1961) Instructor in Clinical Medicine
 GORDON FIELDING LEWIS, Ph.D. (1961) Assistant Professor of Sociology
 WILLIAM J. LEWIS, Ph.D. (1954) Professor of Speech
 FRANK WAYNE LIDRAL, Ph.D. (1960) Professor of Music

¹ On leave second semester 1962-63.² Sabbatical leave second semester 1963-64.

- *HARRY LIGHTHALL, JR., Ph.D. (1955) Associate Professor of Mathematics
 *GEORGE THOMAS LITTLE, Ph.D. (1950) Professor of Political Science
 *JACK ERNEST LITTLE, Ph.D. (1945) Professor of Biochemistry (Agriculture)
 VIRGINIA LYLE COLE LITTLE (MRS. G. T.), Ph.D. (Feb., 1962) Assistant Professor of Sociology
 JOYCE KENYON LIVAK (MRS. F. H.), M.S. (1961) Instructor in Home Economics
 *JOHN HUTCHISON LOCHHEAD, Ph.D. (1942)¹ Professor of Zoology
 MARGIT LOCHHEAD (MRS. J. H.), Ph.D. (1954) Instructor in Nursing
 *PHILIPP HANS LOHMAN, Ph.D. (1945) Converse Professor of Commerce and Economics
 ROSALIE MAY LOMBARD, M.A. (1959) Assistant Professor of Medical-Surgical Nursing
 MARSHALL GENE LONDON, M.D. (1961) Instructor in Clinical Medicine
 NORMAN THEODORE LONDON, D.Ed. (1960) Assistant Professor of Speech
 *LITTLETON LONG, Ph.D. (1949) Associate Professor of English
 JEROLD FRANCIS LUCEY, M.D. (1956) Associate Professor of Pediatrics
 WILLIAM HOSSFELD, LUGINBUHL, M.D. (1960) Assistant Professor of Pathology
 ELEANOR MERRIFIELD LUSE, Ph.D. (1947) Professor of Speech
 MURDO GLENN MacDONALD, M.D. (1950) Assistant Professor of Clinical Pharmacology
 ALBERT GEORGE MACKAY, M.D. (1933) Professor of Surgery
 *WILLIAM HOOPER MACMILLAN, Ph.D. (1954) Associate Professor of Pharmacology
 JOHN VAN SICKLEN MAECK, M.D. (1948) Professor of Obstetrics and Gynecology
 FREDERICK JOSEPH MAHER, JR., B.A. (1958) Assistant Professor of Sociology
 FRANCIS XAVIER MAHONEY, B.S., Captain U. S. Army (1962) Assistant Professor of Military Science
 NOLA ILENE MARBERGER, M.Mus. (1962) Instructor in Music
 J. EDWARD MARCEAU, D.D.S. (1950-52; 1954) Instructor in Dental Hygiene
 GILBERT ADAMS MARSHALL, M.S. (1947) Associate Professor of Mechanical Engineering
 *FREDERIC CARVER MARSTON, JR., Ph.D. (1948)² Professor of English
 HERBERT LLOYD MARTIN, M.D. (1954) Associate Professor of Clinical Neurology
 RICHARD MONTGOMERY MARTIN, M.S. (1960) Instructor in Psychology
 *JAMES WALLACE MARVIN, Ph.D. (1939) Professor of Botany
 WILLIAM IRVING MATTHEWS, M.A. (1962) Assistant Professor of Political Science
 ROBERT ARTHUR MAXWELL, Ph.D. (1962) Associate Professor of Pharmacology
 SALLY BERRY MAYBURY (MRS. T. J.), Ed.D. (1944) Associate Professor of Economics
 MARGARET ANNIE MAYS, M.Ed. (1962) Instructor in Physical Education for Women
 JOHN EDMUND MAZUZAN, JR., M.D. (1959) Instructor in Anesthesiology
 CHRISTOPHER PATRICK McAREE, M.B. (1962) Instructor in Psychiatry
 *HERBERT CHRISTIAN McARTHUR, Ph.D. (1950) Associate Professor of English
 PATRICIA ANN MCCARTHY, M.Ed. (1960)³ Assistant Professor of Home Economics
 VERNE LIONEL McDONALD, JR., M.Ed. (1956) Instructor in Education
 JAMES BISHOP MCGILL, M.D. (1952) Assistant Professor of Clinical Surgery
 GERALD FRANCIS MCGINNISS, M.D. (1962) Assistant Professor of Psychiatry
 ROBERT JAMES McKAY, JR., M.D. (1950) Professor of Pediatrics
 EDD RUTHVEN McKEE, M.S., E.E. (1934) Professor of Electrical Engineering
 MARION CLAIRE McKEE, M.D. (1958) Instructor in Clinical Pediatrics
 HAROLD EDWARD MEDIVETSKY, M.D. (1937) Assistant Professor of Clinical Medicine
 CORNELIUS IRVING MEEKER, M.D. (1962) Instructor in Obstetrics and Gynecology
 *DONALD BURTON MELVILLE, Ph.D. (1960) Professor of Biochemistry
 JOYCE EVELYN MERRIAM, M.A. (1961) Instructor in Mathematics
 EVERETT PERKINS MERRILL, Ph.D. (1961) Assistant Professor of Animal and Dairy Science
 ROGER JEFF MEYER, M.D. (1962) Assistant Professor of Epidemiology and Community Medicine, and Instructor in Clinical Pediatrics
 WILLIAM LAROS MEYER, Ph.D. (1962) Instructor in Biochemistry
 *ALVIN REES MIDGLEY, Ph.D. (1951) Professor of Agronomy
 *REGINALD VENN MILBANK, M.S. (1946-48; 1949) Professor of Civil Engineering
 EDWARD JERVIS MILES, Ph.D. (1962) Associate Professor of Geography
 ANN JOSEPHINE MILLER, B.S. (1962) Instructor in Dental Hygiene
 DONALD BARKER MILLER, M.D. (1951) Associate Professor of Clinical Surgery (Thoracic)
 PAUL ROBERT MILLER, M.S. (1931) Professor of Agronomy

¹ Sabbatical leave second semester 1963-64.

² Sabbatical leave first semester 1962-63.

³ On leave first semester 1962-63.

- JEAN BEATTIE MILLIGAN, M.A. (1953) Associate Professor of Nursing
 ERNEST LEE MILLS, M.D. (1955) Assistant Professor of Clinical Anesthesia
 ISABEL CLARK MILLS (MRS. C. H.), M.A. (1932) Associate Professor of Art
 MALCOLM CLARK MILLS, M.B.A. (1962) Lecturer in Commerce and Economics
 FRANK KENNON MOODY, B.D. (1962) Temporary Instructor in Religion
 *PAUL AMOS MOODY, Ph.D. (1927)¹ Howard Professor of Natural History and Zoology
 DOROTHY JACKSON MORROW (MRS. R. C.), M.D. (1952) Instructor in Clinical Pediatrics
 RUFUS CLEGG MORROW, JR., M.D. (1951) Associate Professor of Otolaryngology
 ELLEN HASTINGS MORSE, Ph.D. (1960) Associate Professor of Home Economics
 DONALD EUGENE MOSER, Ph.D. (1960) Associate Professor of Mathematics
 STANLEY IRVIN MOUR, M.A. (1962) Assistant Professor of Education
 HANS JOACHIM MURBE, M.A. (1960) Instructor in English
 *BENNET BRONSON MURDOCK, JR., Ph.D. (1951)² Professor of Psychology
 *MILTON JOSEPH NADWORNY, Ph.D. (1952) Professor of Economics
 RICHARD L. NAEYE, M.D. (1960) Assistant Professor of Pathology
 KEVORK VARTAN NAHABEDIAN, Ph.D. (1962) Instructor in Chemistry
 AUDREY JEANNE NAYLOR, M.D. (1962) Instructor in Epidemiology and Community Medicine, and Clinical Pediatrics
 CHESTER ALBERT NEWHALL, M.D. (1929) Tbayer Professor of Anatomy
 DAVID SOULE NEWHALL, M.A. (1959) Instructor in History
 AUDREY EVELYN NEWTON, M.S. (1955) Assistant Professor of Home Economics
 GEORGE HUBERT NICHOLSON, A.M. (1923) Associate Professor of Mathematics
 MITSUO NUMOTO, M.D. (1962) Instructor in Experimental Neurosurgery
 *ANDREW EDGERTON NUQUIST, Ph.D. (1938)³ McCullough Professor of Political Science
 *WESLEY LEMARS NYBORG, Ph.D. (1960) Professor of Physics
 *ELBERT AUSTIN NYQUIST, M.S., C.P.A. (1953) Associate Professor of Economics
 ROBERT EMMETT O'BRIEN, M.D. (1955) Assistant Professor of Clinical Medicine
 JAMES DONALD O'HARA, M.A. (1959) Instructor in English
 *PAUL OREN, JR., Ph.D. (1958) Professor of Sociology
 RALPH HARRY ORTH, Ph.D. (1959) Assistant Professor of English
 CLARE KENT O'SHEA (MRS. B.), M.D. (1955) Instructor in Clinical Psychiatry and in Clinical Neurology
 *JOHN OGDEN OUTWATER, JR., Sc.D. (1956) Professor of Mechanical Engineering
 HENRI LOUIS PACHE, M.D. (1951) Instructor in Clinical Surgery
 PAUL PAGANUZZI, M.A. (1961) Assistant Professor of Russian
 HAROLD GORDON PAGE, M.D. (1954) Associate Professor of Clinical Surgery
 MARY ELLEN PALMER (MRS. E. M.), M.S. (1953-55; 1958) Assistant Professor of Nursing
 *IPPOCRATES PAPPOUTSAKIS, Mus.M. (1940)³ Professor of Music
 VICTOR H. PAQUET, B.S. (1949) Associate Professor of Graphics
 MALCOLM SKEELS PARKER, D.M.L. (1953) Associate Professor of Romance Languages
 EDWIN MATTSON PAXSON, M.D. (1957) Assistant Professor of Clinical Pediatrics
 HANS HENRY PENNER, M.A. (1962) Instructor in Philosophy and Religion
 MERVYN WILLIAM PERRINE, Ph.D. (1961) Assistant Professor of Psychology
 OSCAR SYLVANDER PETERSON, JR., M.D. (1944) Associate Professor of Clinical Radiology and Associate in Biophysics
 MARY MARGARET PETRUSICH, M.Ed. (1962) Assistant Professor of Education
 LORRAINE WATERS PHILLIPS, M.N. (1962) Assistant Professor of Nursing
 RAYMOND VIRGIL PHILLIPS, Ph.D. (1961) Professor of Education
 DORIS ABBY PLATZKER, A.M. (1962) Instructor in English
 SIDNEY BORIS POGER, M.A. (1962) Instructor in English
 JAMES EUGENE POOLEY, A.M. (1928) Associate Professor of Classical Languages and History
 *WILLARD BISSELL POPE, Ph.D. (1934) Frederick Corse Professor of English Language and Literature
 ARCHIBALD THOMPSON POST, Ed.M. (1929) Associate Professor of Physical Education for Men
 *MILTON POTASH, Ph.D. (1951) Associate Professor of Zoology

¹ Sabbatical leave first semester 1962-63.² On leave 1962-63.³ Sabbatical leave first semester 1963-64.

- PLATT RUGAR POWELL, M.D. (1949) Associate Professor of Clinical Urology
 HENRY LEWIS PRATT, M.D. (1952) Instructor in Clinical Obstetrics and Gynecology
 MARY LOUISE PRATT, M.Ed. (1955)¹ Assistant Professor of Economics
 WILLIAM ARTHUR PRATT, M.D. (1950) Instructor in Clinical Medicine
 RUTH ANN PRESTON, M.S. (1962) Instructor in Epidemiology and Community Medicine
 *HERBERT EVERETT PUTNAM, Ph.D. (1931) Associate Professor of History
 PHYLLIS MELVILLE QUINBY, B.S. (1949) Assistant Professor of Dental Hygiene
 *DAVID WILLIAM RACUSEN, Ph.D. (1958) Associate Professor of Agricultural Biochemistry
 ROBERT MALCOLM RAGAN, M.S. (1959)² Assistant Professor of Civil Engineering
 LOUISE ADELE RAYNOR, Ph.D. (1946) Associate Professor of Botany
 ELMER MCCREADY REED, M.D. (1948) Assistant Professor of Otolaryngology
 EDWARD K. REIMAN, D.D.S. (1951) Instructor in Dental Hygiene
 *HEATH KENYON RIGGS, Ph.D. (1953) Professor of Mathematics
 BENJAMIN ALBERT RING, M.D. (1959) Assistant Professor of Neuroradiology and Radiologic Anatomy
 S. ALEXANDER RIPPA, Ed.D. (1960) Associate Professor of Education
 ALICE KELLY RODGERS, M.S. (1962) Instructor in Nursing
 ALBAN BENNETT ROONEY, M.S. (1922) Associate Professor of Physics
 JAMES ALBERT ROOT, M.C.E. (1948) Associate Professor of Civil Engineering
 HOWARD ROTHSTEIN, Ph.D. (1962) Assistant Professor of Zoology
 LYMAN SMITH ROWELL, M.S. (1925) Associate Professor of Zoology
 WILLIAM ADOLPH RUFFER, M.A. (1962) Assistant Professor of Physical Education for Men
 STANLEY RUSH, Ph.D. (1962) Associate Professor of Electrical Engineering
 CHARLES BRUSH RUST, M.D. (1948) Assistant Professor of Clinical Orthopedic Surgery
 THOMAS DUDLEY SACHS, Ph.D. (Feb., 1962) Assistant Professor of Physics
 *ALBERT WILLIAM SADLER, Ph.D. (1956) Associate Professor of Philosophy and Religion
 J. ANTHONY SAMENFINK, Ed.D. (1961) Professor of Home Economics
 FREDERIC OBERLIN SARGENT, Ph.D. (1962) Professor of Agricultural Economics
 WADI I. SAWABINI, D.D.S. (1950) Assistant Professor of Dental Hygiene and
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 ROBERT NEWTON SAXBY, M.D. (1950) Instructor in Clinical Radiology
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 *HAROLD SEESSEL SCHULTZ, Ph.D. (1946) Professor of History
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The Agricultural Experiment Station has as its essential functions to conduct research in agriculture and home economics, to administer certain regulatory statutes, and to publish the results of such work.

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The Vermont Agricultural Extension Service is a cooperative undertaking of the State of Vermont, the College of Agriculture, the United States Department of Agriculture, and the several counties of the State. It has a State staff, with headquarters at the University, and a staff of county extension agents in each county. Its purpose is "to aid in diffusing among the people . . . useful and practical information on subjects relating to agriculture and home economics, and to encourage the application of the same." It works primarily with the rural people of the State, including both adults and children.

PAUL ROBERT MILLER, M.S.
 ROBERT POWERS DAVISON, M.Ed.

*Dean
 Director*

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*Dairy Bacteriologist
 Assistant Animal Husbandman
 Animal Pathologist
 Horticulturist
 Dairyman
 Poultryman
 Agricultural Economist
 Plant Pathologist
 Dairyman, Breeding
 Assistant Agronomist
 Ornamental Horticulturist
 Forester
 Agricultural Economist, Farm Management
 Assistant Editor
 Dairyman, DHIA
 Entomologist
 Assistant Editor
 Agronomist
 State 4-H Club Leader
 Poultryman
 Home Management Specialist
 Associate 4-H Club Leader
 Agricultural Economist
 Associate Dairy Husbandman
 Clothing Specialist
 Editor
 Agricultural Economist, Food Merchandising
 State Home Demonstration Leader
 County Agent Leader and Rural Development Specialist
 Agricultural Engineer*

ENOCH HAROLD TOMPKINS, M.S.
 JAMES ROGER WADSWORTH, V.M.D., M.S.
 WINSTON ARTHUR WAY, M.S.
 KATHLEEN BEAVINGTON WEBB, B.S.
 FRED CLARENCE WEBSTER, Ph.D.
 ANNA MARION WILSON, M.S.

Rural Sociologist
Animal Pathologist
Agronomist
Associate Editor
Agricultural Economist, Marketing
Nutritionist

County Agricultural Agents

Addison County

Agricultural: LUCIEN DEMERS PAQUETTE, B.S.
 JOHN FRANKLIN STEPHENSON, B.S. (Associate)
Home Demonstration: MRS. LEONA WARREN THOMPSON, B.S.
Club: BERNARD MAURICE NADEAU, B.S.

Middlebury
 Middlebury
 Middlebury
 Middlebury

Bennington County

Agricultural: JOHN CALVIN PAGE, M.S.
Home Demonstration: MRS. MARION STONE HARRIS, B.S.
Club: JAMES ALBERT EDGERTON, B.S.

Bennington
 Bennington
 Bennington

Caledonia County

Agricultural: PHILIP KAIR GRIME, B.S.
Home Demonstration: MRS. ALICE JOHNSON BLAIR, B.S.
Club: MRS. MARGARET TOWER BECK, B.S.

St. Johnsbury
 St. Johnsbury
 St. Johnsbury

Chittenden County

Agricultural: ROBERT LACKIE CARLSON, B.S.
 BRUCE LELAND CRAIG, B.S. (Assistant)
Home Demonstration: MRS. F. ALINE COFFEY, B.S.
Club: MRS. MARGARET POOLE MACDONOUGH, B.S.

Essex Junction
 Essex Junction
 Essex Junction
 Essex Junction

Essex County

Agricultural: EARLE DRAKE CLARK, B.S.
Home Demonstration: MRS. ELSIE L. M. DORR, B.E.

Guildhall
 Guildhall

Franklin County

Agricultural: WALTER GENE ROCKWOOD, B.S.
 ERDEN WELLS BAILEY, B.S. (Associate)
Home Demonstration: MRS. MARLENE PATRICK THIBAUT, B.S.
Club: JANET CATHERINE CARPENTER, B.S.

St. Albans
 St. Albans
 St. Albans
 St. Albans

Grand Isle County

Agricultural: ROBERT ELLIS WHITE, B.S.

North Hero

Lamoille County

Agricultural: SILAS HAMILTON JEWETT, B.S.
Home Demonstration: MRS. ELIZABETH EMMONS ROBINS, B.S.
Club: MARY GUSTAVA SANDIN, B.S.

Morrisville
 Morrisville
 Morrisville

Orange County

Agricultural: GORDON VOLNEY FARR, B.S.
Home Demonstration: MARY ANNA BURBANK, B.S.
Club: JOHN STUART HALL, B.S.

Chelsea
 Chelsea
 Chelsea

Orleans County

Agricultural: ROGER DAVIS WHITCOMB, B.S.
 JOHN ROBERT PRICE, B.S. (Associate)
Home Demonstration: MRS. MARION McIVER BUCKLAND, B.S.
Club: WILLIAM TARBELL ZELLER, B.S.

Newport
 Newport
 Newport
 Newport

*Rutland County**Agricultural:* WILLIAM MICHAEL COREY, M.S.*DAVID PAUL NEWTON, B.S. (Associate)*¹*Home Demonstration:* MRS. BETHIA NOBLE MUNGER, B.S.*Club:* CHESLEY PECK HORTON, M.Ed.

Rutland

Rutland

Rutland

Rutland

*Washington County**Agricultural:* GORDON EARL BUTLER, M.S.*Home Demonstration:* MRS. HAZEL C. BROWN, M.S.*Club:* JUDITH PILLSBURY SICCAMA, B.S.

Montpelier

Montpelier

Montpelier

*Windham County**Agricultural:* RAYMOND IRVING PESTLE, JR., M.S.*Home Demonstration:* MRS. RUTH DENSMORE HERTZBERG, B.S.*Club:* HOWARD HARRY SMITH, B.S.

Brattleboro

Brattleboro

Brattleboro

*Windsor County**Agricultural:* CHADWICK CUMMINGS ARMS, M.S.*JOYCE WILLIAM SUMNER, B.S. (Associate)**Home Demonstration:* MRS. JENNIE ARMSTRONG HALL, B.S.*Club:* EDWARD WALTER GOODHOUSE, B.S.

Woodstock

Woodstock

Woodstock

Woodstock

RELATED SERVICES STAFF

The Related Services Division renders various services in the fields of agriculture and home economics, such as inspection of feed, seeds, and fertilizer; analysis of soils, milk, and other agricultural products on request; diagnosis of diseases of plants, poultry, and other livestock; and conduct of short courses and educational conferences.

PAUL ROBERT MILLER, M.S.

THOMAS WHITFIELD DOWE, Ph.D.

Dean

Director

WESSON DUDLEY BOLTON, D.V.M., M.S.

ALEC BRADFIELD, M.S.

HOLLIS EARL BUCKLAND, B.S.

WINFIELD BOOTH DURRELL, D.V.M., M.S.

RICHARD JOHN HOPP, M.S.

LUTHER WALTER KINNEY

ROGER WALTER MURRAY, D.V.M.

HARRY LEONARD SAWYER, JR., B.S.

THOMAS SPROSTON, JR., Ph.D.

JAMES ROGER WADSWORTH, V.M.D., M.S.

ROBERT THOMAS WETHERBEE, M.S.

*Animal Pathologist**Associate, Dairy Manufacturing**Seed Analyst**Associate Animal Pathologist**Horticulturist**Superintendent, Morgan Horse Farm**Assistant Animal Pathologist**Assistant Chemist**Plant Pathologist and Mycologist**Animal Pathologist**Chemist*¹ On leave September 1962-September 1963.

UNIVERSITY COMMITTEES

Effective July 1, 1962

Committees of the Senate

Admissions: S. C. Knight (Chairman), H. C. Collins¹, R. W. Cochran, T. C. King, Roberta Schwalb, M. F. Severance, W. A. Stultz, F. C. Webster.

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Ceremonies: T. M. Webster (Chairman), B. B. Gilleland, F. W. Lidral, F. C. Marston¹, J. E. Little, C. A. Newhall, A. W. Sadler¹, R. A. Whitmore, Betty J. Wills, Constance Zolotas.¹

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Library: H. C. McArthur (Chairman), B. C. Bowman¹, C. D. Cook, R. V. Daniels, Jean Davison, L. Dellin, Mary E. Palmer, T. Sproston.

Museum: R. H. Janson¹ (Chairman), T. D. S. Bassett, C. G. Doll¹, Ann Keppel, Eleanor M. Luse.

Policy: S. N. Bogorad (Arts and Sciences), (Chairman), S. T. Allen (Medical), J. H. Kent (Graduate), P. H. Lohman (Technology), Jean Milligan (Education and Nursing), E. C. Schneider (Agriculture and Home Economics).

Public Relations: C. F. Bond (Chairman), J. H. Bates, C. E. Braun, Katherine Davis, W. O. Essler, W. J. Lewis¹, P. R. Miller, L. E. Van Benthuyssen.¹

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¹ *Ex-officio.*

Other University Committees

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George Bishop Lane Series: J. Trevithick (Executive Secretary), E. J. Feidner, F. W. Lidral, G. Paterson, L. E. Van Benthuyssen.

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Radiological Safety: O. S. Peterson, Jr. (Chairman), J. Abajian, Jr., E. L. Amidon, C. D. Janney (Radiological Safety Officer), D. W. Racusen, A. B. Rooney, A. H. Schein, F. J. M. Sichel, D. J. Smith, A. B. Soule, F. W. Van Buskirk.

Residence: H. C. Collins (Chairman), G. N. Clerkin, G. V. Kidder, L. D. Latham, J. E. Little, C. A. Newhall.

Introduction

The University of Vermont was founded in 1791, taking its place among the handful of colleges founded in this country in the eighteenth century for the higher education of young colonials and Americans of the first post-revolutionary generation. The University was the fifth New England college chartered, the second established by a state to grant the bachelor's degree, and the twentieth in the nation to do so.

Though it has enjoyed a long tradition which has seen it receive substantial private support, University development has been closely identified with that of the State since 1791, when Vermont's founding General Assembly granted a charter to the University and set aside about 29,000 acres throughout the State with the intent that rents from this land would support the new educational institution.

That same Vermont General Assembly established that the by-laws of the University should give no preference to any religious sect or denomination or discriminate against any, making the University of Vermont the first in this country and possibly the first in history to go on public record as supporting freedom of religion upon its campus.

Colleges and Curricula

The University consists of the College of Arts and Sciences, the College of Agriculture and Home Economics, the College of Technology, the College of Education and Nursing, the College of Medicine, the Graduate College, and the two-year School of Dental Hygiene.

The College of Arts and Sciences

In common with the practice at most of the early universities, the original curriculum was based on languages, rhetoric, and mathematics, theology, and moral philosophy. Today, the College of Arts and Sciences, often considered the direct descendant of the original University, provides a general four-year curriculum leading to the degree of Bachelor of Arts, with opportunity for concentration in one or more of the following studies: botany, chemistry, economics, English, French, geology, German, Greek, history, Latin, mathematics, music, philosophy, physics, political science, psychology, sociology, Spanish, speech, and zoology.

Students interested in continuing their studies beyond the bachelor's degree may, by making a proper selection of courses, meet all requirements for admission to graduate schools, and to such professional schools

and colleges as those of medicine, dentistry, law, theology, optometry, and social work. Those who have completed three years of premedical study at the University may qualify for the degree of Bachelor of Science after successfully completing one year of study in an approved college of medicine.

The College of Agriculture and Home Economics

In 1862, the Congress of the United States enacted legislation, fostered by Vermont Senator Justin Smith Morrill, which provided for the establishment of a system of colleges—one for every state—which would make possible college education for all who were qualified. These institutions came to be known as the Land-Grant institutions of America because the Morrill Act provided federal funds for each state which would set aside lands for the new colleges. Their aim was to make possible a new kind of education which combined and blended the agricultural and mechanic arts with education in the liberal and scientific courses. The State of Vermont moved to charter a land-grant institution, the Vermont College of Agriculture, in 1864, and this new college was joined with the University of Vermont in 1865. Under later federal legislation, the services of the Land-Grant colleges were expanded by the creation of agricultural research and service divisions—the Agricultural Experiment Station and the Agricultural Extension Service respectively.

Today the College of Agriculture and Home Economics offers four-year curricula leading to the degrees of Bachelor of Science in Agriculture, Bachelor of Science in Agricultural Engineering and Bachelor of Science in Home Economics. It also offers a two-year program in pre-veterinary science which prepares students for admission to other institutions for professional training.

The curriculum in agriculture provides options in general agriculture, agricultural economics, agricultural education, agronomy, animal and dairy production, dairy plant management, dairy technology, botany, foreign agricultural service, forestry, horticulture, and poultry science.

The curriculum in home economics provides options in general home economics; food and nutrition; related arts, clothing and textiles; and home economics education.

The College of Technology

The University of Vermont was probably the first nonmilitary institution in America to offer instruction in engineering and was certainly the first of the present land-grant colleges to give any instruction in

this area which was incorporated later into the Morrill Act. Engineering was taught in a separate department until 1911, when a College of Engineering was established. In 1946 the College of Technology was formed to include the curricula in civil, electrical, mechanical, and management engineering; professional chemistry; commerce and economics; and, later medical technology.

Majors in the Department of Commerce and Economics may specialize in options which include accounting; banking, finance and insurance; business administration; industrial management, marketing and merchandising; and secretarial studies.

The College of Education and Nursing

The University of Vermont has contributed teachers to its state, region and nation virtually since its founding. The evolution of formal professional education preparation resulted first in the department, then the School of Education and, in 1946, the College of Education and Nursing, offering four-year curricula leading to the Bachelor of Science degree in the fields of elementary, secondary, business and music education; and a four-calendar-year curriculum leading to the degree of Bachelor of Science in Nursing.

Although techniques have varied, the primary concern of the education curricula has been to prepare qualified teachers who have a broad background in academic subject matter and modern professional training in education methods.

The University's collegiate program of nursing is designed to educate the student for the practice of professional nursing in beginning positions in the hospital, home and community, and to provide a foundation for advanced study in nursing at the graduate level.

The College of Medicine

The College of Medicine is historically almost as old as the University itself. Medical lectures became part of the offerings in 1804 and degrees were granted in medicine in 1822. There were some interruptions in the operation of the medical courses in 1836, but since 1853 qualified physicians have been graduated annually to serve Vermont and neighboring states. Today, the College of Medicine offers a four-year graduate curriculum leading to the degree Doctor of Medicine and provides facilities for a limited number of candidates for other graduate degrees to take courses in its departments.

The Graduate College

Many academic departments of the University have a long history of providing formal graduate study for well qualified candidates. The Graduate College was formally established in 1952, and since that time has served to provide graduate study opportunities in academic fields in which University resources have made sound graduate programs possible. In recent years several doctoral programs have been inaugurated and more are being planned. The Graduate College administers all studies beyond the Bachelor's degree, with the exception of the program of the College of Medicine leading to the doctor of medicine.

Scholarship aid, fellowships, assistantships and special loan programs are available in increasing numbers for graduate study for the student who achieves a good academic record in his undergraduate program. Nationally, the demand for men and women with advanced training continues to be urgent.

A separate catalogue describing graduate programs at Vermont is available from the Office of the Dean of the Graduate College.

The School of Dental Hygiene

The School of Dental Hygiene was established at the University in 1949. This two-year program leads to a Certificate in Dental Hygiene. Recipients of the certificate are eligible to take all state board examinations for licensing as dental hygienists. Enrollment in the School is limited to women.

Regional Cooperation

The University of Vermont is an active participant with the other state universities of New England in a program of regional cooperation aimed at increasing educational opportunities for the qualified young men and women of the six New England states. Under the program New England residents are given admissions preference and resident tuition privileges in certain specialized curricula. The University of Vermont offers several programs in which qualified residents of other New England states may be granted admissions preference and resident tuition benefits. A special brochure, detailing these specialized curricula, has been prepared by the New England Board of Higher Education and is available through the University of Vermont admission office and from the other New England state universities.

The University of Vermont offers the following programs in which the Vermont in-state tuition rate is available for students from the

states named beginning with the year indicated. Students from the New England states may enter the programs earlier than the year indicated but in that event the out-of-state rate of tuition would apply.

Classics, junior year, Massachusetts, New Hampshire, Rhode Island; graduate, Maine.

Business Education, junior year, Maine.

Dairy Manufacturing, junior year, Maine, New Hampshire, Rhode Island.

Foreign Agricultural Service, sophomore year, Massachusetts, Rhode Island.

Medical Electronics, graduate, Maine, Massachusetts, New Hampshire, Rhode Island.

Medical Technology, senior year, Massachusetts.

Microbiology, graduate, Maine, Rhode Island.

Nursing, freshman year, New Hampshire.

Secretarial Science, junior year, Maine.

The Vermont Campus

The campus and present buildings had their origin in 1800, when Burlington was virtually still frontier territory.

The University's inaugural president and his first four students felled trees from ground which is today's College Green for timber for the first college building. From their labors and from financial contributions of the citizens of Burlington, the first college building rose. When, in the early 1820's fire destroyed this first structure, it was rebuilt, again through support of Burlington residents. General Lafayette laid the cornerstone in 1825 for that second building which still stands as today's Old Mill. A modern classroom addition, Lafayette Hall, was dedicated in 1958 with a direct descendant of General Lafayette present for the ceremonies.

Following its earliest tradition, much of the University's growth in terms of buildings has been the result of generous private philanthropy.

The Billings Library, now being remodeled to serve as a student center, was one of several structures dedicated in the late 1800's. A fine example of the work of Henry Hobson Richardson, the well-known American architect, the Library was the gift of Frederick Billings of Woodstock. The Williams Science Hall, the first completely fire-proofed college building in this country, was added in 1896 to house the expanding departments of the several sciences. The gift of Dr. and Mrs. Edward

H. Williams of Philadelphia, it was built and furnished at a cost of \$160,000. The effect of changing times is illustrated by the fact that a major renovation of the chemistry department facilities in Williams Science Hall has been completed recently at a cost of over \$400,000.

Converse Hall, an unusual design of Gothic architecture, was completed in 1895. John H. Converse, class of 1861 purchased the land on which Converse stands, erected the building, and presented the completed gift to his alma mater. He also gave two houses for faculty members on the "south common."

The present engineering building was built in the early 1900s, and is inadequate for present demands. A new \$1,895,000 engineering building, made possible by a state appropriation, is now under construction and when completed will house all of the engineering departments and mathematics. A new \$2,700,000 physical education facility, with three playing floors, swimming pool, field house with indoor track and ice rink, was placed in use in the fall of 1962. Alumni and private support and a state guaranteed bond issue to be repaid from student fees have made this possible.

Morrill Hall, named to honor Vermont's Senator Justin S. Morrill, father of the Land-Grant Act, was the first university building to be provided by an appropriation from the State of Vermont. It was erected in 1907 and houses administrative offices for the College of Agriculture and Home Economics.

The twentieth century has seen the construction of several buildings of Georgian architecture. The Ira Allen Memorial Chapel, with an imposing bell tower which has become a symbol of the University, was completed in 1927. It was the gift of James B. Wilbur, who also made a generous gift to provide scholarships for Vermont residents. In 1955 a sixty-four-bell electronic carillon was installed in the tower, a gift of winter carnival funds, and dedicated to all men and women of the University who served in the armed forces. Mr. Wilbur's bequest also contributed to the building of the Fleming Museum. Named for Robert Hull Fleming, class of 1862, the Museum was made possible by a gift from Miss Katherine Wolcott of Chicago, Mr. Fleming's niece, and by gifts from other friends of the University. Completed in 1931, it houses the University's art collection, and a fine Arena Theatre.

The Waterman Building, dedicated in 1941, was the gift of Charles W. Waterman, class of 1885, and Anna R. Waterman. It contains administrative offices, classrooms, laboratories, recreation facilities, a dining hall, and the University Store. A well-equipped language laboratory is maintained in the Waterman Building with tape-recording facili-

ties and listening stations as an aid to pronunciation, aural comprehension, and pattern practice in French, German, Hebrew, Russian and Spanish. An I.B.M. 1620 model electronic computer has been installed to be used for teaching and research in the University and for use by other colleges which may have need for its service.

The Redstone campus for women was originally a large estate. The mansion and the carriage house now serve as Redstone and Robinson Halls. Mable Louise Southwick Memorial Building, another imposing Georgian structure, was completed in 1936 as a center for women's activities. A gift from the family of Miss Southwick, a University graduate in the class of 1905, a bequest from Miss Shirley Farr, federal funds, and a student subscription provided the building and its furnishings.

Slade Hall, built in 1929, is of Colonial-type architecture. Mrs. William G. Slade made a gift toward this building, in memory of her daughter, Harriet Slade Crombie. In 1947, the Grace Goodhue Coolidge Hall, a residence hall for women, was built adjacent to Southwick. Grace Goodhue, class of 1902, was the wife of Calvin Coolidge, President of the United States.

In 1949, a group of modern buildings, financed by state appropriation, was erected on the East campus. These are the Hills Agricultural Science Building, named to honor Joseph L. Hills, for many years Dean of the College of Agriculture; the Bertha M. Terrill Home Economics Building, named in honor of the originator and first chairman of the department of home economics; and the Dairy Science Building.

Coolidge Hall and the three men's residence halls, Buckham, Chittenden and Wills Halls, were the first University resident halls to be financed by a bond issue guaranteed by the State of Vermont. Room rents are used to liquidate the bond issue.

Also built on these terms are the three residence halls for women south of Coolidge. Mason, Simpson, and Hamilton Halls were completed in 1957 and named, appropriately, to honor three distinguished women. Mason Hall and Hamilton Hall honor Vermont's first two women graduates, Lida Mason Hodge and Ellen Hamilton Woodruff, class of 1875, who were also the first women admitted to Phi Beta Kappa at the University. Simpson Hall honors Dean of Women Emeritus Mary Jean Simpson, class of 1913. An additional new residence hall for women and a new three unit residence and dining facility for men were completed in the fall of 1961 under the federal housing loan program. The new unit for women is named to honor former Dean of Women Marian Patterson. The men's units, which make it possible for the University to provide on campus housing for many upperclassmen, are named to

honor James Marsh, distinguished scholar who served as president of the University from 1826-33, and who introduced the works of Coleridge in this country; the late Professor Frederick Tupper, a noted scholar of Chaucer; and for Warren R. Austin, a Vermont graduate of the class of 1899, who served as the U. S. Representative to the United Nations from 1946-53.

Other buildings of interest include Grassmount, a gracious Georgian mansion which was the home of a former Governor of Vermont and which now houses University women; Pomeroy Building, erected in 1829 for the medical department and now used to house the department of speech. The Wasson Infirmary, believed to have been an underground railway stop for escaping Negro slaves at the time of the Civil War was purchased for the University in 1944 by a group of faculty and alumni, and named for the first dean of women, Pearl Randall Wasson. A modern home management laboratory, named to honor the late Miss Alice E. Blundell, a member of the University's home economics faculty, was completed on the Redstone campus in 1961.

The College of Medicine

Alumni and private philanthropy has proven the key to a modern building program of the College of Medicine. Vermont medical alumni led the nation in terms of the total amount given in the first year of a three-year fund drive which saw alumni contributions more than match a federal grant which permitted completion of a \$1,200,000 first unit of a three-phase program.

So impressive was this record of alumni giving that it attracted the interest and support of private philanthropy which made it possible for the University to match a second federal grant in completing in 1962 the second, \$1,500,000 phase of the program.

The University's Board of Trustees have authorized a fund campaign which will seek to find alumni and private support sufficient to match a hoped-for-federal grant for the major, \$8 to \$10 million third phase of the medical building program.

The College of Medicine, with the fine hospitals with which it is associated, give to Burlington and Vermont one of New England's most modern medical centers.

The Bailey Library

The new library, is named to honor the late Guy W. Bailey, thirteenth president of the University. Early completion was made possible by a

bond issue guaranteed by the state, to be repaid through an annual student library fee. The University's library collection also includes the medical library collection housed in the medical building. It is the largest book collection in Vermont and 1400 periodical titles are regularly received.

Support of the library is derived mainly from University operating funds. Some support is received from income from endowments designating the library as beneficiary, and a group of friends, the Library Fellows, interest themselves in the library and its support.

The library is a depository of U. S. Government publications. Newspapers, pamphlets, maps, state agricultural publications, and microfilms are included in the collection. Special collections include the George P. Marsh Library, of about twelve thousand volumes in the humanities, the Howard-Hawkins Civil War collection, and the Whittingham-Stevens collection of Chiswick imprints.

The James B. Wilbur Library, is rich in manuscript materials, early Vermont imprints, books relating to Vermont, and books by Vermont authors. The Wilbur Library has recently been given the personal collection of Dorothy Canfield Fisher, consisting of books, correspondence, and literary manuscripts.

The Robert Hull Fleming Museum

The Museum, an integral part of the University's teaching program, provides a fourfold educational service to the University and the people of Vermont through its permanent collections covering the history of art, temporary exhibitions, the Fleming Museum Association, and Children's Classes in the Creative Arts.

The permanent collection is arranged to augment in so far as possible the University's teaching in varied fields. Particular galleries are devoted to ancient, medieval, and renaissance art; baroque and modern painting and sculpture; American art; primitive art; and the Orient. Two galleries are often devoted to temporary exhibitions which supplement the permanent collections by representing various aspects of painting, sculpture, graphic arts, architecture, photography and related material. Group shows such as the Vermont Camera Club Exhibition and the Northern Vermont Artists' Show are held annually.

The Fleming Museum Association, open to the public, is composed of friends of the Museum whose support makes possible certain special exhibitions, guest lectures and films. Gallery talks related to exhibitions and the permanent collections are given from time to time and guide

service for schools and clubs is available. Children's classes offer instruction in painting and the dance to youngsters of the community.

The Museum has a conference room, a lounge with a high-fidelity sound system, and a kitchenette available for meetings and social functions, a geological collection, a collection of several thousand photographs of painting and sculpture, and study area for courses in art.

The auditorium of the Museum has been reconstructed as an arena theater. A lighting and control room was added and the interior of the auditorium was redesigned to contain about 300 theater seats on the four sides. The arrangement provides the intimate atmosphere of a small theater and has contributed much to the dramatic offerings of the college year. It also houses the annual summer Shakespeare Festival.

The George Bishop Lane Artists Series

The George Bishop Lane Artists Series is one of the largest collegiate artists series in the country. It was inaugurated in 1955 by a gift of over \$300,000 from the late Mrs. Lane, in honor of her husband, George Bishop Lane of the Class of 1883.

The Lane Series makes it possible for the University to bring to the campus and the community a continuing program of outstanding musical, theatrical, dance and other artistic productions for a moderate admission fee.

The Series is planned and produced by a student-faculty committee, with townspeople serving with student and faculty members on an advisory committee.

The Lane Series has presented many of the world's finest artists and groups, including the London Philharmonia, the Vienna Philharmonic, the Philadelphia Orchestra, the Royal Ballet of London, Rudolf Serkin, Isaac Stern, Nathan Milstein, Andres Segovia, the Vienna Choir Boys, the Weavers, the Robert Shaw Chorale, the Budapest String Quartet, Dave Brubeck, Errol Garner, Benny Goodman, Mantovani, Sir John Gielgud, Roberta Peters, Pete Seeger, the New York City Opera Company, and a number of plays including *Tea and Sympathy*, *Li'l Abner*, *Look Homeward*, *Angel*, and *J. B.* In addition to two major series presented during each academic year, the Lane Series also sponsors a Chamber Arts Series in the spring semester, and the Lane Summer Series.

Conferences and Institutes

An increasing number of groups seek to meet on the campus of the University of Vermont for the purpose of holding educational confer-

ences, institutes and seminars. Wherever it is possible to do so, the University is pleased to cooperate in making its facilities available for this purpose. Nominal charges are made to cover costs to the University.

Further information may be obtained through the Office of Conferences and Institutes.

Student Life

The general welfare of students is the responsibility of the Offices of the Dean of Women and the Dean of Men.

Housing

All undergraduate women who do not live locally with their families, or in a sorority house are required to live and have their meals in University residence halls. All freshman, sophomore and junior men who do not live locally with their families or in a fraternity house are required to live and have their meals in University residence halls.

Contracts for room and board are binding for the college year, unless cancelled for due cause with the sanction of the Dean of Women or the Dean of Men. In August each new student will receive notification of a room assignment, and the date and hour of the opening of his or her residence hall. The rooms for freshman women and men may not be occupied until the first day of the Preliminary Days program. Other students may occupy their rooms no earlier than twenty-four hours before the day of enrollment. Each student is expected to leave the residence hall no later than twenty-four hours after his or her last examination, at the close of the school year.

Facilities for doing personal laundry are provided in each residence hall, and space for the storage of trunks, baggage, and skiis. Bed linen and towels may be furnished by the student or rented from a commercial linen service which provides weekly delivery of two sheets, a pillow case, and three towels. Students provide their own window draperies, pillows, metal waste baskets, bureau covers, desk lamps and reading lamps.

Women

There are twelve residence halls for women and seven sorority houses. The residents of the halls on the Redstone Campus: Coolidge, Hamilton, Mason, Patterson, Redstone, Robinson, Simpson and Slade Halls will have their meals in Simpson Dining Hall on a twenty-meal per week annual contract. The residents of Allen, Claggett, Grassmount and Sanders will have their meals on an eighteen-meal per week annual contract at the Waterman Cafeteria.

Usually, only junior and senior women are permitted to live in sorority houses. All other residences have a prorated number of residents from each of the four undergraduate classes.

A Head Resident on the staff of the Dean of Women's Office is in charge of each living unit. In the larger living unit, there is also a House Fellow, who is a mature and responsible Senior woman. The Head Resident and House Fellow work together to assist the women in their residence to profit from the educational opportunities that the University offers and to assist the residents to grow in maturity and self direction.

There is a student house president in each women's residence unit who is appointed by the Women's Student Government Council to carry out the policies of the Association, and a house committee, elected by the residents of each unit, to assist the house president in seeing that the traditions, standards and ideals of the University, and of the Women's Student Government Association are observed.

Men

Austin, Buckham, Chittenden, Converse, Marsh, Tupper, and Wills Halls are residence halls for men. All students who live in these residence halls must have board contracts for the year for eighteen meals per week. Sophomore, junior and senior men who are members of fraternities are eligible to live in their fraternity houses. Other sophomore and junior men will live in University residence halls.

Senior men may live either in their fraternity houses, University residence halls or in approved off-campus housing.

Sixteen fraternity houses representing fourteen national fraternities and two local fraternities provide housing, and in most cases, dining facilities for approximately 500 upperclassmen. Only upperclass fraternity men may contract for meals or a room in fraternity housing.

Student Personnel Services

COUNSELING The offices of the Dean of Women and the Dean of Men offer assistance to students who may have social, vocational and personal problems. Psychiatric counseling is available through the University Health Service.

PLACEMENT SERVICE Seniors register for placement assistance with the Placement Director. The Placement Service prepares confidential credentials, arranges campus interviews each February and March, and assists in other ways to enable the graduate to find employment. Alumni may also contact the Placement Service for interviews and for notices of employment opportunities. Occupational information, as well as employment material distributed by various companies, schools and government agencies, is available in the Placement Service.

VETERANS EDUCATION Veterans who are eligible to receive educational benefits under Public Laws 550, 634, or 894 should present a "Certificate for Education and Training" at registration. If the veteran is presently in training at another institution, he should request his school to complete a "Change of Place of Training Form" so that a new certificate will be presented to him for use at the University of Vermont. Questions regarding veterans' benefits should be directed to the Office of the Dean of Men.

PART-TIME EMPLOYMENT Some opportunities to do part-time work are available on campus and in Burlington. Freshman students are advised to seek employment only in instances of definite financial need and only when they have reason to believe they can carry successfully a normal college program at the same time.

READING CENTER The University Reading Center provides a free service for students who wish to improve their reading, vocabulary, and study techniques. The first semester classes are open primarily to freshmen who are selected as a result of diagnostic tests given at the beginning of the academic year. Other students may enroll in the reading program as places become available. Students who enroll must attend regularly throughout the semester.

SPEECH CLINIC Services of the speech clinic, located in Pomeroy Hall, are free to students in the University who have problems of articulation, foreign dialect, stuttering, inadequate vocal control, cerebral palsy, or hearing loss.

Health Services

The University has complete facilities for maintaining the physical well-being of members of the student body. The Health Service, with its headquarters at the Wasson Memorial Infirmary, provides complete physical examinations on all incoming students, the examination of members of athletic squads, care of injuries, and advice on all health and medical problems. It is staffed by an administrative director, a medical director, resident psychiatrists, and associate physicians who hold regular office hours in the infirmary and are on call for emergencies. An orthopedic surgeon holds a regular clinic for consultation at the infirmary. Registered nurses are on duty at all hours. A student may employ a private physician using the facilities of the infirmary if desired. Cases of serious illness are sent to one of the two modern, well-equipped hospitals which are adjacent to the campus. Parents of a student are

notified of an illness by letter or telephone, depending on the nature of the illness.

Every student who pays full tuition for the normal college year of nine months is entitled to a maximum of five days of free infirmary care and such routine medical care as is needed and as the infirmary and health service can render during the nine months' period. Students who require infirmary care for more than five days in the college year are charged at the rate of \$8.00 per day.

Every student at the University is required to participate in the physical education program for two years. Normally this work is taken in the freshman and sophomore years, but may be postponed on the advice and authorization of the medical director, or the student's own physician, who must forward statements to the medical director concerning disability.

Student Activities

The University officially recognizes the activities of a number of organizations supplementing the social and recreational needs of students, developing their cultural and religious interests, providing them with valuable business and executive experience, and broadening their contacts. Because it is within this area that qualities of leadership may be developed, the University encourages participation consistent with its scholastic requirements. The students manage the affairs and finances of these organizations within the framework of the University's regulations.

RELIGIOUS LIFE Although the University cannot itself attempt to guide the religious life of its students, this work is carried out by several independent agencies: the B'nai B'rith Hillel Foundation, the Council for a Cooperative Ministry (representing the Baptist, Congregational Christian, Methodist, and Presbyterian churches), the Episcopal Church at the University of Vermont, and the Newman Club. In addition, the Inter-Varsity Christian Fellowship, the Society of Friends, the Christian Science College Organization, and the Church of Jesus Christ of Latter-Day Saints are also represented on campus. Students desiring information on any of these groups are referred to the office of the Consultant on Religious Programs.

THE BILLINGS CENTER The former Billings Library has been adapted to meet the space needs of campus organizations and activities. The following offices are located there: The Director of Student Activities, Student Association, Women's Student Government Association, Pan-

hellenic, Interfraternity Council, Men's Residence Halls, Student Court, Kake Walk, *Cynic*, *Ariel*, Student Photography Staff.

Billings also provides lounge and snack bar facilities. The major function of this multi-purpose building is to provide an atmosphere in keeping with the goals of the University for appropriate development of student activities.

UVM STUDENT ASSOCIATION All students enrolled in the undergraduate colleges and schools are charged a student activity fee and thus become members of the UVM Student Association. A Senate, consisting of elected officers and representatives, holds weekly meetings during the year and conducts the regular business of the association. However, the student body may be convoked by the Senate or by any group of students to hold a referendum or to conduct extraordinary business. There are many opportunities for students to participate in the work of the standing committees.

STUDENT COURT The judicial authority of the Student Association is vested in the Student Court, which consists of representatives of each of the undergraduate colleges. The Court has exclusive jurisdiction in all cases concerning interpretation of the Constitution and Bylaws of the Student Association and legislation enacted in pursuance thereof. The Court hears cases referred to it by the Dean of Women, the Dean of Men or the Standing Committee on Jurisdiction.

WOMEN'S STUDENT GOVERNMENT ASSOCIATION Every woman who enrolls as an undergraduate student at the University becomes a member of the Women's Student Government Association. W.S.G.A. Council, elected by the women students, works to educate students to become self-directing individuals, to respect the rights of others, and to develop into responsible citizens of the college community. Through the Honor System high ideals of personal integrity and social consciousness are fostered.

W.S.G.A.'s primary purpose is to promote the academic success and the social development of all, while at the same time respecting the personality and the worth of the individual.

HONORARY SOCIETIES The Boulder Society, a local senior honorary society for men, recognizes responsible student leadership. Election to this society is counted one of the highest honors that a Vermont man may achieve. Other honorary class societies for men are Key and Serpent, a junior society, and Gold Key, a sophomore society.

Mortar Board is a national honorary society for senior women. Though membership in Mortar Board comes as a great honor for a Vermont

woman in recognition of outstanding service, scholarship, and leadership, it is also a challenge for continued sound and honest scholarship, and for unselfish service in the best interests of the college campus. Other honorary class societies for women are Staff and Sandal for juniors and Sophomore Aides.

The Phi Beta Kappa Society established the Vermont Alpha Chapter at the University in 1848, and initiates are chosen primarily on the basis of high scholastic standing. The local chapter was the first in Phi Beta Kappa to initiate women into membership.

The Society of the Sigma Xi, established at the University in 1945, initiates those who have proved their ability to do research in one of the sciences and, if students, who have a high scholastic standing.

Other national honorary societies include Alpha Omega Alpha, medicine; Alpha Zeta, agriculture; Kappa Delta Pi, education; Tau Beta Pi, engineering; Omicron Nu, home economics; Tau Kappa Alpha, debating; Sigma Delta Psi, men's physical education; Sigma Phi Alpha, dental hygiene; National Collegiate Players, dramatics; Commerce and Economics Honorary Society; and Alpha Lambda Delta, freshman women's scholastic; Ethan Allen Rifles, outstanding students in the Reserve Officers Training Corps.

ATHLETICS An excellent program of intramural sports provides for voluntary participation by men in all classes. Competitions are arranged among fraternities, residence halls, independent groups, and individuals. A program of intercollegiate competition for men is maintained in football, skiing, baseball, basketball, track, cross-country, tennis, golf, and rifle marksmanship. The athletic policies of the University are under the direction of the Athletic Council, composed of members of the faculty, the student body, and alumni. Athletic relations are maintained with colleges and universities in New England and the eastern seaboard. The University is a member of the "Yankee Conference," which is composed of the land-grant colleges and universities in New England, of the National Collegiate Athletic Association, the New England Intercollegiate Athletic Association, and the Eastern College Athletic Conference.

The Women's Recreation Association sponsors intramural and extramural sports events for women in a variety of team sports, individual, dual and recreational activities. Through its program, WRA endeavors to provide opportunity for leadership and to encourage participation in and administration of recreational activities for all women students.

The Outing Club sponsors for both men and women students mountain climbing expeditions, ski trips, and the other outdoor activities.

FRATERNITIES AND SORORITIES Chapters of Greek letter fraternities and sororities have long been recognized as part of the social and extra-curricular life on the campus. These groups provide valuable experience for their members in the form of interfraternity athletic competition, interfraternity sings, dances, social work projects, house operation, and meal service. Fraternities and sororities are under the jurisdiction of the University Council, and policies regarding the establishment of new chapters and the operation of present groups on the campus are subject to its control. Fraternity activities are coordinated by the Interfraternity Council and sorority activities are coordinated by a Panhellenic Council. The following are active chapters of national and local fraternities: Acacia, Alpha Epsilon Pi, Alpha Gamma Rho, Alpha Tau Omega, Delta Psi, Kappa Sigma, Lambda Iota, Phi Delta Theta, Phi Mu Delta, Phi Sigma Delta, Sigma Alpha Epsilon, Sigma Nu, Sigma Phi, Sigma Phi Epsilon, Tau Epsilon Phi, and Theta Chi. Chapters of the following national sororities are represented: Alpha Epsilon Phi, Alpha Chi Omega, Alpha Delta Pi, Delta Delta Delta, Gamma Phi Beta, Kappa Alpha Theta, and Pi Beta Phi.

KAKE WALK The outstanding social event of the year is the Kake Walk week end in February. This unique celebration is UVM's gala occasion and many alumni attend annually. Festivities include a formal ball at which a king and queen are crowned, snow sculpture, and athletic events. For two nights, the fraternities compete with one another in original skits and in *Walkin' fo' de Kake*.

MUSICAL ACTIVITIES Opportunities for participation and appreciation are provided for students with strong musical interests. The University Choir, the University Orchestra, and the University Band appear in public presentations many times during the year. Christmas and Easter concerts and a spring opera are regular events. Faculty, senior and monthly departmental recitals are scheduled throughout the year.

The University Band is under the guidance of a director who is a member of the music department. The band appears at military reviews, Kake Walk, football games and parades. The band also performs as a concert band in which valuable experience for students in musical education is obtained.

FINE ARTS FESTIVAL A Fine Arts Festival is held each spring primarily to show student talents and work in the fine arts. Among the highlights

of the Festival are exhibitions of painting, sculpture, and arts and crafts. Productions include an opera, a dance program, and student directed plays, as well as choral and orchestral concerts. One issue of the *Centaur*, devoted to student creative writing, is published during the Festival, and exhibitions, lectures and movies are scheduled at the Fleming Museum.

DRAMA, DEBATING AND RADIO The University Players, an organization of students interested in theatre arts, offers opportunities for student participation. These include two or more full length plays, an annual opera or musical comedy, a faculty-student variety show, Readers Theatre productions, and a Drama Workshop for qualified student directors. Outstanding juniors and seniors are eligible for membership in National Collegiate Players, a national theatre honorary.

The Lawrence Debate Club provides opportunities for participation in all types of forensic activities—debate, discussion, oratory, after-dinner, and extemporaneous speaking. Members of the club appear before service clubs, farm organizations, high schools, and other groups throughout the state. The members of the club participate in more than three hundred intercollegiate debates annually with the beginners getting as extensive an experience as the veterans. The club travels to various discussion programs and to outstanding tournaments in the East. Outstanding performers receive recognition by election to Tau Kappa Alpha, the national honorary forensic fraternity.

The Radio-Television Workshop operates the campus radio station WRUV and produces many radio and television programs for broadcast on both commercial and educational stations. Open to all students, it provides opportunity for participation in broadcasting activities. The Workshop produces *Spotlight UVM*, a weekly documentary report of campus activities, provides student interviews for hometown stations; presents a daily newscast over a local station; and assists in the production of the university television series, *Living and Learning*.

WRUV, a student owned and operated closed-circuit station with professional equipment, broadcasts to the campus daily.

STUDENT PUBLICATIONS A college newspaper, literary magazine, and annual yearbook offer interested students the opportunity for journalistic, literary, and editorial expression. The newspaper, the *Vermont Cynic*, is published weekly by students. *Centaur*, the literary magazine, is published three or four times each year by students. The *Ariel*, the annual yearbook, is published by members of the senior class. The annual

Freshman Record Book for all incoming students is published by a committee of the Student Association.

CLASS ORGANIZATIONS The members of each freshman class form a class organization which retains its identity throughout the undergraduate years of its members and extends through subsequent years as long as there are living alumni of the class. Members of each undergraduate class elect officers each spring, except that officers elected at the end of the junior year serve through the senior year and to the end of the first reunion. Each senior class conducts the events of Senior Week.

LIBRARY FELLOWS This society of students, faculty members, alumni, and members of the public at large aids the libraries in carrying on various phases of their work by special contributions. Membership is open to all who are interested in books, knowledge, and the advancement of learning.

The Admission of Students

To be fully qualified for admission an applicant must have his application on file with the Director of Admissions before March 1 of the year in which admission is sought. Applications filed after this date can be considered only as curriculum and dormitory capacities allow. Forms for admission will be sent upon request. A non-refeundable application fee of \$10 is required of all out-of-state applicants.

Admission to the freshman class is determined after careful consideration of the high school record, rank in graduating class, recommendation of the high school principal, scores on the College Entrance Examination Board Scholastic Aptitude Test and a personal interview if requested by the Director of Admissions. The Scholastic Aptitude Test should be taken in December or January of the senior year.

At least three quarters of the grades for high school courses should be at the college certifying level or higher as determined by each high school. The quality of work in the junior and senior years is especially important.

Candidates for admission are expected to present not less than sixteen units from high school. These must include:

English	4 years
Mathematics (as specified below)	2 years
Foreign language, ancient or modern	2 years of one
Science	2 years
History	1 year

The two years of mathematics should be one year of algebra and one year of geometry. Students planning to enter the College of Agriculture and Home Economics should present a second year of algebra for a total of three years of mathematics. Students who plan to specialize in engineering, mathematics or science should present both a second year of algebra and a course in trigonometry for a total of four years of mathematics.

Exceptionally qualified students may in some instances be admitted even though they do not meet the above requirements in full.

Additional courses in mathematics, history (other than United States History), science, and a third year in the foreign language are recommended as desirable preparation for college. Students who present such courses will be given preference for admission.

SCHOOL OF DENTAL HYGIENE Enrollment is limited to women who are eligible to enter the freshman class of the University. Attributes necessary for success are good health, emotional stability, interest in the work, and the ability to get along well with people. Candidates who plan to practice in Vermont or Massachusetts must be seventeen years of age before the first of June preceding their entrance.

SPECIAL STUDENTS Special students are those who are not candidates for a degree in one of the regular curricula, or who are carrying fewer than twelve credit hours. Subject to the usual entrance requirements of the University, persons who are qualified for regular admission may, on payment of specified fees, pursue certain studies in regular college classes as special students. This arrangement is intended to accommodate those whose previous study and attainments enable them to pursue with profit special courses of study in particular departments. Students who have been dismissed for low scholarship may not re-enter as special students.

Special students are registered and enrolled in the same manner as regular students, and are subject to all regulations of the University. Credit for courses completed may be subsequently counted toward a degree. Special students are not eligible to hold University scholarships.

College Entrance Examinations

The College Entrance Examination Board will administer a series of tests during 1963 on May 18, August 14 and December 7, and in 1964 on January 11, March 7, May 2 and July 8. Complete information may be obtained from the College Entrance Examination Board, P. O. Box 592, Princeton, New Jersey.

Admission to Advanced Standing

All applicants for admission who have attended another collegiate institution are required to file with the Director of Admissions and Records an official transcript of high school and college records. A confidential report from the college attended is also required.

A student who transfers to the University from another accredited college or university may be given provisional credit for all courses satisfactorily completed, provided that similar courses are counted toward graduation at The University of Vermont. Transfer credit is not allowed for work completed with grade "D" or its equivalent, unless a more advanced course in the same subject has been passed with a higher grade in the institution from which the student transfers.

The credit is provisional, pending satisfactory completion of a semester's work at the University. The provisional transfer credits are fully granted if the student is in good standing at the end of the first semester.

Advanced Placement

The University of Vermont welcomes applications from high school students who have taken college level courses offered in their high schools under the Advanced Placement Program of the College Entrance Examination Board. Departments will review Advanced Placement examinations and the scores received in order that qualified students may not be required to repeat work already covered adequately and to permit enrollment in courses above the freshman level.

Preliminary Registration Program

The days immediately preceding the opening of class work are devoted to certain preliminary events designed to facilitate the adjustment of freshmen to conditions of life and study at college. The full schedule of events is given in a special circular, *Preliminary Days at The University of Vermont*, which is sent to all prospective freshmen by the Office of Admissions and Records one month before the opening of college.

Freshmen take several placement tests on the basis of which some students are placed in more advanced courses. The scores on all tests are used in advising students regarding the course of study to pursue and vocational plans.

Student Expenses

The student expenses outlined in the following paragraphs are the anticipated charges for the academic year 1963-64. Changing costs, however, may require an adjustment of these charges.

APPLICATION FEES An application fee of \$10.00 is charged each applicant for admission to the College of Medicine and to all non-residents of Vermont applying to an undergraduate college or school.

DEPOSIT A deposit of \$35.00 is required of every applicant after he has received notification of his acceptance as a student at the University. This deposit is held until he graduates or discontinues his course of study, at which time the deposit minus any indebtedness to the University will be returned to him.

An applicant to an undergraduate college or the College of Medicine who gives written notice of cancellation of an application prior to July 15 will receive a refund of \$15.00.

An applicant to the Graduate College for a program beginning in July or September will receive a \$15.00 refund if the Dean is notified by May 1; if the program is to begin in February, the deadline is December 1.

TUITION The tuition charges are in accordance with the following schedule.

1. VERMONT RESIDENTS

All Undergraduate Colleges and Divisions	\$ 416.00 per year
College of Medicine	550.00 per year
Graduate and Special Students	18.00 per credit hour

2. NON-RESIDENTS OF VERMONT

All Undergraduate Colleges and Divisions	
Freshmen and transfers	
Sophomores, Juniors and Seniors	\$1200.00 per year
College of Medicine	1500.00 per year
Graduate and Special Students	50.00 per credit hour

EXCEPTIONAL ENROLLMENTS A student taking fewer than twelve hours is enrolled as a special student.

Undergraduate students who, by reason of conditions over which they have no control, require more than four years to complete the requirements for a degree shall be charged no more than the full tuition for four years.

In the College of Medicine students allowed to repeat a year are charged full tuition for that year.

In the graduate college a tuition fee of \$25.00 per semester is charged each graduate student who has completed all course requirements but who is in residence for the purpose of completing his thesis.

TUITION FOR COURSES IN APPLIED MUSIC Private lessons are approximately one-half hour in length, fifteen being given in each semester. Students who enroll as regular full-time students in a music education curriculum, paying full tuition, are charged one-half the regular rates for applied music for such courses as are required in the curriculum. All others pay the scheduled charges.

One lesson a week	\$50.00 per semester
Two lessons a week	75.00 per semester

ROOM CHARGE Rooms in college residence halls are rented for the entire year and the prices are uniform in all residence halls. Single rooms rent for \$380.00, all others rent for \$335.00 per occupant per year. Nominal charges for the use of certain electrical appliances may be levied upon occupants of the residence halls. A \$2.00 fee is charged each male dormitory resident to be used for the Residence Halls' activities program.

A payment of \$50.00 is required by April 25 from each student returning to a University residence hall to hold a room reservation for the next year. If written notice of cancellation is received before July 1, the \$50.00 charge will be refunded.

The University has established procedures under which it will assist fraternities by collecting room rents from their resident members.

BOARD All women students who live on Redstone Campus are required to have meal contracts at Simpson Hall. Twenty meals are served each week at a cost of \$440.00 per year. All women living in Allen, Claggett, Sanders and Grassmount residence halls and all men living in Buckham, Chittenden, Converse and Wills residence halls are required to have meal contracts at the Waterman dining hall. Eighteen meals are served each week at a cost of \$410.00 per year. Men living in Marsh, Tupper and Austin residence halls will have meal contracts for eighteen meals per week at the Marsh dining hall. Members of a University fraternity which provides meal service may contract for that service with their fraternity.

LIBRARY FEE A Library fee of \$30.00 per year is charged to all full-time students except those registered in the College of Medicine. Special and unclassified students enrolled in less than twelve hours but more than three hours will be charged a fee of \$15.00 per year. Special and unclassified students enrolled in three hours or less are not subject to the library fee.

ATHLETIC FEE An athletic fee of \$30.00 per year is charged to all full-time students. This gives each student the privilege of using the facilities in the gymnasium at scheduled times, and provides admission to intercollegiate home games.

STUDENT ACTIVITY FEE All students who are enrolled in twelve semester hours or more in the College of Arts and Sciences, Technology, Agriculture and Home Economics, Education and Nursing, and the School of Dental Hygiene are charged a fee of \$7.50 per semester. This fee is assessed, allocated, and controlled by Student Association and covers the support of student organizations and activities, and includes subscriptions to the *Vermont Cynic* and the *Ariel*. First-year medical students who enter the College of Medicine after three years in the College of Arts and Sciences are charged this same fee.

Graduate students, special students, unclassified students, and students in the College of Medicine may, by paying this fee, become entitled to the benefits listed above.

MEDICAL STUDENT ACTIVITY FEE All students in the College of Medicine are charged a fee of \$10 per year. This covers the cost of the medical year book and other student activities.

LATE REGISTRATION FEE A late registration fee of \$6.00 is charged students who fail to complete enrollment at the appointed times. In unusual cases, exemption from this charge may be made by the deans.

CHANGE OF ENROLLMENT FEE A fee of \$3.00 is charged, except in the College of Medicine, for any change of enrollment requested by the student concerned. Deans may waive this fee in exceptional cases.

ADVANCED DEGREE FEE A fee of \$25.00, payable during the semester prior to graduation, is charged degree candidates in the Graduate College. This fee includes the cost of thesis binding and the academic hood.

Estimated Expenses Per Year

Estimated expenses (excluding transportation, laundry and spending money), based on the regular tuition for undergraduate students include the following:

Resident Tuition	\$ 416.00
Non-Resident Tuition	1200.00
Meals	475.00
Room (add \$45.00 for single room)	335.00
Library and Athletic Fees	60.00
Student Association Fee	15.00
¹ Books and Supplies (estimated)	150.00
<hr/>	
Resident Total	\$1451.00
Non-Resident Total	\$2235.00

Payment of Bills

All fees and tuition for the semester (one half of the above yearly total) are payable upon notification and not later than at the time of registration. Checks should be made payable to The University of Vermont. The University reserves the right to withhold all information regarding the record of any student who is in arrears in the payment of fees or other charges including student loans.

TIME PAYMENT The University of Vermont offers a time payment plan to students or parents wherein, after arranging with the Treasurer's Office, the total charges for a semester may be divided into six equal monthly payments beginning with July 1st for the first semester and January 1st for the 2nd

¹ Engineering students add about \$50 for instruments. Dental Hygiene students add about \$75 for instruments and uniforms. Nursing students should add about \$225 for uniforms and special equipment.

semester. By June 1st the total charges for the year are paid in full. There is a small service charge for this arrangement.

Refunds

In the event of withdrawal from college, refunds are made as follows:

1. During the first week of any semester the full tuition is refunded. Thereafter 20% of the tuition is deducted for each week that has elapsed.
2. No refund is made of the student fees.
3. Refund of board is made on a pro rata basis.
4. No refund is made of room rent.
5. Contracts for rooms are canceled for the remainder of the year for all students not enrolled for the second semester.

Banking Facilities

An arrangement with the Howard National Bank and Trust Company of Burlington enables students to open and maintain regular checking accounts through the University Cashier's Office. Applications for new accounts, deposits to individual accounts, and orders for checkbooks are accepted during office hours in the Cashier's Office. The bank's normal charge of 12½c per check is made for this service. The Cashier's Office cashes small personal checks for students in good standing who furnish satisfactory identification.

Student Aid

Many worthy and deserving students are unable to meet the financial charges and for them the University provides, so far as its resources permit, aid in the form of scholarships, loans, and employment. The extent of need and the type of financial assistance most desirable is determined by the Director of Financial Aid.

New students should request application forms for aid from the Director of Admissions or from the principal if they are attending a Vermont high school. All applicants for financial assistance must submit a Parents' Confidential Statement to the College Scholarship Service in addition to the application for financial aid. These forms may be obtained from the local high school principal.

A complete list of scholarships and loan funds will be found on page 213. A brochure listing the scholarships which will be available for awarding to entering students in 1963-64 may be obtained from the Financial Aid Office.

LOAN FUNDS Loan funds are apportioned annually to needy and deserving students, permitting them to pay a part of the cost of college attendance at some future time. The notes are payable following graduation.

NATIONAL DEFENSE EDUCATION ACT STUDENT LOAN PROGRAM The University participates in this loan program in which a student, depending upon ability and need, may borrow as much as \$5,000 during his college years (maximum for one year, \$1,000). Freshmen may borrow under this program. The applicant and his parents sign a promissory note which is non-interest bearing while the student is in college. Interest of 3% is charged on the unpaid balance of the loan beginning one year after the borrower ceases to be a full-time

student. Loans are to be repaid in ten equal installments beginning one year after the borrower ceases to be a full-time student. Teaching full-time in a public school permits cancellation at the rate of 10% per year of teaching up to a maximum of 50% of the total loan and interest. Death and permanent disability is cause for total cancellation.

Application forms should be obtained from the Admissions Office.

General Information

Definition of "Vermont Resident"

The following rules of residence, adopted by the Board of Trustees on October 18, 1952, are used in determining a student's eligibility to benefit from the reduced tuition rate for residents of Vermont.

1. A student who is of age when he first enrolls in the University shall be deemed to be a Vermont resident if, and only if, he had his domicile in Vermont for a period of one year next preceding his first enrollment in the University, except as otherwise provided by these rules.

2. A student who is a minor when he first enrolls in the University shall be deemed to be a resident of Vermont, if, and only if, his parents had their domicile in Vermont for one year preceding his first enrollment at the University, except as otherwise provided in these rules.

3. A student who, at the time of his first enrollment at the University, has his domicile fixed by a special rule of law (as a student under guardianship, a married woman, etc.) shall be deemed to be a resident of the State of Vermont if, and only if, the governing rule of law made Vermont his residence for a period of at least one year preceding his first enrollment.

4. In all cases in which a nonresident student claims that he has become a resident of the State of Vermont by reason of the application of a special rule of law (resulting from the appointment of a guardian, marriage of a woman student, etc.), the circumstances claimed to have made the student a resident must have taken place at least one year prior to the next regular student enrollment. In all such cases, the new resident status of the student shall take effect at the time of the next regular enrollment.

5. Whenever a resident student shall lose his Vermont domicile (as in the case of a minor whose parents move from the State and excepting women who marry nonresidents), the student shall immediately be reclassified as a nonresident.

6. It shall be incumbent upon any student whose status changes from resident to nonresident, to inform the dean of his college, or the Registrar, promptly, of the facts relating to his residence.

7. The burden of proof shall, in all cases, rest upon the student claiming a residence of the State of Vermont.

8. The Board of Trustees may, whenever justice requires, make exceptions to these rules.

The Committee on Residence has been authorized by the Board of Trustees to consider exceptions as stated in rule 8 above. Appeals from the decision of the committee may be made to the Board of Trustees.

Application for change of residence classification should be made to the Director of Admissions and Records, who is chairman of the Committee on Residence.

Academic Discipline

The disciplinary authority of the University is vested in the President. In such cases as he considers proper, this authority may be delegated to the several deans and to appropriate judicial bodies. The continuance of each student at the University, the receipt by him of academic credits, his graduation and the conferring of any degree or the granting of any certificate are strictly subject to the disciplinary powers of the University. The University is free to cancel his registration at any time on any grounds, if it considers such action to be for the welfare of the institution.

Reserve Officers' Training Corps

As a land-grant institution, the University provides military training in its curriculum as its contribution toward national defence. A senior division unit

of the Army ROTC is maintained. Its mission is to produce junior officers with qualities and attributes essential to their progressive and continued development as officers in the Army.

The Army ROTC curriculum is designed to develop the leadership potential of the individual. Instruction is given in subjects common to all branches of the Army, and qualified graduates of the four-year course are commissioned as lieutenants of armor, artillery, engineers, infantry, signal, quartermaster, ordnance or other branch depending upon aptitudes, the individual's choice, and the needs of the Army.

The Army Flight Training Program is open to selected senior Army ROTC students. It is designed to train a reserve pool of pilots and it affords trainees the opportunity to qualify for a civilian pilot's license.

All reservists should consult their Reserve advisers or the ROTC Department on campus as to possible advantages for them in taking the ROTC program.

THE BASIC COURSE A two-year course is required of all undergraduate, male students except the following:

1. *Veterans and Reservists.*
 - a. Those whose service or commitment for service in the Armed Forces, combining active duty and reserve status, meets the requirements of Selective Service for exemption from the draft.
 - b. Those who have served on active duty for six months but do not qualify under (a) may be excused from the first year of the basic course.
2. *Former ROTC Students.* Those who have successfully completed three or more years of an accredited Junior ROTC program may be excused from the freshman basic course upon presentation of a military training certificate.
3. *Transfer Students.* A student who transfers to this institution after having successfully completed two years of work at his former college may be excused from the entire basic course provided no ROTC training was offered at the former institution, or was offered on a voluntary basis; or provided he has successfully completed it if it were a required course.
4. *Those not physically qualified.*
5. *Noncitizens.*

The status of each student is determined by his academic dean in consultation with the Military Science Department.

Uniforms, arms, and equipment are furnished the student by the military department. The classes meet a maximum of three periods a week and carry two hours credit per semester. *These eight hours for the two years are in addition to the total number required for a degree in a specific curriculum.*

THE ADVANCED COURSE This is a two-year elective course open to juniors, and carries two hours credit per semester or eight hours for the full four semesters. In addition each student must complete one three-credit course in his regular academic enrollment that has been approved by the Military Department as furthering the professional qualifications of the student as a prospective commissioned officer in the United States Army. Students are selected by the department chairman and the President. Ex-service personnel, with the approval of the dean of the college, may apply in the spring of their sophomore year for Advanced Army ROTC. Each student receives a uniform allowance credit of \$100.00 and a daily subsistence allowance which during recent years has averaged \$27.00 per month. The Class meets at least five periods per week.

Attendance at a summer camp is mandatory. Duration of the Army ROTC summer camp is six weeks. During such attendance the student is paid at the pay scale of a private. Mileage at five cents per mile is paid to and from camp. Students attend camp between the junior and senior academic years, but deferment may be made, for cogent reason, when approved by the department.

On successful completion of the advanced course, ROTC students are normally commissioned as second lieutenants in the United States Army Reserve. Distinguished military students may receive regular commissions upon graduation.

Physical Education

Two years of physical education, normally completed during the freshman and sophomore years is required of all undergraduate students. Medical examinations are required of all new students. Those with serious defects may be given restricted work or may be excused by the Director of Student Health. Students twenty-five years of age or older are exempt from physical education requirements. The semester hours listed for physical education are in addition to the total number of hours required for graduation in a specific curriculum.

University Responsibility

Many courses involve instruction in and the use of various types of power equipment, laboratory apparatus, and specialized facilities. The University takes every precaution to provide competent instruction and supervision of such courses. It is expected that students will cooperate by following instructions and exercising precaution. In case an accident does occur resulting in personal injury, the University can assume no responsibility except for medical care that is provided by the Student Health Service.

Student Health Insurance

Through an arrangement with the Vermont Accident Insurance Company students are able to procure a policy providing for payment up to \$500 for each accident and each illness. The cost for one year's coverage is \$23.00 for men and \$21.00 for women. Further details may be obtained from the Treasurer's Office.

Enrollment

Every student is required to register and enroll on the designated days. All charges for the ensuing semester must be paid, or otherwise provided for, before enrollment is completed. After enrollment, no changes of studies will be allowed except such as are authorized by the dean of the college in which the student is registered. After Saturday of the first full week of the semester, no enrollment or changes of studies will be permitted, except that a student may drop a course with his dean's permission during the first three weeks of a semester without incurring any academic penalty.

Auditing Courses

With the approval of his dean and the instructor concerned, a student who is regularly enrolled and carrying a normal program may audit a course. In

such cases no entry is made on the student's permanent record; no credit is given for the work; and no charge is made. Full tuition is charged those students who are not regularly enrolled in at least twelve credit hours.

Undergraduate Degree Requirements

Degrees are conferred on the recommendation of the several colleges, and specific requirements will be found in the sections devoted to the respective colleges.

In addition to the course requirements of the several curricula, students must also fulfill the general requirements in physical education and military science.

To be eligible for graduation, a student must have attained a grade average of 72 or above in the work required for graduation in his curriculum. Grades in courses accepted for transfer credit are excluded in computing this average.

To be eligible for a degree, a student must have completed eight semesters or the equivalent as a full-time student. Exceptions to this rule may be made in special cases by the University Council.

Every candidate for a degree is required to have taken 30 of the last 42 semester hours of credit in residence at the University, except that those who have completed three years of premedical study in the University are awarded their degrees after successful completion of one year of study in any approved college of medicine. Courses taken in the regular session or in summer session at the University are counted toward residence.

Honors

The Bachelor's degree may be conferred with honors, by vote of the Senate, in recognition of general high standing in scholarship. Three grades are distinguished and indicated by inscribing on the diploma the words *cum laude*, *magna cum laude*, or *summa cum laude*. In the College of Medicine, the five students who have attained the highest average of marks during the entire four years' course are graduated *cum laude*. The names of those who receive these honors and of those who win academic awards are printed in the commencement program.

Dean's List

The deans of the undergraduate colleges publish at the beginning of each semester the names of those students who have attained an average of at least 85 in their college credit courses during the preceding semester.

Grades and Reports

Scholarship is graded on a percentage scale. Grades are reported and recorded numerically. The minimum passing grade in the undergraduate colleges is 60; any grade lower than 60 represents a failure and indicates that the course must be repeated if credit is to be obtained.

All students enrolled in the undergraduate colleges receive reports of scholarship from the respective deans' offices after the close of each semester. These reports are also sent by the Recorder to the parent or guardian of each freshman student and to the principal of the secondary school from which he was graduated. Reports of upperclass students are sent to parents only upon request.

Special reports of low standing are sent by the deans' offices about the middle of each semester, both to the students concerned and to the parents or guardians.

Each student, former student or graduate student may procure one photostatic transcript of his record without charge. For additional orders the charge is one dollar when one transcript is ordererd. When more than one transcript is ordered at a time, the charge is one dollar for the first copy and fifty cents for each additional copy.

Use of English

Correct English usage is demanded by all departments in the University. Written work of any kind which is unsatisfactory in manuscript form, grammar, punctuation, spelling, or effectiveness of expression may be penalized, regardless of contents. Students whose written work falls below the standard of correct usage may be remanded to the English Department for additional instruction, even though the freshman course in English has been passed.

Before they may be admitted to the University, foreign students must offer evidence that they are capable of reading and writing English on the college level.

The College of Agriculture and Home Economics

The College of Agriculture and Home Economics performs four public functions: it teaches resident students; it investigates problems; it disseminates information; it renders related services. These four lines of work are carried out respectively by the resident instruction division; the research division, or Vermont Agricultural Experiment Station; the extension division, or Vermont Agricultural Extension Service; and the Related Services Division.

The resident instruction division offers professional curricula in agriculture, agricultural engineering, and home economics and, in addition, two-year programs in forestry and preveterinary science. The curriculum in agriculture leading to the degree of Bachelor of Science in Agriculture provides a variety of options. The curriculum in agricultural engineering offered in cooperation with the College of Technology leads to the degree of Bachelor of Science in Agricultural Engineering. Young women may earn the degree of Bachelor of Science in Home Economics by selecting one of several options. The two-year preveterinary program prepares students for admission to other institutions for professional training. Forestry students complete their last two years at the University of Maine.

Most options in the College of Agriculture and Home Economics leading to the Bachelor of Science degree require 130 semester hours of prescribed and elective courses, plus credit for required courses in basic military science and physical education. The Agricultural Engineering Curriculum requires 137-141 semester hours of prescribed and elective courses. Normally 15 to 18 credit hours of courses exclusive of the aforementioned courses constitute a semester program.

In each field a list of courses is prescribed, with allowance made for the election of additional courses, to provide a well-balanced and integrated educational program and to insure reasonable concentration. Faculty advisers counsel students in the selection of elective courses and other educational problems.

As part of the preliminary registration program, a mathematics placement test is given. Freshman mathematics courses are normally assigned on the basis of the scores made in these tests.

A student may transfer from one curriculum, option or program in the College to another, provided the course requirements established

for the curriculum, option or program are satisfied. Arrangements may be made for transfer within the College through counsel with the student's faculty adviser.

The Honors Program

This program in the College of Agriculture is designed to help the superior student. It is intended to provide an environment for such students which will insure that they are constantly challenged by the most advanced work their talents will allow. It is assumed that honors students will have mastered more subject matter upon graduation than other graduates.

Such students are selected on the basis of their academic performance usually as second semester freshmen or during the sophomore year. Their curricula are developed in consultation with an honors committee and are relatively free of the customary restrictions. Special colloquia or consultations may be arranged in lieu of regular class work. Prerequisites may be waived and in general the student is encouraged to work as an individual.

The Curriculum in Agriculture

This curriculum leading to the degree of Bachelor of Science in Agriculture provides the following options:

Agricultural economics	Dairy industry
Agricultural education	Foreign agricultural service
Agronomy	Horticulture
Animal and dairy science	Poultry science
Botany	General agriculture

Every candidate for this degree must fulfill the requirements stated below, and present a total of 130 semester hours of credit plus credit for required courses in basic military science and physical education.

Required of All Students

- A. 4 semester courses in English.
2 semester courses in Mathematics, or 5 credit hours
1 semester course in Speech.
- B. 4 semester courses in physical and biological sciences: Chemistry, Physics, Geology, Botany, Zoology.
- C. Social Sciences and Humanities
 - a) 5 semester courses taken in at least three of the following areas:
Economics and Agricultural Economics;
Political Science;
History;
Geography;
Sociology and Anthropology;
Psychology.
 - b) 2 semester courses chosen from the following areas:
Philosophy; Religion; Music; Art;
Literature in addition to any taken under A above;
Foreign Language above the elementary level.

- D. 4 semester courses in the College of Agriculture and Home Economics, outside the field of concentration and not included in the option requirements.
- E. Option requirements. Each student must choose one of the options listed above. Specific courses to be taken in each option are listed in the description of each option on pages 59-63. These prescribed courses, where applicable, can be used to fulfill, wholly or partially, the requirements under B and C above. Additional departmental courses, supporting courses, and electives to fulfill the general requirements are chosen in consultation with the student's advisor or the chairman of the department.

The Freshman Year

Every candidate for the degree of Bachelor of Science in Agriculture is required to enroll in a uniform freshman year as follows:

English	2 semesters
Mathematics	2 semesters or 5 credit hours
Chemistry	2 semesters
Botany or Zoology	1 semester

Electives, preferably in agriculture.

Description of Options and Specific Requirements

AGRICULTURAL ECONOMICS Training in agricultural economics prepares students wholly or in part for appraising land; marketing activities; supervising agricultural loan departments in private banks; directing farmer cooperatives such as the production and farm loan association affiliated with the Farm Credit Administration; public relations research and sales work for the manufacturers of agricultural tools or products; organizational and publicity work for farm organizations and cooperative associations; positions in state, county, and local government service; research work in farm management, farm credit, taxation, marketing, farm population and rural life trends; for operating numerous enterprises where a knowledge of economic principles is an essential supplement to knowledge of the technical requirements of the business. This course of study satisfies the entrance requirements for graduate schools, for applicants for research or teaching fellowships in agricultural economics.

Required Courses: Each student majoring in agricultural economics must satisfactorily complete 30 hours of credit in agricultural economics or general economics; 21 hours of which must be in agricultural economics. All courses must be selected in consultation with and have the approval of the student's departmental adviser.

AGRICULTURAL EDUCATION This option prepares students to teach vocational agriculture in high schools for high school pupils, young farmers and adult farmers in the community. The program prepares individuals to serve as advisers to local FFA chapters and Young Farmer Associations for the purpose of developing leadership and citizenship abilities in these organizations.

Students completing this option may pursue many of the professional agricultural opportunities with organizations, commercial concerns, government agencies and foreign services in agricultural education.

Students are prepared to enter graduate programs in Agricultural Education leading to employment by technical schools, colleges or departments of education.

Required courses:

Agricultural Education	104	Leadership Training and Organization Methods
Agricultural Education	152	Introduction to Teaching Vocational Agriculture
Agricultural Education	155	Directed Practice Teaching in Vocational Agriculture
Agricultural Education	251	Methods of Teaching Vocational Agriculture
Agricultural Education	253	Methods of Teaching Young and Adult Farmer Classes in Vocational Agriculture
Agricultural Education	282	Seminar
Agricultural Economics	2	World Food and Agriculture
Agricultural Economics	201-202	Farm Management
Agricultural Economics	207	Agricultural Marketing and Prices
Animal and Dairy Science	1	Introductory Dairy Science
Animal and Dairy Science	105	Feeds and Feeding
Animal and Dairy Science	251	Dairy Cattle and Milk Production
Economics	11-12	Principles of Economics
Forestry	103-104	Woodland Management
Poultry Science	1	General Poultry Science
Psychology	1	General Psychology

Suggested courses to satisfy the D (p. 59) requirement: Agron. 11, 52; Agr. Eng. 1, 2, 101.

AGRONOMY This option is designed to give students a fundamental background in the theory and practice of crop and soil science and to prepare them for graduate study in these fields. By proper selection of electives, students may specialize in either crops or soils. Upon completion of four years' study, agronomy majors may enter federal, state or commercial employment in such areas as soil conservation, soil survey, soil analysis, fertilizers, field or forage crop production and management, seed production, weed control, and crop breeding, or engage in practical farming. Graduates are qualified to do research, teaching or extension work in the above or related fields.

Required courses:

Agronomy	21	Field Crops
Agronomy	22	Forage and Pasture Crops
Agronomy	52	General Soils
Agronomy	103	Soil Chemistry and Fertility
Agronomy	105	Soil Physics
Agronomy	281, 282	Seminar
Botany	1	Introductory Botany
Botany	103	Plant Physiology
Botany	115	Introductory Microbiology
Chemistry	21	Elem. Quantitative Analysis
Chemistry	131	Organic Chemistry
Geology	1	Introductory Geology
Physics	5-6	General Physics
Zoology	1	Introduction to Zoology

ANIMAL AND DAIRY SCIENCE

Option 1. Animal and Dairy Production. This option provides technical and practical instruction in the field of animal science with emphasis on the selection, breeding, nutrition, and management of farm animals. It prepares the graduate for the operation of dairy farms and other livestock enterprises; for field work with federal and state extension services, breed associations, farm organizations and various commercial companies concerned with the animal

sciences; for positions in industries related to the processing and sales of dairy products and meats, feed and grain companies, dairy equipment and supply agencies; and for advanced study.

Option 2. Dairy Industry. This option provides technical and practical instruction to prepare the graduate for positions in either dairy technology or dairy plant management. It prepares the individual for supervisory and management positions in the dairy industry; for quality control work in the dairy industry and allied fields; and for advanced study.

Required courses: Satisfactory completion of eight semester courses in Animal and Dairy Science, including at least five of advanced standing. Additional courses to be selected by the student in consultation with the department in order to place the desired emphasis on the student's special field of interest.

BOTANY Botany is that subdivision of biology which is the foundation of the various branches of plant science, whether theoretical or applied. Students from both the College of Agriculture and Arts and Sciences may select the botany option. The student receives general instruction in the physical and biological sciences while obtaining a liberal education. Such an undergraduate experience can be applied to many fields of future endeavor. A student takes beginning and general botany and physiology as prerequisite to four advanced courses. These courses are selected depending on the student's own interest in any one of the fields which constitute botany. In these courses he is introduced to the ideas, the technics and appropriate modern scientific apparatus. Students have a variety of choices open to them upon receiving the Bachelor's degree. Some go directly into agriculture, industry, government services, applied research, or biology teaching in the secondary schools. Others enter professional schools. Still others go on to graduate school to prepare themselves for more advanced positions.

Required courses:

Botany	1	Introductory Botany
Botany	103	Plant Physiology
Chemistry	131-132	Organic Chemistry
Physics	5-6	General Physics
Zoology	1	Introduction to Zoology

Three additional semester courses in botany. Six credit hours foreign language above the elementary level.

FOREIGN AGRICULTURAL SERVICE This option is designed to prepare students for opportunities in the vast field of foreign service with particular emphasis on agriculture. Positions available to graduates include those with commercial concerns engaged in foreign trade in agricultural products, with the agencies of the federal government engaged in world-wide activities, and with the international organizations contributing to the solution of world agricultural problems. Graduates are well qualified to enter graduate school. Students electing this option are well qualified for work in the Peace Corps.

Required courses:

Agricultural Economics	2	World Food and Agriculture
Agricultural Economics	201-202	Farm Management

Agricultural Economics	207	Agricultural Marketing and Prices
Agricultural Economics	208	Agricultural Policy
Agricultural Economics	281, 282	Seminar
Agricultural Education	102	Extension Methods
Economics	11-12	Principles of Economics
Economics	187, 188	Elementary Statistics
Economics	205	International Trade and Finance
Political Science	11, 12	Introduction to Political Science
Political Science	51, 52	International Relations

Twelve credit hours in Sociology, Anthropology or Psychology. Six credit hours foreign language above the elementary level.

HORTICULTURE Horticulture is one of the major divisions of Agriculture. It deals with plant resources of the earth. It is often defined by the plant subjects with which it is primarily concerned, such as pomology, or the study of fruits; floriculture, the study of flowers; olericulture, the study of vegetables; and landscape architecture. Food technology and processing are also the concern of the horticulturist. The curriculum is designed to prepare students for advanced study. Although opportunities are available to holders of the B.S. degree it is becoming increasingly essential to present advanced degrees for positions in research, teaching, and industry.

Required courses:

Horticulture	51, 52	General Horticulture
Horticulture	56	Plant Propagation
Horticulture	281, 282	Seminar
Botany	1	Introductory Botany
Botany	103	Plant Physiology
Chemistry	131	Organic Chemistry
Physics	5-6	General Physics
Zoology	1	Introduction to Zoology

Two additional semester courses in Horticulture.

Six credit hours foreign language above the elementary level.

Other courses from supporting disciplines to be selected in consultation with the student's adviser.

POULTRY SCIENCE This option provides formal training in the theory and practice of poultry science and technology. The phases that may be emphasized are nutrition, physiology, production, marketing technology, incubation and hatchery management. This prepares the student, depending upon curriculum emphasis, for graduate work or positions in poultry or related fields in the areas of resident teaching, extension, research, or industry.

Required courses: Four semester courses plus two semesters of seminar in Poultry Science. Other courses from supporting disciplines to be selected in consultation with the student's adviser and approved by the Department Chairman. Such a program is designed to be flexible and allow the student to meet his needs and desires.

GENERAL AGRICULTURE This option is designed for students wishing to return to farming, to become farm managers, to enter work allied to farming; for those seeking a general rather than a specialized knowledge in the field of agriculture; for those desiring to prepare for county extension work; and for those preparing

to work in the general field of agriculture with commercial concerns such as feed, fertilizer or seed companies, meat packers, agricultural implement and equipment concerns, dairy products and supplies companies, and for organizational and publicity work for farm organizations. Through the proper selection of electives, a student may choose a field of concentration in agriculture, and at the same time select courses that contribute to a liberal education.

Students taking a major part of their work in forestry under this option may prepare for entrance to professional forestry schools granting the Master of Forestry degree. Students contemplating preparation for county extension work should, not later than their sophomore year, seek the advice of the state extension leaders.

Required courses:

Agricultural Economics	201-202	Farm Management
Agricultural Education	102	Extension Methods
Agricultural Engineering	1 or 2	Farm Power, Machinery and Electricity; or Farm Structures and Utilities, and soil and Water Engineering

At least four semester courses from the following group:

Agricultural Engineering	1 or 2	Farm Power, Machinery and Electricity; or Farm Structures and Utilities, and Soil and Water Engineering
Agronomy	11	Introductory Crop Science
Agronomy	52	General Soils
Animal and Dairy Science	1	Introductory Dairy Science
Animal and Dairy Science	2	Milk and Milk Products
Forestry	103-104	Woodland Management
Horticulture	51, 52	General Horticulture
Poultry	1	Introductory Poultry Science

A minimum of twenty-one additional credit hours of agricultural courses, of which at least nine credit hours must be in courses numbered 100 and above.

The Agricultural Engineering Curriculum

The curriculum in Agricultural Engineering leads to the degree of Bachelor of Science in Agricultural Engineering. It provides fundamental training in engineering similar to that provided by the engineering curricula in the College of Technology. In addition, it provides specialized training in the several subdivisions of Agricultural Engineering. The curriculum, the teaching staff, and the course content are approved jointly by the College of Technology and the College of Agriculture and Home Economics.

The graduate is prepared for professional engineering work in soil and water control, agricultural machinery and equipment, agricultural structures, the application of electricity and refrigeration to agriculture, and rural water supply and sanitation. The program prepares the student for advanced study in agricultural engineering.

Employment opportunities exist in government agencies and schools; in manufacturing plants, utility companies, insurance companies and processing plants; in contracting, selling, farming, consulting, and many other types of work which demand college training in engineering or agriculture.

The specific courses required for graduation are given below. These courses, exclusive of electives, provide 119 semester hours of credit and student must select additional courses to meet the full requirement of 137 semester hours. The elective courses must be chosen so as to fulfill the requirements on page 89, entitled Humanistic-Social Studies for Engineering Students.

Normally, a student who has a good record in high school mathematics, which includes two years of algebra, one year of geometry and a half year of trigonometry, and who qualifies in the placement test in mathematics given at the University during freshman preliminary days, may enroll in Mathematics 5 or 11 during the first semester and Math 12 during the second semester; these students may graduate in four years with 137 semester hours of credit. Students who do not qualify for Math 5 or 11 will enroll in Math 9 during their first semester and Math 10 in their second semester, but the graduation requirement is then 141 semester hours. Since graduation in four years requires the completion of sophomore mathematics, Math 21-22, by the end of the second year, students taking Math 9, 10 in their freshman year must take Math 12 in summer school between their freshman and sophomore years, or take more than four years to complete the curriculum.

The Freshman Year		1st	2nd	The Sophomore Year		1st	2nd
		SEMESTER				SEMESTER	
Freshman Math., 11, 12		5	5	Soph. Math., 21, 22		3	3
Intro. Chemistry, 1-2		4	4	Gen. Physics, 15, 16		4	5
Freshman English, 1-2		3	3	Farm Shop, 101		3	—
Engin. Problems (M.E. 3)		1	—	Statics (C.E. 24)		3	—
Mechanical Drawing (E.G. 1)		2	—	Plane Surveying (C.E. 53)		4	—
Descr. Geometry (E.G. 2)		—	2	Dynamics (C.E. 130)		—	3
General Physics, 14-		—	3	General Soils (Agron. 52)		—	3
				Public Speaking (Speech 11)		—	3
The Junior Year		1st	2nd	The Senior Year		1st	2nd
		SEMESTER				SEMESTER	
Junior Seminar, 181, 182		1	1	Princ. of Econ. (C. & E. 11-12)		3	3
Diff. Equations (Math. 211)		3	—	Farm Management (A. Econ. 201-202)		3	3
Mech. of Materials (C.E. 131)		3	—	Senior Seminar, 183, 184		1	1
Thermodynamics (M.E. 113)		3	—	Farm Structures, 151 or			
Elec. Cir. & Mach. (E.E. 101)		4	—	Soil & Water Engr., 155		3	—
Soil & Water Engr., 155 or				Farm Utilities, 152 or			
Farm Structures, 151		3	—	Farm Power Mach., 158		—	3
Farm Power Mach., 158 or				Electricity in Agr., 156 or			
Farm Utilities, 152		—	3	Agr. Mach. & Equip., 154		—	3
Agr. Mach. & Equip., 154 or				Electives		6	6
Elec. in Agr., 156		—	3				
Hydraulics (C.E. 162) or							
Fluid Mech. (M.E. 142)		—	3				
Literature (Engl. 25, 26, 27, or 28)		—	3				
Electives		—	6				

The Forestry Program

This program provides the first two years of study in a four-year forestry curriculum. The last two years of scientific, cultural, and professional education must be taken at an institution that confers the degree of Bachelor of Science in Forestry or Wildlife Management. Special arrangement with the

University of Maine permits Vermont resident students in good standing to continue their forestry education at that University after completion of the two-year program. They will receive full credit for all courses passed and they will pay the same tuition as resident students in Maine. Transfers may be made to other institutions under the usual conditions. Nonresident students enrolled in this program complete their last two years as transfer students to the University of Maine or to any other forest school of their choice.

Beginning with the junior year the curriculum at the University of Maine provides for concentrations in General Forestry, Forest Management, Forest Utilization, Forest Science (Tree Growing or Wood Technology), Wildlife Land Management, and Wildlife Science. Immediately following the junior year Forestry students take a one-week field trip to experimental forests in New England before the eight weeks instruction at the summer camp. Wildlife students study Ecology at the summer camp for one week before the eight weeks of instruction at the summer camp.

Professional forestry prepares men to manage large and small public woodlands for timber production and use; to manage wildlife areas; for technical and managerial work in the wood-using industries; for positions in the United States Forest Service, Wildlife Service, National Park Service, Soil Conservation Service, and other federal and state agencies; for research and teaching; and to function as private forestry consultants.

Forest Management and Wildlife Science

The Freshman Year	1st SEMESTER	2nd SEMESTER	The Sophomore Year	1st SEMESTER	2nd SEMESTER
Introductory Botany	—	4	Introductory Chemistry	4	4
Freshman English	3	3	Forest Fire Control	2	—
Dendrology	—	4	Forest Mensuration	3	2
Introduction to Forestry	2	2	Forest Products	—	3
Mechanical Drawing	2	—	General Physics 5-6	4	4
Mathematics 9, 2	3	3	Plane Surveying	4	—
Political Science	3	—	Introduction to Zoology	—	4
Public Speaking	3	—			

The Preveterinary Program

This program offers preparation for entrance to colleges of veterinary medicine. Adjustments of individual programs may be made to meet the requirements of different colleges. Students completing the prescribed courses with good grades and suitable qualifications may expect consideration for admission to veterinary colleges. Six months of experience after the age of 14 years on a farm with a variety of livestock is an important qualification for admission to some veterinary colleges. Opportunities are available for graduate veterinarians in general practice, the armed services, public health, teaching and research, and federal, state and municipal disease control work. Two years of work, totaling at least 60 semester credit hours, plus training in military science (men only) and physical education, are required.

The Freshman Year	1st SEMESTER	2nd SEMESTER	The Sophomore Year	1st SEMESTER	2nd SEMESTER
Freshman English	3	3	Comparative Vertebrate Anatomy 41	4	—

Introductory Chemistry 1, 2	4	4	General Physics 5-6	4	4
Introduction to Zoology, 1	4	—	Organic Chemistry, 131-132	4	4
Introductory Botany 1	—	4	American Govt. or History	3	3
Mathematics	3	3	Public Speaking (Speech 11)	—	3
Elective	1-4	1-4	Elective	1-4	2-5

The Curriculum in Home Economics

This curriculum has two purposes: first, to provide a liberal education including the areas of learning which are related to home and family; second, to provide several options which are organized to give a more specialized training and background for the interesting professions that are a part of home economics.

Every candidate for the degree of Bachelor of Science in Home Economics must present a total of 130 semester hours of credit, plus credit in required courses in physical education. All students are required to take 41 credit hours in non-home economics subjects and 30 credit hours of home economics subjects. The choice of additional credit hours required for graduation is dependent upon which of the following options the student plans to pursue:

Business and Liberal
Education
Family Living and Human (Child) Development
Food and Nutrition
Related Art, Clothing and Textiles

The food and nutrition option allows special adjustments in curriculum requirements for men taking institutional management.

Core Courses Required of all Students

A. Non-Home Economics	Hours	B. Home Economics	Hours
English	12	Orientation, 1	1
Speech	3	Design, 21	3
Political Science or History	6	Clothing Selection and Construction, 22	3
Laboratory Science ¹	8	or	
Psychology, 1	3	Survey of Textiles, 83	
Economics, 11, 12	6	Basic Concepts of Food and Nutrition, 43	4
Sociology, 21	3	Housing, 51	3
4 semester courses in Physical Education	—	or	
		Household Equipment, 54	
		Child Development and Personality, 63	3
		Principles of Home Management, 101	3
		Meal Management, 137	3
		Senior Seminar, 151	1
		Home Management Residence, 152	3
		Dynamics of Family Development, 163	3

BUSINESS AND LIBERAL OPTION This option provides a general education in home economics and liberal arts. The business major provides more concentration in commerce and economics courses and is planned to prepare a student

¹ Students choosing Food and Nutrition or Education Options must take Chemistry.

for business positions in home economics. The liberal major allows for more concentration in liberal arts and science courses as well as general background in home economics.

Business Major

Required courses:

Clothing and Textiles	22	Clothing Selection and Construction
Clothing and Textiles	83	Survey of Textiles
Home Economics Education	169	Demonstration Techniques
Home Management	51	Housing
Home Management	54	Household Equipment
Home Management	204	Family Economics
Communications		6 credit hours additional
Commerce and Economics		9 credit hours additional
Home Economics		6 credit hours additional

Liberal Major

Clothing and Textiles	22	Clothing Selection and Construction
Clothing and Textiles	83	Survey of Textiles
Home Management	51	Housing
Home Management	54	Household Equipment
Home Management	204	Family Economics
Institutional Management	139	Food Service Management
Nursing	7	Nursing
Related Art	130	Home Furnishing I
Arts and Science		21 credit hours additional

EDUCATION OPTION This option provides a background which prepares students to teach Home Economics at elementary, junior high, secondary and adult levels, or to become home demonstration or 4-H club agents. Students must have a 75 average in their home economics subjects to be eligible for student teaching during their senior year. Preparation for Extension or 4-H club work may be fulfilled by appropriate selection and substitution of recommended courses: Extension Participation, Extension Methods, American History since 1900, Local Government, and Elements of Radio and Television Broadcasting.

Required courses:

Chemistry	1-2	Introductory
Clothing and Textiles	22	Clothing Selection and Construction
Clothing and Textiles	73	Pattern Design and Advanced Construction
Clothing and Textiles	83	Survey of Textiles
Food and Nutrition	135	Advanced Food Preparation
Food and Nutrition	144	Applied Normal Nutrition
Home Economics Education	115	Introduction to Home Economics Education
Home Economics Education	165	Methods of Teaching
Home Economics Education	167	Student Teaching
Home Economics Education	169	Demonstration Techniques
Home Economics Education	216	Teaching Adults
Home Management	51	Housing
Home Management	54	Household Equipment
Home Management	204	Family Economics
Institutional Management	139	General Institutional Management
Nursing	7	Home Nursing
Related Art	130	Home Furnishing I
Education		3 credit hours additional

FAMILY LIVING AND HUMAN (CHILD) DEVELOPMENT OPTION This option provides the knowledge which prepares a student to become a preschool teacher-family consultant, or to work in allied areas such as social work and/or family life education. This option through its Preschool Program provides opportunities for both study and experiences in the area of human development and family relationships. In the Preschool Laboratory the student has an opportunity to work with the preschool children and their parents. College students visit the homes of preschool children to observe dynamics of family living.

The Department of Home Economics is affiliated with the Merrill-Palmer Institute, Detroit, Mich. A student concentrating in Family Living and Human Development may spend the second semester of the junior year at Merrill-Palmer. The cost of this semester, including transportation, is comparable to the cost of one semester at the University of Vermont.

Required courses:

Clothing and Textiles	22	Clothing Selection and Construction
Family Living	65	Experience with Preschool Children
Family Living	67	Creative Activities
Family Living	164	Introduction to Parent Education and Family Consulting
Family Living	172	Preschool Planning and Practicum
Family Living	263	Seminar in Family Relations and Human Development
Family Living	264	The American Woman
Food and Nutrition	144	Applied Normal Nutrition
Home Management	51	Housing
Psychology	201	Personality
Sociology	31	Sociological Analysis
Sociology	51	The Family

Work taken at Merrill-Palmer Institute may be substituted for the second semester requirements.

FOOD AND NUTRITION OPTION This option provides a background which prepares students for specialization in foods, nutrition or institutional administration. Academic requirements for the dietetic internship and membership in the American Dietetic Association may be met through selection of designated courses.

Required courses:

Agricultural Biochemistry	172	General Biochemistry
Botany	115	Introductory Microbiology
Chemistry	1-2	Introductory Chemistry
Chemistry	131	Organic Chemistry
Clothing and Textiles	83	Survey of Textiles
Food and Nutrition	135	Advanced Food Preparation
Food and Nutrition	243	Nutrition and Diet
Home Management	54	Household Equipment
Home Management	204	Family Economics
Institutional Management	186	Quantity Food Production
Institutional Management	187	Institutional Administration
Zoology	1	Introduction to Zoology
Zoology	52	Physiology

Additional courses, taken as elective credit, for meeting academic requirements of the American Dietetic Association.

Therapeutic and Administrative Dietetics

(Hospital Internship Program)

Personnel Administration, 251

Education

Diet Therapy, 244

Institutional Marketing and Accounting, 288

or

Food Service Administration

Principles of Accounting, 13-14

Labor Economics, 141

Personnel Administration, 251

Institutional Marketing and Accounting, 288

or

Science—Foods and Nutrition

Education

Experimental Foods, 236

Diet Therapy, 244

Readings in Foods, 246

Readings in Nutrition, 248

For men interested in training in this increasingly important field the Department makes the following adjustments. Requirements in the following courses are waived: Home Management Theory and Residence, Family Economics, Child Development and Personality.

RELATED ART, CLOTHING AND TEXTILES OPTION This option provides the opportunity for concentrated study in fields of costume and textile designing, fashion illustration, merchandising, interior design, and textile testing.

Required courses:

Clothing and Textiles	22	Clothing Selection and Construction
Clothing and Textiles	73	Pattern Design and Advanced Construction
Clothing and Textiles	83	Survey of Textiles
Clothing and Textiles	123	Tailoring
Clothing and Textiles	182	Advanced Textiles
Clothing and Textiles	221	Costume Design and Draping
Home Management	51	Housing
Home Management	54	Household Equipment
	or 106	House Planning
Related Art	71	Costume Design
Related Art	120	History of Costume
Related Art	130	Home Furnishing I
Related Art	230	Home Furnishing II
Laboratory Science		3 credit hours additional

The College of Arts and Sciences

The College of Arts and Sciences aims to provide for young men and women the means and opportunity of fitting themselves intellectually, emotionally, and spiritually to play a responsible part in the world of thought and action.

It devotes itself to the inculcation of ideals and the cultivation of ideas. It seeks to encourage habits of clear, independent thinking and effective expression; to stimulate an appreciative understanding of the thought and achievement of man; to develop sound critical judgment and a spirit of tolerance; to arouse the intellectual curiosity which is the basis of continuing self-education.

Its fundamental purpose is to instill the courage and conviction to exemplify the enduring values of American democracy.

The Liberal Arts Curriculum

The curriculum in liberal arts, leading to the degree of Bachelor of Arts, is designed to assure adequate training in language, particularly in English, as the mother tongue and the chief tool of thought and expression, and in certain other subjects essential to an understanding of the various fields of human knowledge; and to provide for further study and mastery of a chosen field of concentration.

Every candidate for this degree must fulfill the requirements stated below, and present a total of 120 semester hours of credit, plus credit in required courses in military science and physical education.

Required of All Students

1. English. Freshman English the first year, and the second year either English-American Literature or World Literature.
2. Foreign Language. One year course of at least intermediate grade in a foreign language, to be completed as early as possible in the college career.
3. Science. One laboratory course, normally the first year, to be chosen from botany, chemistry, geology, physics and zoology. A semester of botany may be combined with a semester of zoology to meet this requirement.
4. Physical Education and Military Science. Two years of physical education for men and women and two years of military science for men.
5. Field of Concentration. Each student, in consultation with his adviser must choose a field of concentration during his sophomore year. The specific courses making up the field, as well as the student's whole program for the last two years, are chosen in consultation with the chairman of the department in which the major part of the work is to be taken and must have his approval. There are certain restrictions to be met. (A) The field must be a well integrated whole, adapted to the student's special interests. (B) It must include a

minimum of twelve semester courses totalling not less than thirty-six semester hours, at least eighteen in one subject and at least twelve in a related subject. (C) It must contain at least four semester courses (twelve hours) of advanced level in one subject and two related semester courses (six hours) of advanced level in another subject. (D) Each student must take at least one course, normally an advanced course, in his field of concentration in each semester of his junior and senior years.

Additional Distribution Requirements for Students Concentrating in Fields in the Following Divisions

1. Language¹ and Literature, or Music; History (American, Ancient, Medieval, or European Civilization) normally the first year; a second foreign language reaching the intermediate level²; a second year course in the social science division.

2. Social Science: History (American, Ancient, Medieval, or European Civilization) normally the first year; during the first two years a total of two year courses in different subjects, chosen from the following: economics, philosophy, political science, psychology, religion and sociology.

3. Science and Mathematics: Introductory Chemistry (except for students concentrating in mathematics), mathematics and physics as indicated below under requirements for special departments, and a total of at least four semester courses (12 semester hours) in departments other than the sciences and mathematics.

Additional Specific Requirements for Concentration in Special Departments

BOTANY Mathematics 9, 2 or 7, 8 or 11, 12; Physics 5-6; Chemistry 131, 132; Zoology 1; Botany 1, 2, 103, and four additional semester courses. The advanced related course (six semester hours or more) is normally in one of the other sciences.

CHEMISTRY Mathematics 21; Physics 14-15, 16; Chemistry 11-12, 21-22, 131, 132, 141-142, 181-182, and 183-184. No advanced related course is required. Those who wish to qualify for accreditation by the American Chemical Society must also complete either 237 or senior research, three additional hours in advanced courses, and also German 11-12. Only those who so qualify will be recommended by the department as chemists.

ECONOMICS Courses in economics totalling at least twenty-four semester hours, including twelve or more of advanced grade. The related courses are chosen in consultation with the departmental adviser on the basis of the student's individual needs and plans. See page 74 for economics courses for which credit is granted in the Liberal Arts Curriculum.

ENGLISH Satisfactory completion of English-American Literature and seven semester courses of advanced grade. The advanced related courses may be in

¹ It is strongly recommended by the respective departments that students who wish to choose modern foreign language as their field of concentration complete Intermediate Latin in college unless they presented four years of Latin for entrance. The English Department considers courses in Latin to be a distinct aid to students concentrating in English.

² Students concentrating in English substitute an advanced literature course in foreign language for the second foreign language.

language, music, or any course approved by the department; it is expected that this advanced related course will be taken in the senior year. An advanced literature course in a foreign language is required, but an intermediate course in a second foreign language is not required.

GEOLOGY Mathematics 11, 12; Physics 5-6; Introductory Chemistry; eight semester courses in geology, of which four are of advanced grade; one advanced related course, six semester hours or more, in one of the other sciences or mathematics. A course in some other subject may be approved to meet particular needs.

GERMAN Satisfactory completion of eight semester courses in German, including at least four of advanced grade, and at least one advanced related year course, normally in a language.

GREEK Satisfactory completion of twenty-four semester hours, twelve of which must be of advanced grade, and one advanced related course of at least six semester hours.

HISTORY Satisfactory completion of twenty-four hours in history and twelve semester hours in a related subject in another department. At least twelve of the hours in history and six in a related subject must be in courses numbered above 100. The history courses must include: History 11, 12; at least six hours in American history; at least six hours in courses numbered above 250.

LATIN Satisfactory completion of eighteen hours in courses numbered above 100, and one advanced related course of at least six semester hours. Courses in Greek are strongly recommended, particularly to those who contemplate graduate work in classics.

MATHEMATICS Physics 5-6 or 14-15; Mathematics 21, 22 and six semester courses numbered above 100. The advanced related course, six semester hours or more, is normally in one of the sciences and is chosen in consultation with the department.

MUSIC Music 1, 2, 5, 6, 105-106, 221, 222, and six hours of applied music including piano. It is recommended that the related course be an advanced course in a foreign language. Those who wish to qualify for recommendations for teaching positions or graduate study will also complete one of the following combinations:

- (a) 203, 205, 223, 224, 225, and 226
- (b) 203, 205, 208, 215, and two advanced courses in Music Literature
- (c) 208, one advanced course in Music Literature, and twelve additional hours of applied music.

Candidates for honors may complete 281, 282 in lieu of two courses subject to approval by the department.

PHILOSOPHY Satisfactory completion of Philosophy 1, 2, 4, 107, 108, 214, and either 201 or 206, and an advanced related course or courses, chosen in consultation with the departmental adviser to fit the needs of the individual students.

PHYSICS Mathematics 211, 212; six semesters of physics courses numbered above 100, including Physics 115, 116, and 271. A student who plans a heavy

concentration should take Physics 5 with Mathematics 11, or Physics 1 with Mathematics 9, in the freshman year, postponing his language. Russian or German is recommended.

POLITICAL SCIENCE Satisfactory completion of four semesters of advanced courses in political science and an advanced course of six or more semester hours ordinarily in one of the other social sciences.

PSYCHOLOGY Satisfactory completion of at least twelve semester courses, eight in psychology, totalling at least twenty-four semester hours and including 1, 109-110, 223, and 281-282; the other four to be chosen in consultation with the department from mathematics, philosophy, physics, sociology, or zoology.

ROMANCE LANGUAGE Satisfactory completion of six semester courses of advanced grade, of which at least four must be in literature, and at least one advanced course, six semester hours or more, ordinarily in another foreign language or English.

SOCIOLOGY Satisfactory completion of 21, 31 and 251, and at least five additional semester courses in sociology, including three numbered above 100. A minimum of four semester courses in a related field must include two numbered above 100.

SPEECH Students concentrating in speech meet the "additional distribution requirements" as follows: Those whose advanced related course is in the Social Sciences meet the distribution requirements of that area; those whose advanced related course is in Language, Literature or Music meet the requirements of that area, but may, in place of a second foreign language, substitute (a) an advanced literature course in foreign language or (b) 12 hours of course work in Fine Arts (art, music, dance). They must complete satisfactorily nine semester courses in speech, as indicated below, and an advanced related course or courses (six semester hours or more) chosen in consultation with the departmental adviser. The courses in speech must include 1, 11, a one-semester course in three of the following five areas: public speaking (other than 11), oral interpretation, drama, radio and speech correction, and four semesters of advanced courses in no more than three areas.

ZOOLOGY Mathematics: 7, 8 or 9, 10 or 5 or 11 (Mathematics 7, 8 should be chosen only by students certain that they will not wish to study branches of zoology in which mathematics is an important tool); Physics 5-6; Botany 1; Zoology 1, 41, 150, 281, 282, and five additional semester courses of which at least four are numbered above 100. The advanced related courses (six semester hours or more) may be in one of the other sciences or psychology. A student concentrating in zoology must attain an over-all average of 72 or above in the courses in mathematics and science required for concentration in the department.

Courses Offered in Other Colleges Acceptable for Credit Toward the B.A. Degree¹

Agr. Biochem. 172: Elementary Biochemistry
Agr. Biochem. 252: Plant Biochemistry

Agr. Biochem. 253: Microbial Biochemistry
Botany: all courses

¹ Other courses may be approved in individual cases by the committee on studies.

- Chem.: all courses except Outline of Organic Chemistry
 Econ. 1-2: World Economic Geography
 Econ. 11-12: Principles of Economics
 Econ. 15-16: Economic History of the United States
 Econ. 141: Labor Economics
 Econ. 181: Transportation
 Econ. 183: Economic Life and Government Control
 Econ. 187, 188: Economic Statistics
 Econ. 201-202: Money and Banking
 Econ. 203: Economics of Taxation
 Econ. 204: State and Local Finance
 Econ. 205: International Trade and Finance
 Econ. 242: Collective Bargaining
 Econ. 286: Economic Analysis
 Econ. 292: International Economic Problems and Policies
 Econ. 293-294: Money, Income and Prices
 Econ. 295: History of Economic Thought
 Econ. 296: Modern Economic Thought
 Econ. 297, 298: Seminar
 Educ. 202: Philosophy of Education
 Family Living 61: Family Relationships
 Forestry 208: Biological Statistics
 Mathematics: all courses
 Music Education 151-152: Secondary School Methods
 Phys. Ed. 50: Dance Technique and Analysis
 Sec. Educ. 102: Principles of Education
 Sec. Educ. 252: Teaching Latin
 Sec. Educ. 255: The School as a Social Institution

THE RESTRICTED LIST A given student may elect from this list courses totaling not more than 12 semester hours, provided he has completed his basic distribution requirements, and provided that these courses are not to be counted as part of the minimum requirement for concentration:

- Agr. Econ. 103: Rural Sociology
 Chem. 35: Outline of Organic Chemistry
 C. & T. 22: Clothing Selection
 Civ. Engrg. 24: Statistics
 Civ. Engrg. 130: Dynamics
 Civ. Engrg. 131: Mechanics of Materials
 Econ. 13-14: Principles of Accounting
 Econ. 109-110: Business Law
 Econ. 206: Securities Markets
 Econ. 208: Investments
 Educ. 145-146: Learning and Human Development
 Family Living 63: Child Development
 Food and Nutrition 43: Basic Concepts
 Graphics 1, 2: Engineering Drawing
 Home Management 102: Home Management
 Related Art 21: Design
 Sec. Educ. 180: Secondary Methods and Procedures
 Sec. Educ. 181: Student Teaching in Secondary Schools
 Sec. Educ. S225: Teaching Social Studies in Secondary Schools
 Sec. Educ. S227: Teaching Science in Secondary Schools
 Sec. Educ. S232: School Administration
 Sec. Educ. S250: Guidance
 Sec. Educ. S257: Teaching Mathematics

Special Honors

The honors program at both the junior and senior levels is designed for the superior student with unusual initiative and intellectual curiosity, and provides an opportunity to pursue a special project without the restrictions of classroom routine. Such a student enters a program of reading, research, or creation under the direction of the department of his choice. A student may take honors in either or both years.

A student in the College of Arts and Sciences who, at the end of his junior year, has an average of 85 or above for the work of the sophomore and junior years may become an applicant for special honors in a particular subject. His program for the senior year must be approved not later than the end of the junior year by the department in which honors are sought and by the Committee on Honors, and he must present a satisfactory written report and pass an oral examination on the field of special study.

A program called junior honors, which may be considered introductory to but distinct from special honors, is available to juniors who have a sophomore average of 85 or above and who have the permission of their department chair-

men. The program for each junior honors candidate will be determined by the department concerned.

Preprofessional Preparation

Students who plan to enter professional colleges requiring previous collegiate preparation will find the variety of courses offered in the College of Arts and Sciences and the freedom of election in that college is such that all the requirements for any professional school may be met. Many students will desire so to direct their four-year undergraduate course as to provide, in addition to a sound general education, appropriate preprofessional training for later work in the medical sciences, law, or theology.

LAW American law schools, as a rule, require graduation from a four-year college with a Bachelor's degree prior to admission. There is no prescribed curriculum which is requisite for admission, but the student is advised to include in his undergraduate course substantial elections in the fields of languages, literature, history, economics, political science, and philosophy.

THEOLOGY Graduation from a four-year college is prerequisite for admission to most theological seminaries. Although no prescribed curriculum is demanded as preparation for such professional schools, the student is advised to elect substantially from the departments of languages (particularly classics), history, philosophy and religion, psychology, and social studies.

OPTOMETRY The requirements for admission to schools and colleges of Optometry vary, but typically they include courses in English, mathematics, physics, chemistry and zoology with a minimum of two years of college work.

PHARMACY Under the Regional Plan (pages 27-28) Vermont residents may prepare for pharmacy school at Connecticut or Rhode Island. This is a five-year program with two years of preprofessional work which includes English, mathematics, botany, chemistry, zoology, physics, social science, a course in fine arts, and orientation to pharmacy taken in the sophomore year.

PREMEDICAL AND PREDENTAL The prevailing requirements for admission to an accredited medical college usually include not less than three years of undergraduate work, during which courses in biology, chemistry, English and physics must be completed. Any student who wishes to enter medical college should by the beginning of his sophomore year consult the catalogue of the college of his choice and arrange to include in his program courses required by that particular school.

Each student, in consultation with his advisor, plans a four-year program of courses which will fulfill the requirements for a Bachelor's degree. At the end of the sophomore year the student may enroll in the College of Arts and Sciences if a program of work leading to the Bachelor of Arts degree is desired. Those who wish to meet the minimum requirements for admission to medical college may follow the first three years of the program below. By successfully completing these three years and one year in an accredited medical college, they will qualify, on application, as candidates for a Bachelor of Science degree.

In the following outline, courses listed are normally taken in the year indicated. The program may be modified both for the needs of the individual student and to allow for concentration in a particular field. A student must have

completed a total of 90 semester hours by the end of the third year to be considered for admission to a medical college.

The First Year	1st SEMESTER	2nd SEMESTER	The Second Year	1st SEMESTER	2nd SEMESTER
Freshman English	3	3	English-Amer., 27, 28 or World Lit., 25, 26	3	3
Introductory Chemistry, 1-2 or 11-12	5-4	5-4	Intermediate For. Lang. ¹	3	3
Mathematics, 7, 8 or 11	3-5	3-5	Quantitative Chemistry, 21-22	3	3
Zoology	4 or 4		Physics, 5-6 or 21-22	4-5	4-5
Foreign Language (Elementary or Intermediate)	3-4	3-4	Electives	3-6	3-6
The Third Year	1st SEMESTER	2nd SEMESTER	The Fourth Year		
Organic Chemistry, 131-132	4	4	Courses in field of concentration and electives		
Zoology, 41 ¹	4	—			
Social Science Electives	6	6			
Courses in field of concentration and electives					

The requirements for admission to colleges of dentistry vary but in all cases include at least two years of college work with at least one course each in biology, inorganic chemistry, physics, and English. Hence, the course of study advised as preparation for medicine may be used as a basis for selection by those interested in dentistry.

¹ Unless already completed.

The School of Dental Hygiene

The School of Dental Hygiene, established in the fall of 1949 on authorization and a grant of money by the State Legislature and accredited by the Council on Dental Education of the American Dental Association, offers a two-year curriculum leading to a Certificate in Dental Hygiene. The purpose is to meet the ever-increasing need for dental health service.

The curriculum conforms to the requirements for accrediting of schools of dental hygiene as adopted by The Council on Dental Education of the American Dental Association on June 20, 1951. On successful completion of this curriculum, the student is eligible to take various examinations given by the State Board of Dental Examiners for licensing by that body.

Graduates of this school will be qualified to give oral prophylactic treatment; to chart the mouth, and to carry dental health education into the private dental practice, public institutions, hospitals and industrial clinics. The hygienist may be called upon to perform the following subsidiary functions as the supervising dentist may direct or approve: to X-ray teeth and develop X-ray films; to assist with laboratory work; to make appointments and keep office records; to give demonstrations of the proper method of using a toothbrush and massaging the gums; to lecture on oral hygiene, and to teach oral hygiene and the relation of diet to oral health. The role of the dental hygienist in the achievement of oral health is an extremely important one, and opportunities for well-rewarded service are practically unlimited.

The course of study is designed to give the student a background of knowledge sufficient to enable her to perform intelligently the tasks of her profession. Students applying for this program should be interested in and have aptitude for scientific studies. A general scientific background is acquired by courses in chemistry, bacteriology, anatomy, and physiology. Courses specifically relating to dental problems give the student an insight into the field of dentistry and dental health. English composition and public speaking teach the individual to express herself clearly on paper and by word of mouth. The proper approach to the patient is taught by courses in psychology and sociology. Skill and self-confidence are acquired by extensive work during the second year in the dental clinic.

The School of Dental Hygiene operates a ten-chair clinic and offers its service for examination and charting of the teeth, prophylaxis treatments and the teaching of dental health to students, employees and faculty members of the University, in addition to the school children in surrounding areas.

Enrollment is limited to women who are high school graduates and otherwise eligible to enter the freshman class of the University. All candidates who plan to practice dental hygiene in Massachusetts or Vermont must be seventeen years of age by the first of June preceding their entrance into the School. Prospective applicants are invited to write the Director of Admissions for detailed information concerning such matters as requirements for admission and expenses. High school subjects which are helpful prerequisites include algebra, chemistry,

physics or biology. Attributes necessary for success in this curriculum are good health, emotional stability, interest in the work, and the ability to get along well with people. Since the laboratory equipment in the School of Dental Hygiene is limited, prospective students are advised to submit their application by May of their senior year in high school. Applicants in this curriculum are required to take the Dental Aptitude Test. Application for the test should be made to the American Dental Hygienists' Association, 304 East 45th St., New York 17, N. Y.

The Freshman Year	1st SEMESTER	2nd SEMESTER	The Sophomore Year	1st SEMESTER	2nd SEMESTER
Freshman English	3	3	Psychology	—	3
Dental Anatomy	4	—	Introductory Sociology	3	—
Dental Histology and Embryology	2	—	Oral Pathology	2	1
Chemistry	4	4	Radiology	1	1
Dental Hygiene	—	—	Public Health	—	2
Orientation	1	—	Clinical Practice	5	5
Instrumentation	—	3	Dental Health Education	—	2
First Aid	—	1	Pharmacology and Anesthesia	—	2
Microbiology	—	4	Ethics and Office Management,	—	—
Anatomy and Physiology	3	3	Dental Assisting	1	1
			Public Speaking	3	—
			Nutrition	3	—

The College of Education and Nursing

The College of Education and Nursing offers four-year curricula leading to the following degrees: in elementary and secondary education, the degree of Bachelor of Science in Education; in business education, the degree of Bachelor of Science in Business Education; and in music education, the degree of Bachelor of Science in Music Education.

This College also offers a four-year curriculum leading to the degree of Bachelor of Science in Nursing.

The objectives of the several curricula include growth in appreciation and understanding of the cultural heritage, development of social and civic competence, improvement of personality, stimulation of intellectual curiosity, strengthening of personal integrity, and development of competence and enthusiasm for the professions of teaching and nursing. To attain these objectives each curriculum provides for a balance of general education courses, professional courses, and laboratory experiences.

General education courses may be elected in the College of Arts and Sciences, Technology, and Agriculture and Home Economics. Professional courses are taken in the College of Education and Nursing. Professional laboratory experiences are provided in the College of Education and Nursing and in schools and hospitals under the supervision of the College of Education and Nursing.

Education curricula in the College of Education and Nursing meet requirements for teaching certification in most of the states. Adjustments in individual programs may be made to fit special requirements for certification in specific states. If in doubt about certification requirements, students should consult with their advisors or with the dean of the college.

The Department of Education has the responsibility for maintenance of standards approved by the National Council for the Accreditation of Teacher Education. Students not enrolled in the College of Education and Nursing but who wish to be certified for public school teaching must meet basic requirements in general education, teaching majors, and professional courses. If these requirements are to be met, students must plan programs early in their college careers. Specific information may be obtained from the Department of Education.

Fifth-Year Certificate in Education

A special fifth-year program culminating in a certificate of advanced study is offered for students who wish to work beyond the bachelor's degree but who need or desire more flexibility than is possible in any of the standard programs for master's degrees.

The certificate program is especially designed to meet the needs of teachers who are developing new teaching fields, for advanced students who are meeting requirements for state certification, and for experienced teachers who desire flexibility in choice of courses at both graduate and undergraduate levels.

Each certificate program is individualized to fit the qualifications and the professional objectives of the candidate. Undergraduate courses may be approved for the program when such courses appropriately support the candidate's professional objectives.

The program for the *Fifth-Year Certificate* is governed by the following regulations:

- (1) Candidates must hold a bachelor's degree.
- (2) Candidates must make written application on forms obtained from the Office of the Dean of the College of Education and Nursing.
- (3) Candidates are admitted to the program by action of a faculty committee.
- (4) A maximum of 12 credits may be applied to the program at the time of admission.
- (5) A maximum of nine credits may be transferred from other institutions.
- (6) Credits for the program may be earned in the regular academic year, the Summer Session, and the Evening Division.
- (7) The program for each candidate must include a minimum of 30 credits approved by a faculty adviser.
- (8) A minimum mark of 72 (C) must be made in any course which is to be included in the program.
- (9) No comprehensive examination or formal thesis is required for completion of the program, but the candidate will submit a culminating paper under the direction of his faculty adviser.
- (10) The program must be completed within seven years after the time of admission.

In addition to the planned program leading to the *Fifth-Year Certificate*, the Department of Education will arrange for college graduates special programs leading to qualification for teaching certificates in either elementary or secondary education. To be accepted for these special programs, candidates must have included appropriate academic courses in their degree curricula, and they must satisfy the Department of Education that they have desirable personal qualifications for teaching.

Requests for further information about fifth-year programs should be directed to the Dean of the College of Education and Nursing.

Elementary Education

The elementary education program is intended to prepare teachers for any of the elementary grades in schools of Vermont and other states. The degree

Bachelor of Science in Education is awarded upon satisfactory completion of an approved program.

The elementary education curriculum includes a base of required academic courses, a planned sequence of professional courses, laboratory experiences, and elective academic courses. The student must use electives during the four years to build an academic major.

The foundation in general education includes required courses in the social sciences, in mathematics, in laboratory science, in English and literature, in psychology and in speech. Courses in fine arts and in languages may be elected.

The professional program begins with an orientation to education in the freshman year. The purpose of this orientation is to give the student an opportunity to learn about the professional courses and experiences in the several education curricula and to consider the desirability of a career in education. Educational films, contacts with teachers and administrators from the field, presentations by upperclassmen, and opportunities for small group discussion are included in the orientation experiences.

In the sophomore year, the students are offered field experiences with children's groups in the community. These experiences serve the dual purpose of giving first-hand information about children and of providing opportunity for determining the satisfaction which association with children of different age levels brings to the student.

The junior year emphasizes professional course work and special content courses for elementary teaching. Professional courses include classroom observation and participation in local elementary schools.

The senior year continues the professional methods courses and includes seven full weeks of student teaching in the elementary schools of Burlington, South Burlington, Winooski, and Essex Junction.

In each year of the program, the curriculum provides for elective courses from other colleges. Total electives approximate 40 semester hours and open to the student in elementary education attractive majors in music, art, speech, language, literature, history, and other fields of study offered by the University.

The Freshman Year		1st	2nd	The Sophomore Year		1st	2nd
		SEMESTER				SEMESTER	
Orientation to Education		2	or 2	Child and Community		1	or 1
Speech		3	3	Psychology		3	or 3
Science		4	4	World Geography		3	or 3
Freshman English		3	3	Literature		3	3
Approved Electives ¹		3-6	3-6	American History		3	3
				Music		3	3
				Approved Electives ¹		6	6
The Junior Year		1st	2nd	The Senior Year		1st	2nd
		SEMESTER				SEMESTER	
Art for Elementary Schools		3	.....	Methods and Materials		3	.....
Learning and Human Development		3	3	Music Methods		3	.....
Children's Literature		3	.....	Physical Education for Elementary Schools		2	or 2
Methods and Materials		.....	3	Student Teaching		7	.....
Teaching Reading		.....	3	Philosophy of Education		.....	3
Mathematics		3	3	Health Education		2	or 2
Approved Electives ¹		6	6	Approved Electives ¹		.....	12

¹ A political science course in local and state government must be included during the four-year curriculum. Some of the electives must be concentrated in an academic major.

A minimum of 125 approved semester hours is required for the degree, plus credit in required courses in physical education and military science.

Secondary Education

The secondary education program is intended to prepare teachers for junior and senior high schools in Vermont and other states. The degree Bachelor of Science in Education is awarded upon satisfactory completion of an approved program.

During the first two years the curriculum consists generally of basic courses in English, fine arts, foreign languages, mathematics, science, and social science. Orientation to education as a career is provided during the freshman year. Sophomores begin concentration on majors and minors in chosen teaching fields and are given opportunity to participate in teaching experiences in local secondary schools. The junior and senior years combine courses in the elected teaching fields, professional courses in education, and laboratory experience in teaching.

PROFESSIONAL REQUIREMENTS Candidates for the degree in secondary education are required to complete with a high standard of scholarship twenty semester hours of course work in professional education.

TEACHING MAJORS AND MINORS Candidates for the degree in secondary education are required to complete approved courses in two teaching fields common to secondary schools, or in one of two broad fields combining either natural sciences or social sciences. Broad field majors include approximately fifty semester hours in related courses, single subject majors generally include thirty semester hours, and minors include at least eighteen semester hours. The major-minor program must include credits in advanced courses.

Students should choose majors and minors which bear logical relationships and which commonly occur as teaching combinations in secondary schools. Suggested major and minor fields are English, foreign languages, history, mathematics, political science, speech, and the sciences. Advisors can assist students in making choices which are in accord with student aptitudes and interests and which are likely teaching combinations. Outlines of suggested course sequences for majors and minors may be obtained from advisors or from the office of the dean of the college.

Students are expected to maintain a high standard of scholarship in their major and minor fields. A grade of less than 72 may not be credited toward a major or minor unless other grades in the field are sufficiently high to justify an exception.

EXPERIENCES IN PUBLIC SCHOOLS Students in secondary education have direct experiences in public schools at three points in the four-year curriculum. During the sophomore year students observe and participate as teacher assistants in local junior and senior high schools. Before returning to the University campus at the beginning of the junior year, students are encouraged to spend one or two weeks in schools of their home communities assisting teachers during the opening days of the new school year. During the senior year students devote seven continuous weeks to full-time teaching in public secondary schools. In most cases students must arrange to live off campus during the student teaching assignment.

Applications for all field experiences must be made well in advance of assignments, and the student must assume responsibility for meeting deadlines. Information about application and assignment procedures may be obtained from the dean's office.

The Freshman Year		1st SEMESTER	2nd SEMESTER	The Sophomore Year		1st SEMESTER	2nd SEMESTER
Orientation to Education		2 or 2		Literature		3	3
Laboratory Science		4		Psychology		3 or 3	
English Composition		3		Participation		2 or 2	
Foreign Language		3-4		Foreign Language ⁸		3	
History or Political Science ¹		3		Approved Electives		6-9	6-9
Elective ²		3					
The Junior Year		1st SEMESTER	2nd SEMESTER	The Senior Year		1st SEMESTER	2nd SEMESTER
Learning and Human Development		3		Secondary Education Methods		3 or 3	
Approved Electives in Teaching Fields ⁴		12-15		Philosophy of Education		3 or 3	
		12-15		Student Teaching		6	
				Approved Electives		12-15	3-6

A minimum of 122 approved semester hours is required for the degree, plus credit in required courses in physical education and military science.

PHYSICAL EDUCATION MINOR Students in the secondary education and elementary education curricula may qualify as physical education instructors in Vermont and certain other states by combining a minor program in physical education with other teaching majors. Information about the physical education minor may be obtained from the Office of the Dean, College of Education and Nursing.

Business Education⁵

The curriculum in Business Education is intended to prepare teachers of business subjects for secondary schools in Vermont and other states. Freshman and sophomore years are concerned primarily with the development of a foundation in general education. Junior and senior years emphasize courses in business and in education. Students do seven weeks of practice teaching in the final semester of the senior year.

Beginning courses in typing and in shorthand make it possible for students to succeed in the program without previously developed skills in these subjects.

The Freshman Year		1st SEMESTER	2nd SEMESTER	The Sophomore Year		1st SEMESTER	2nd SEMESTER
Orientation to Education		2 or 2		English-American Literature		3	3
English Composition		3		General Psychology		3 or 3	
Social Science ²		3		Principles of Economics		3	
Mathematics		3		Laboratory Science		4	
Speech		3		Principles of Accounting		4	
Elective		3		Elective		3 or 3	

¹ If History is chosen, European Civilization is recommended.

² If recommended by advisor.

³ An approved elective if intermediate language has been completed.

⁴ All students are to elect a course in speech.

⁵ Revisions are being made in the business education curriculum. Students entering after September, 1962 should ask for information from the Office of the Dean, College of Education and Nursing.

CURRICULUM IN EDUCATION

The Junior Year	1st SEMESTER	2nd SEMESTER	The Senior Year	1st SEMESTER	2nd SEMESTER
Learning and Human Development	3	3	Advanced Shorthand	4	—
Elementary Shorthand ¹	4	—	Advanced Typing	3	—
Intermediate Shorthand	—	4	Office Management	3	—
Elementary Typing ¹	3	—	Elective	3	—
Intermediate Typing	—	3	Sec. Seminar or Elective	3	—
Business Correspondence	3	3	Student Teaching	—	6
Business Law	3	3	Philosophy of Education	—	3
Elective	3	—	Teaching Business Subjects	2	—
Participation	—	2	Secretarial Practice	—	2
Principles of Business Education	—	2	Transcription	—	4

A minimum of 125 approved semester hours is required for the degree, plus credit in required courses in physical education and military science.

Music Education

The curriculum in music education, leading to the degree of Bachelor of Science in Music Education, is recommended to students who have sufficient training and natural musical ability to justify a career in music. Graduates are qualified for positions as instructors and supervisors of music in the public schools.

The Freshman Year	1st SEMESTER	2nd SEMESTER	The Sophomore Year	1st SEMESTER	2nd SEMESTER
Theory I	3	3	Theory II	3	3
Survey of Musical Literature	3	3	Literature ³	3	3
Freshman English	3	3	Social Science ⁴	3	3
Foreign Language (Intermediate)	3	3	Applied Music: Major, Piano ⁵ , Voice ⁶ and Woodwind Class	4	4
Applied Music: Major, Piano ² , and String Class	3	3	Ensembles: Major, Secondary ⁷ , and Chamber Music	3	3
Major Ensemble	1	1	Participation	2	or 2
Orientation to Education	2	or 2			
The Junior Year	1st SEMESTER	2nd SEMESTER	The Senior Year	1st SEMESTER	2nd SEMESTER
Counterpoint	3	—	Practice Teaching in Music	7	—
Form and Analysis	—	3	Elementary and Secondary Music Methods	5	—
Orchestration	3	—	Philosophy of Education	3	—
Conducting	—	3	History of Music	—	3
History of Music	3	—	Applied Music: Major Recital; Percussion and Repair Class	—	4
Laboratory Science	—	4	Ensembles: Major and Chamber Music	—	2
Learning and Human Development	3	3	Liberal Arts Electives	—	9
Applied Music: Major, Brass Class	2	2			
Ensembles: Major, Secondary, and Chamber Music	3	3			

A minimum of 130 approved semester hours is required for the degree, plus credit in required courses in physical education and military science.

¹ Students may be exempt by demonstrating satisfactory proficiency.

² Keyboard Harmony will be studied in Piano; includes Functional Piano Facility.

³ English 25, 26 (World Literature) recommended.

⁴ History 11, 12 (European Civilization) recommended.

⁵ Piano majors will study an applied minor.

⁶ Voice majors will study an applied minor.

⁷ Choir for instrumentalists; Band or Orchestra for vocalists.

The Nursing Curriculum

The faculty of the Department of Nursing believes that nursing is a profession which has increasing responsibilities and contributions to make in meeting the health needs of a changing society. In accordance with this belief, the educational program is designed to stimulate the optimum growth of each student as an individual, a professional person, and a contributing member of society. It is believed that this can best be realized in an environment which recognizes the individuality of each student and which provides guidance towards achievement of independent thought, critical judgment, and effective behavior.

The curriculum provides learning experiences which progress from the simple to the complex with the concentration in nursing in the latter part of the program. Liberal, supportive, and nursing courses are studied concurrently.

The purposes of the program are to provide the opportunity for qualified individuals to prepare for professional practice in beginning positions, to acquire a foundation for continued formal study in nursing, and to enhance growth toward maturity as individuals, professional persons, and citizens. The graduates of this program receive the degree of Bachelor of Science in Nursing, are qualified for state licensure examination, and may advance without further formal education to positions which require beginning administrative skills.

The program objectives are designed to encourage the student in nursing to achieve progressively higher levels in the development of knowledge, skills, and understandings necessary to meet the physical, emotional, spiritual, and social needs of people; the development of skill in establishing effective relationships by the understanding of behavior and its effect on interpersonal relations; the development of an understanding of the responsibilities inherent in the professional practice of nursing and the profession's role in meeting the health needs of a changing society; and, the development of an appreciation of the thought and achievement of man as basis for enrichment of personal life.

The curriculum, conducted in four academic years, provides an approximate balance in general and professional education. The biological, physical, and social sciences serve as a base for the development of professional nursing courses which increase in number and depth as the student progresses. During the first year the major in nursing is begun with an introduction to the scope of nursing. Beginning in the second year the student is assisted in developing the skills and understandings necessary for giving comprehensive care to patients and families. University faculty members plan the learning experiences and give direct guidance to students in the clinical laboratory.

In the sophomore year and during one semester of the junior year the program consists of academic studies in the University and guided laboratory study in the Mary Fletcher Hospital, adjoining the campus, and in other community agencies. At the present time, clinical experience in one semester of the junior year is obtained through Boston University School of Nursing at the Massachusetts Mental Health Center and the Veterans Administration Hospital in Boston. During the senior year students continue to study at the University in liberal arts and in professional courses, with clinical experiences provided in the following cooperating agencies: the Burlington Visiting Nurse Association, Inc., the Family Care Unit of the Department of Epidemiology and Community

Medicine of the University of Vermont College of Medicine, and the Mary Fletcher Hospital.

The program is approved by the Vermont Board of Nursing and is fully accredited by the National League for Nursing, Inc., including public health nursing. Applicants must satisfy the general admission requirements of the University. High school courses in biology, chemistry, and physics are highly desirable. The department reserves the right to request the withdrawal from the nursing curriculum of any student who does not progress satisfactorily in the practice of nursing.

Throughout the four years students live in University residence halls and have the opportunity to share in student life through activities and classes with other students.

The nursing program is being revised, resulting in the elimination of summer school attendance. For the 1963, 1964 and 1965 classes the program includes the following courses.

The Junior Year	CREDITS	The Senior Year	CREDITS
Nursing 123	10	Nursing 136	6
Nursing 127	6	Nursing 181	6
Nursing 129	6	English	3
Elective	3	Nursing 186	3
Home Economics 63	3	Social Science	3
		Approved Electives	12

The program to be taken by the class of 1966 and subsequent classes includes the following courses.

The Freshman Year	1st SEMESTER	2nd SEMESTER	The Sophomore Year	1st SEMESTER	2nd SEMESTER
English 1-2	3	3	English	3	3
Zoology 5-6	3	3	Botany 116	4	.....
Chemistry 3-4	4	4	Home Economics 88	3	.....
Speech 1 or 11	3	.....	Psychology 1	.....	3
Sociology 21	.....	3	Nursing 21-22	4	6
Nursing 1, 2	1	2	Nursing 26	.....	3
Elective	3	3	Physical Education	(1)	(1)
Physical Education	(1)	(1)			

In addition to the general education courses found in the curriculum outlined above, specific courses in general education are required and additional courses are elected in accordance with individual need and interest and in consultation with the faculty adviser. These are:

Introduction to Philosophy	3	History, Political Science,	
Fine Arts	3	Economics or Geography	6
		Elective	12

Students are encouraged to pursue the study of a foreign language if able to enter the intermediate level of instruction. Students desiring to learn a new foreign language will need to plan on summer sessions.

EXPENSES (See also pages 47-49)

The cost of the program in nursing is approximately the same as for undergraduate programs at the University with the following exceptions:

1. All students in nursing are required to carry Blue-Cross and Blue-Shield insurance, or its equivalent, at not less than the maximum daily rate

issued by Blue-Cross (at present \$20/day) effective by October 1 of the second year.

2. At the beginning of the second year all students in nursing are required to purchase uniforms, and other items of special equipment, and to assume the cost of laundering uniforms.
3. Room and board costs are slightly higher at Boston University.

Insofar as resources permit, the University provides financial aid in the form of scholarships, loans, prizes and employment. In addition, Vermont students in the nursing curriculum are eligible for Senatorial Scholarships. Students may apply for appointments in the Army Student Nurse Program at the beginning of their junior year, or the Navy Nurse Corps Candidate Program at the beginning of their senior year. The appointments carry generous financial allowances. A student who participates twelve months or less, serves on active duty in the respective service for twenty-four months. If two years of financial support has been received, thirty-six months of service is required.

PROFESSIONAL PERSONNEL IN COOPERATING AGENCIES

Robert B. Aiken, M.D., Commissioner of Health, Vermont State Department of Health
Grace Buttolph, R.N., Director, School of Nursing, Mary Fletcher Hospital
Philip E. Day, R.N., Director, Nursing Service, Mary Fletcher Hospital
Marie Farrell, Dean, Boston University School of Nursing
Anne Hargreaves, R.N., Assistant Professor of Nursing, Psychiatric Nursing Department, Boston University School of Nursing
Roger J. Meyer, M.D., Director, Family Care Unit, Department of Epidemiology and Community Medicine, College of Medicine, University of Vermont
Georgia Murchison, R.N., Director, Visiting Nurse Association

The College of Technology

The College of Technology includes the Department of Chemistry, Commerce and Economics, Civil Engineering, Electrical Engineering, Mechanical Engineering, and Mathematics. It offers a number of specialized professional curricula in these fields and in medical technology, leading to the degree of Bachelor of Science in the field of specialization. Details are given in the sections immediately following. In addition to the courses listed in the several curricula, *all students must fulfill the general requirements in physical education, military science, and hygiene*. Students whose curricula require them to take two years of mathematics are referred to the footnote under the offerings of the Department of Mathematics for information concerning the possible sequences of courses in freshman mathematics.

The Chemistry Curriculum

The Department of Chemistry offers a specialized curriculum leading to the professional degree of Bachelor of Science in Chemistry. This curriculum is designed to give a sound basic training in chemistry, to prepare the student for service in some branch of the chemical profession, and to qualify him adequately for advanced study in graduate school. The department is accredited by the Committee on Professional Training of the American Chemical Society, which has established minimum requirements for the training of chemists at the bachelor's level. In accepting accreditation, the department has planned a curriculum which permits the student to reach these minimum objectives and will qualify the graduate for certification.

Those who wish a less intensive training in chemistry may take the liberal arts curriculum with a concentration in chemistry and receive the Bachelor of Arts degree. These students may also qualify for accreditation by satisfactorily completing certain courses beyond the minimum required for concentration, and *only those who so qualify will be recommended as chemists by the department*. A student can elect to concentrate in chemistry at the end of the freshman year or even as late as the end of the sophomore year and still qualify for accreditation. However, the department strongly recommends that the student choose before the start of his sophomore year. In the first year, and to some degree in the second year, prescribed courses are such that a student can transfer into the curriculum from liberal arts, or vice versa.

The Freshman Year	1st SEMESTER	2nd SEMESTER	The Sophomore Year	1st SEMESTER	2nd SEMESTER
General Chemistry	5	5	Quantitative Analysis	4	4
Freshman English	3	3	Sophomore English	3	3
Algebra, Trig., Anal. Geom. ¹	5	5	Calculus ²	3	3
Elective	3	----	German or Elective	4-3	4-3
General Physics 14-	----	3	General Physics 15, 16	4	5

¹ See footnote under course offerings of the Department of Mathematics.

² Those students who must enroll in Math. 9 will be required to take Math. 10, 12, and 21. They will not be required to take Math. 22.

The Junior Year	1st SEMESTER	2nd SEMESTER	The Senior Year	1st SEMESTER	2nd SEMESTER
Physical Chemistry	5	5	Iden. of Organic Compounds	5	—
Organic Chemistry	5	5	Senior Research	2-4	4
Advanced Physics or Mathematics	3	3	Advanced Chemistry Elective	3	3
Approved Elective or German	3	3	Advanced Physical Chemistry	3	3
Junior Seminar	1	1	Senior Seminar	1	1
			Approved Elective	3	3

German through the intermediate level is required.

A minimum of 132 approved semester hours is required for the degree in this curriculum, plus required courses in physical education and military science.

The Commerce and Economics Curriculum

The Department of Commerce and Economics offers a specialized curriculum, leading to the degree of Bachelor of Science in Commerce and Economics. Those who wish a less intensive or less specialized training in economics may take the liberal arts curriculum, with a concentration in economics, and receive the Bachelor of Arts degree. An adviser from the department will assist students in building programs to meet their individual needs and plans.

The commerce curriculum is recommended for those who are preparing for a business career. It is intended to provide sound basic training in the various phases of business activity. The several options enable students to emphasize such specialized studies as accounting, banking, finance, insurance, government service, industrial management, production, sales management, secretarial studies¹, and small business. The Department of Commerce and Economics cooperates with the Department of Mechanical Engineering in offering courses in the Management Engineering Curriculum. This curriculum is administered by the Department of Mechanical Engineering and is described in the section on engineering curricula.

The accounting option is registered with The University of the State of New York, The State Education Department, in Albany, N. Y. Students completing the requirements of the accounting option will thus be eligible for admission to the New York State licensing examination in Certified Public Accountancy.

The normal program for the first two years in the commerce and economics curriculum is as follows:

The Freshman Year	1st SEMESTER	2nd SEMESTER	The Sophomore Year	1st SEMESTER	2nd SEMESTER
World Economic Geography	3	3	World Lit. or Eng.-Am. Lit.	3	3
Freshman English	3	3	Principles of Economics	3	3
Fundamentals of Mathematics	3	3	Economic History	3	3
Laboratory Science	4	4	Principles of Accounting	4	4
Foreign Language ²	3-4	3-4	Foreign Language, Calculus or American Government ³	3	3

¹ To be discontinued in 1965.

² In place of the foreign language, students may choose Mathematics 11-12 (plane trigonometry, plane analytic geometry; differential calculus) and 21 (calculus).

³ American Government should be elected by students who have completed the intermediate language requirement.

During the junior and senior years, commerce and economics students normally choose one of the following options:

Accounting

The Junior Year	1st SEMESTER	2nd SEMESTER	The Senior Year	1st SEMESTER	2nd SEMESTER
Int. and Adv. Accounting	3	3	Auditing	3	-----
Fin. Statement Anal.	3	-----	Basic Federal Taxes	-----	3
Cost Accounting	-----	3	Economic Statistics	3	-----
Money and Banking	3	3	C.P.A. Problems	-----	3
American Government ¹	3	3	Securities Markets	3	-----
General Psychology	3	-----	Financial Management	-----	3
Phil., Psych. or Soc. 21	-----	3	Business Law I	3	3
Approved Electives	3	3	Business Law II	-----	2
			Approved Electives	3	3

A minimum of 132 approved semester hours² is required for the degree in this curriculum, plus required courses in physical education and military science.

Banking, Finance, and Insurance

The Junior Year	1st SEMESTER	2nd SEMESTER	The Senior Year	1st SEMESTER	2nd SEMESTER
Money and Banking	3	3	Taxation	3	-----
Securities Markets	3	-----	Investment Analysis	-----	3
Financial Management	-----	3	Insurance—Life and Property	3	3
Economic Statistics	3	3	Money, Income and Prices	3	3
American Government ¹	3	3	Business Law I	3	3
General Psychology	3	-----	Business Law II	-----	2
Phil., Psych. or Soc. 21	-----	3	Approved Electives	3	3
Approved Electives	3	3			

A minimum of 132 approved semester hours² is required for the degree in this curriculum, plus required courses in physical education and military science.

Business Administration

The Junior Year	1st SEMESTER	2nd SEMESTER	The Senior Year	1st SEMESTER	2nd SEMESTER
Money and Banking	3	3	Securities Markets	3	-----
Economic Statistics	3	3	Financial Management	-----	3
General Psychology	3	-----	Investment Analysis	-----	3
Phil., Psych. or Soc. 21	-----	3	Business Law I	3	3
Principles of Marketing	3	-----	Taxation	3	-----
Problems of Marketing	-----	3	Money, Income and Prices	3	3
American Government ¹	3	3	Approved Electives	3	3
Approved Electives	3	3			

A minimum of 130 approved semester hours² is required for the degree in this curriculum, plus required courses in physical education and military science.

Industrial Management

The Junior Year	1st SEMESTER	2nd SEMESTER	The Senior Year	1st SEMESTER	2nd SEMESTER
Labor Economics	3	-----	Principles of Marketing	3	-----
Collective Bargaining	-----	3	Problems of Marketing	-----	3
Industrial Management	3	-----	Motion and Time Study	3	-----

¹ If completed, enroll in approved elective.

² Assuming that 6 credits are earned in elementary foreign language.

Scientific Management and Labor	----	3	Plant Organization	----	4
General Psychology	3	----	Business Law I	3	3
Phil., Psych. or Soc. 21	----	3	Cost Accounting	----	3
American Government ¹	3	3	Approved Electives	6	3
Economic Statistics	3	3			
Approved Electives	3	3			

A minimum of 131 approved semester hours³ is required for the degree in this curriculum, plus required courses in physical education and military science.

Marketing and Merchandising

The Junior Year	1st SEMESTER	2nd SEMESTER	The Senior Year	1st SEMESTER	2nd SEMESTER
Principles of Marketing	3	----	Personal Salesmanship	3	----
Problems in Marketing	----	3	Sales Management	3	----
Money and Banking	3	3	Advertising	----	3
General Psychology	3	----	Business Law I	3	3
Phil., Psych. or Soc. 21	----	3	Cur. Marketing Developments	----	3
American Government ¹	3	3	Approved Electives	6	6
Economic Statistics	3	3			
Approved Electives	3	3			

A minimum of 130 approved semester hours³ is required for the degree in this curriculum, plus required courses in physical education and military science.

Secretarial Studies⁴

The Junior Year	1st SEMESTER	2nd SEMESTER	The Senior Year	1st SEMESTER	2nd SEMESTER
Business Communications	3	3	Office Management	3	----
General Psychology	3	----	Seminar (Secretarial)	3	----
Phil., Psych. or Soc. 21	----	3	Exec. Sec. Procedures	----	3
Business Law I	3	3	Advanced Typing	3	----
Money and Banking	3	3	Advanced Shorthand	3	----
Public Speaking	3	----	Transcription	----	6
Elementary Typing	3	3	Approved Electives ²	6	9
Elementary Shorthand	4	4			
Approved Elective ²	----	3			

A minimum of 136 approved semester hours³ is required for the degree in this curriculum, plus required courses in physical education and military science.

The Engineering Curricula

The engineering curricula are designed to help students learn to approach and deal in a professional manner with problems and situations they will meet as engineers, citizens and individuals. From this basic preparation they should continue to learn from experience and to grow in stature throughout their professional life.

The Departments of Engineering offer instruction in four curricula, Civil, Electrical, Management, and Mechanical Engineering, each leading to the degree

¹ Students who have completed this course will enroll in marketing.

² Students will be guided in the selection of electives in the light of professional objectives.

³ Assuming that 6 credits are earned in elementary foreign language.

⁴ To be discontinued in 1965.

of Bachelor of Science in the field of specialization. Each curriculum includes the general subjects: mathematics, chemistry, physics, graphics, elements of electrical engineering, mechanics, thermodynamics, economics, and English.

All freshman and sophomore men are required to complete the two basic courses in military science for a total credit of eight semester hours, which become an integral part of the record and are counted toward graduation. Two years of physical education are normally required of all students.

All junior engineering students visit New England industrial centers during Spring vacation. This plant inspection trip is required for graduation. The expense for the trip of several days is borne by the student.

Students enrolled in the civil, electrical, and mechanical engineering curricula may become affiliated with their respective national professional engineering societies, the American Society of Civil Engineers, the American Institute of Electrical Engineers, the Institute of Radio Engineers, and the American Society of Mechanical Engineers, as each organization has authorized a student chapter at The University of Vermont. These student organizations' meetings present opportunities for students to conduct activities similar to those of the national societies. These include: technical papers presented by students and engineers actively engaged in their profession; attendance at conventions; and inspection trips. These provide helpful contacts with engineering practice and assist in the development of leadership qualities essential to success in the engineering profession.

The curricula in civil, electrical and mechanical engineering are accredited by the Engineers' Council for Professional Development.

HUMANISTIC-SOCIAL STUDIES FOR ENGINEERING STUDENTS The objective of the program in humanities and social studies is to broaden the engineering student's understanding of man and the relationships in human society. Each student should plan, in consultation with his advisor in the second semester of his freshman year, an integrated sequence of courses to meet this objective.

A minimum of twenty-four credit hours¹ is required in humanistic-social studies. To meet this requirement each student must satisfy the following distribution.

Required of all students	Minimum credit hours
1. Freshman English, 1-2	6
Must be taken the Freshman year	
2. World or American Literature, 25, 26, 27, 28 ¹	3
3. Principles of Economics, 11-12	6
4. A course from any Elective Area ¹	3
5. Courses from one Elective Area ²	6
Minimum total	24

Elective Areas

History	Intermediate Romance Languages
Philosophy	Intermediate German
Religion	Intermediate Russian
Political Science	Advanced Literature courses
Psychology	Art (history courses only)
Sociology	Music (history and survey courses only)

¹ Management engineering students will take English 26 and omit Item No. 4.

² These six hours may be taken from two of the Elective Areas listed if the student has completed six credit hours in Item No. 2.

World Problems

Intermediate Classical Languages

Economics (history and theory courses only)

Speech (history and literature courses only)

The Freshman Year For All Curricula

	1st SEMESTER	2nd SEMESTER
Mathematics, ¹ 11, 12	5	5
Chemistry, 1-2	4	4
Engineering Graphics, 1-2	2	2
Freshman English, 1-2	3	3
Engineering Problems (M.E. 3)	1	.....
General Physics, 14—	.....	3

Civil Engineering

The Sophomore Year	1st SEMESTER	2nd SEMESTER	The Junior Year	1st SEMESTER	2nd SEMESTER
Calculus (Math. 21, 22)	3	3	Differential Equations (Math. 211)	3	.....
General Physics, —15, 16	4	5	Mech. of Materials I (C.E. 131)	3	.....
Surveying (C.E. 51-52)	4	4	Engineering Geology (Geol. 21)	3	.....
Humanistic-Social Studies ²	3	3	Electrical Circuits and Machines (E.E. 101)	4	.....
Statics (C.E. 24)	3	.....	Thermodynamics and Heat Transfer (M.E. 113)	3	.....
Dynamics (C.E. 130)	.....	3	Humanistic-Social Studies ²	3	6
			Mech. of Materials Lab. (C.E. 114)	.....	1
			Eng. Contracts (C.E. 151)	.....	2
			Hydraulics (C.E. 162)	.....	3
			Hydraulics Lab. (C.E. 168)	.....	1
			Statically Indeterminate Struct. (C.E. 140)	.....	4
The Senior Year	1st SEMESTER	2nd SEMESTER		1st SEMESTER	2nd SEMESTER
Concrete and Bituminous Lab. (C.E. 113)	1	.....	Substructure Design (C.E. 158)	.....	4
Reinforced Concrete (C.E. 155)	3	.....	Sanitary Eng. II (C.E. 166)	.....	3
Sanitary Eng. I (C.E. 165)	3	.....	Adv. Struct. Design (C.E. 176)	.....	4
Soil Mechanics (C.E. 173)	3	.....	Mechanics of Materials II (C.E. 231)	.....	3
Indet. Structures I (C.E. 175)	3	.....	Elective	.....	3
Transportation Eng. (C.E. 174)	3	.....	Public Speaking (Speech 11)	.....	3
Humanistic-Social Studies ²	3	.....		

A minimum of 142 approved semester hours is required for the degree in this curriculum, plus required courses in physical education and military science.

Mechanical Engineering

The Sophomore Year	1st SEMESTER	2nd SEMESTER
Calculus (Math. 21, 22)	3	3
General Physics (Phys. —15, 16)	4	5
Manufacturing Processes (M.E. 51, 52)	2	2
World Literature (Engl. 25)	3	.....
Statics (C.E. 24)	3	.....

¹ See footnote under course offerings of the Department of Mathematics.

² See distribution of Humanistic-Social Studies on p. 92.

Public Speaking (Speech 11)				3	----
Dynamics (C.E. 130)				----	3
Thermodynamics I (M.E. 92)				----	2
Mechanical Instrumentation (M.E. 84)				----	1
The Junior Year	1st	2nd	The Senior Year	1st	2nd
	SEMESTER			SEMESTER	
Heat Transfer (M.E. 266)	----	3	Adv. Heat Power Engineering (M.E. 262)	----	4
Mech. of Materials (C.E. 131)	3	----	Industrial Materials (M.E. 101)	3	----
Materials Lab. (C.E. 114)	----	1	Adv. Fluid Mechanics (M.E. 243)	----	4
Mechanisms (M.E. 132)	----	4	Machine Design I, II (M.E. 135, 6)	3	4
Thermodynamics II (M.E. 111)	4	----	Thesis (M.E. 191 or Technical Elective ¹)	3	----
Differential Equations (Math. 211)	3	----	Thesis (M.E. 192) or Elective ²	----	3
Mech. Engineering Laboratory (M.E. 117)	1	----	Advanced Mathematics ⁵	----	3
Electrical Engineering Principles (E.E. 101, 102)	4	4	Engineering Analysis (M.E. 294)	----	1
Fluid Mechanics (M.E. 142)	----	3	Humanistic-Social Studies ³	6	3
Principles of Economics	3	3			

A minimum of 139 approved semester hours is required for the degree in this curriculum, plus required courses in physical education and military science.

Electrical Engineering

The Sophomore Year			1st	2nd
			SEMESTER	
Calculus (Math. 21, 22)			3	3
General Physics (Phys. -15, 16)			4	5
Statics (C.E. 24)			3	—
Dynamics (C.E. 130)			—	3
Electrical Circuits I (E.E. 25-26)			4	4
Humanistic-Social Studies ⁴			3	3
The Junior Year			1st	2nd
			SEMESTER	
Public Speaking (Speech 11)	—	3		
Differential Equations (Math. 211)	3	—		
Mech. of Materials (C.E. 131)	3	—		
Thermodynamics (M.E. 113)	3	—		
Electrical Circuits II (E.E. 125)	4	—		
Circuits and Fields I (E.E. 126)	—	3		
Electrical Machines (E.E. 116)	—	4		
Electronics I (E.E. 109, 110)	3	4		
Humanistic-Social Studies ⁴	3	3		
Elective ⁵	—	2-3		
The Senior Year			1st	2nd
			SEMESTER	
Circuits and Fields II (E.E. 225-6)			4	3
Electrical Machines (E.E. 117)			4	—
Servomechanisms (E.E. 210)			—	3
Electronics II (E.E. 203)			3	—
Fluid Mechanics (M.E. 142)			—	3
Contracts (C.E. 151)			—	2
Seminar (E.E. 281, 282)			1	1
Humanistic-Social Studies ⁴			3	3
Elective ⁵			3-4	3-4

A minimum of 141 approved semester hours is required for the degree in this curriculum, plus required courses in physical education and military science.

¹ Technical Electives will be chosen from the departments of Chemistry, Physics, Engineering or Mathematics with the approval of the Mechanical Engineering Department faculty.

² Elective may be chosen from any area.

³ A course at the "200" level with approval of the Mechanical Engineering Department.

⁴ See distribution of Humanistic-Social Studies on p. 92.

⁵ Three hours of elective credit must be advanced mathematics, mathematical physics or electromagnetic wave theory.

Management Engineering

The Sophomore Year

	1st SEMESTER	2nd SEMESTER
Calculus (Math. 21, 22)	3	3
General Physics (Phys. -15, 16)	4	5
Principles of Economics (Econ. 11-12)	3	3
Manufacturing Processes (M.E. 51, 52)	2	2
Statics (C.E. 24)	3	-----
Dynamics (C.E. 130)	-----	3
Public Speaking (Speech 11)	3	-----

The Junior Year

	1st SEMESTER	2nd SEMESTER
Prin. of Accounting (Ec. 13-14)	4	4
Differential Equations (Math. 211)	3	-----
General Psychology (Psych. 1)	3	-----
Thermo. and Heat Transfer (M.E. 132)	3	-----
Mechanisms (M.E. 132)	-----	4
Electrical Engineering Principles (E.E. 101-102)	4	4
Fluid Mechanics (M.E. 142)	-----	3
Mech. of Materials (C.E. 131)	3	-----
World Literature (English 26)	-----	3

The Senior Year

	1st SEMESTER	2nd SEMESTER
Motion and Time (M.E. 175)	3	-----
Plant Organization (M.E. 176)	-----	4
Industrial Materials (M.E. 101)	3	-----
Corporation Finance (Econ. 207)	-----	3
Business Law (Econ. 109-110)	3	3
Labor Economics (Econ. 141)	3	-----
Statistics (Econ. 187-188)	3	3
Collective Bargaining (Ec. 242)	-----	3
Humanistic-Social Studies ¹	3	3

A minimum of 141 approved semester hours is required for the degree in this curriculum, plus required courses in physical education and military science.

Agricultural Engineering

For the Agricultural Engineering Curriculum see pages 63-64.

The Mathematics Curriculum

This curriculum is designed to provide sound basic training in mathematics, to prepare the student for a position in an area in which mathematicians are sought, and to qualify him for advanced study in graduate school. Students in the College of Arts and Sciences may also concentrate in mathematics and will receive the Bachelor of Arts degree. An adviser from the department will assist students in the determination of a program best suited to their individual needs and plans.

The Freshman Year

	1st SEMESTER	2nd SEMESTER
Freshman English, 1-2	3	3
Mathematics, ² 11, 12	5	5
Laboratory Science ³	4-5	4-5
Approved Elective	3	-----
General Physics, 14-	-----	3

The Sophomore Year

	1st SEMESTER	2nd SEMESTER
English-American or World Lit.	3	3
Mathematics, 21, 22	3	3
German, French or Russian	4	4
General Physics, -15, 16	4	5
Approved Electives	3	3

¹ See distribution of Humanistic-Social Studies on p. 92.

² See footnote under course offerings of the Department of Mathematics.

³ Students desiring to take a foreign language during the freshman year may defer the laboratory science until after the language requirement has been met.

The Junior Year	1st SEMESTER	2nd SEMESTER	The Senior Year	1st SEMESTER	2nd SEMESTER
German, French or Russian ¹	3	3	Mathematics Electives ²	9	9
Mathematics Electives ²	6	6	Advanced Science ³	3-4	3-4
Advanced Science ³	3-4	3-4	Approved Electives	3	3
Approved Electives	6	6			

A minimum of 131 approved semester hours is required for the degree in this curriculum, plus required courses in physical education and military science.

The Medical Technology Curriculum

The curriculum is divided into two parts, a three-year preclinical period and a final clinical year of twelve months which is under the supervision of members of the faculty of the College of Medicine.

The program of the preclinical period is designed to provide the student with a background in basic fundamentals essential for the professional work of the clinical year. The clinical year includes didactic courses in the College of Medicine and practical laboratory experience, primarily in the laboratories of the Mary Fletcher Hospital but also in other local health facilities.

After graduation an additional two and one-half months of practical supervised experience in the affiliated laboratories is required. At the end of this additional period, those satisfactorily completing the program will be recommended to the Registry of Medical Technologists as eligible to take the examination for certification by that body.

The Freshman Year	1st SEMESTER	2nd SEMESTER	The Sophomore Year	1st SEMESTER	2nd SEMESTER
Freshman English	3	3	English-American or World Lit.	3	3
Introductory Chemistry	4	4	Elementary Quantitative Analysis	3	3
Introductory Zoology	4	—	Zoology (Vertebrate and Comparative Anatomy)	4	4
Mathematics (Algebra and Trigonometry)	3	3	Approved Non-Science Electives	6	6
Approved Non-Science Electives	—	3			
Introduction to Medical Technology	1	—			
Biology (Botany or Zoology)	—	4			
The Junior Year	1st SEMESTER	2nd SEMESTER	The Senior Year	1st SEMESTER	2nd SEMESTER
Organic Chemistry	4	4	Biochemistry for Medical Technologists	4	4
Introductory Physics	3	3	Bacteriology	7	—
Approved Non-Science Electives	9	9	Basic Techniques	6	3
			Clinical Pathology	—	2
			Hospital Assignments	—	6

A minimum of 128 approved semester hours is required for the degree in this curriculum, plus required courses in physical education and military science.

¹ If an intermediate language is taken initially, an elective may be substituted.

² Beyond Mathematics, 22.

³ Physical Science or Engineering courses beyond the Sophomore level, to constitute a minor specialization.

The Graduate College

The purpose of the Graduate College is to serve the needs of college graduates who desire a broader and more thorough knowledge of scholarship and research in their chosen fields. At present the College offers fifty-five different programs leading to the Master's degree and seven programs leading to the degree of Doctor of Philosophy.

Attention is also drawn to the special fifth-year program (cf. p. 80) offered by the College of Education and Nursing leading to a certificate of advanced study in Education.

Master of Education

Programs are planned on an individual basis, and are designed primarily for teachers who intend to qualify for various administrative positions in public school systems. Candidates for this degree must spend at least one Summer Session in residence as a wider selection of advanced courses in Education is available in summers than in regular sessions.

Master of Arts in Teaching

This degree is appropriate for teachers who are interested primarily in increasing their knowledge of their subject matter fields and thereby the effectiveness of their classroom instruction. Programs are offered in the following fields:

Agriculture	Geology	Mathematics
Botany	German	Music
Chemistry	Greek	Physics
Commercial Subjects	History	Spanish
English	Home Economics	Zoology
French	Latin	

Master of Science

Programs are offered in the following fields:

Agricultural Biochemistry	Chemistry	Medical Electronics
Agricultural Economics	Civil Engineering	Medical Microbiology
Agronomy	Commerce	Microbiology
Anatomy	Electrical Engineering	Pathology
Animal and Dairy Science	Forestry	Pharmacology
Animal Pathology	Geology	Physics
Biochemistry	Home Economics	Physiology and Biophysics
Botany	Horticulture	Poultry Science
	Mechanical Engineering	Zoology

Master of Arts

Programs are offered in the following fields:

Economics	Greek	Music
English	History	Political Science
French	Latin	Psychology
German	Mathematics	Spanish

Master of Extension Education

This degree is designed to meet the needs of county agricultural agents, home demonstration agents, 4-H Club agents, extension specialists, professional co-operative and agricultural business leaders, teachers of agriculture and home economics.

Doctor of Philosophy

Doctoral programs are offered for qualified students in the fields of botany, biochemistry, chemistry, microbiology, pharmacology, physiology and biophysics and zoology.

Admission

Students seeking admission to the Graduate College must make application to the Dean of the Graduate College. The University of Vermont will accept applications from foreign students, other than those from the United Kingdom, for admission into the Graduate College only through the medium of the Institute of International Education.

Applicants should be persons who, prior to the date of their first enrollment, will hold a baccalaureate degree or will have completed work equivalent to that required for a baccalaureate, and whose undergraduate records indicate that they are capable of successful study at the graduate level. Graduates of unaccredited institutions must support their application with satisfactory scores on the Graduate Record Examinations; full information concerning these examinations may be obtained from the Educational Testing Service, Box 592, Princeton, N. J.

Admission is limited to (a) students who intend to become candidates for advanced degrees, other than Doctor of Medicine, and (b) students whose enrollment will consist of courses to be taken for graduate credit. Students who hold Bachelors' degrees, but whose entire enrollment will be in undergraduate courses, should seek admission as special students in the appropriate undergraduate college.

Admission to the Graduate College does not mean that a student is automatically accepted as a candidate for an advanced degree.

Only applicants who desire to work along lines in which the University offers graduate programs will be admitted to the Graduate College. Students in the Graduate College therefore fall into three categories: (1) duly admitted students accepted to candidacy, (2) degree candidates at other institutions who study at The University of Vermont for transfer of credit, (3) duly admitted students not yet accepted to candidacy.

A deposit of \$35 is required of each applicant upon enrollment or admission to the Graduate College. This deposit covers the graduation fee of \$25. Any residue from this deposit will be returned to the student upon graduation or withdrawal from the college. A duly admitted student who later decides not to enter the College is eligible to receive a partial refund of this deposit, provided that he notifies the Dean of his change in plans well in advance of the date of his first enrollment (cf. p. 47, Expenses).

A graduate student whose work or deportment is unsatisfactory may be requested at any time by the Dean or the department concerned to withdraw from the Graduate College.

College Regulations Concerning Masters' Degrees

Acceptance to Candidacy

Applications must be made on forms supplied by the Dean's office, and must be approved both by his office and by the department concerned. Acceptance to candidacy is granted only in cases where the student has fully met all undergraduate prerequisites in his chosen field of concentration and has demonstrated to the full satisfaction of the department concerned his capacity for successful study at the graduate level.

Not until a student has been accepted to candidacy is the department obliged to help plan his over-all degree program, supervise his research, and so forth. *Students are therefore advised to apply for acceptance to candidacy as soon as they become eligible for it.*

Minimum Residence Requirements

Each candidate for the Master's degree must satisfactorily complete at least twenty hours of graduate credit while in residence on The University of Vermont campus, either in the regular academic year, in summer sessions or at the off campus centers at Castleton and Lyndon.

Maximum Time Limits

A program leading to the Master's degree must be completed within three years if it is pursued on a full-time basis during the regular academic year; if the program is pursued during summer sessions or on a part-time basis, it must be completed within seven years. Only in special cases will credits earned outside these time limits be re-evaluated and accepted; requests for such re-evaluation must be addressed to the Dean and must be accompanied by a full statement of the extenuating circumstances. This time limit applies both to study at The University of Vermont and to courses taken in other institutions and presented for transfer of credit.

Graduate Credit

Courses numbered 200 and above are offered for graduate credit, and, if taken by graduate students, must be taken for graduate credit.

Courses numbered between 100 and 199 are normally courses for undergraduates. Graduate credit can be allowed for any course so numbered only when a graduate student has already been accepted to candidacy and has obtained in advance the approval of his department and the Dean for the inclusion of this particular course in his Master's degree program. Under no circumstances will graduate credit be allowed for a course numbered below 100.

Transfer of Credit

A maximum of eight semester hours of credit for graduate courses taken in other institutions can be transferred into the program of a duly accepted candi-

date for the Master's degree. Such courses must have been taken in a fully accredited college or university which offers graduate study and must be acceptable at that institution in partial fulfillment of its requirements for an advanced degree. Credit cannot be transferred for (1) courses which would not, if taken at The University of Vermont, receive graduate credit, (2) courses in which a grade lower than 80 (B—) was received, (3) extension courses, (4) correspondence courses, (5) courses which are inappropriate for inclusion in any Master's program offered by the Graduate College. No transfer is possible prior to a student's acceptance to candidacy.

Extension Courses

Not more than eight semester hours of credit toward the Master's degree may be earned by taking extension courses offered by The University of Vermont. A maximum of three hours of graduate credit per semester is permissible to Master's candidates who are full-time teachers in public schools. Graduate credit cannot be allowed for courses which would not offer graduate credit if given in regular or summer sessions at The University of Vermont. No credit for extension courses is allowable in a doctoral program.

General Academic Requirements for Master's Degrees

A total of thirty semester hour credits is the minimum number required by the Graduate College for the Master's degree, of which at least fifteen must be earned in formal courses and seminars. Credit for the preparation of a thesis under the direction of the particular department, when required, is included in the minimum number of required credit hours.

Each student must maintain an average of 85 (B). A course in which a grade lower than 75 (C—) is received will not be accepted in partial fulfillment of requirements for an advanced degree.

Each Master's candidate must acquire appropriate teaching experience in his chosen field prior to the award of his degree. The nature and the amount of this teaching, for which no academic credit is allowed by the Graduate College, will be determined by the department concerned.

Master of Arts and Master of Science

FIELD OF SPECIALIZATION In judging the attainments of candidates, great emphasis is placed upon ability to do original research in the chosen field of specialization. Hence the number of courses required will vary with the preparation and needs of the individual student. In order to plan his individual program, a new student should consult as early as possible with the chairman of the department in which he is specializing.

At least twenty hours of graduate credit, including credit for the thesis and research leading to the thesis, must be earned in the field of specialization. All course credits included in these twenty hours must have been earned in courses which are numbered above 200.

THESIS Each candidate will undertake a problem of original research under the direction of a member of the department in which he is specializing. At

the conclusion of the investigation the student must present a thesis which embodies the results of his work and which demonstrates his capability for independent research. The original copy of this thesis must be presented to the Dean for deposit in the University Libraries; some departments require that additional copies be presented to the department. The number of credit hours to be earned in thesis research varies between six (minimum) and fifteen (maximum), the precise number being decided on an individual basis by the department concerned.

RELATED STUDY Sometimes a graduate program will include advanced courses outside the field of specialization. In order to be included as part of the Master's program these courses must be approved by the department in which the student is specializing.

Master of Education

The graduate program of each student admitted to candidacy for the degree of Master of Education is planned and supervised by an individual committee, which includes *ex-officio* the Deans of the Graduate College and the College of Education. A graduate program is planned in view of a student's undergraduate curriculum and in the light of his aims and purposes in pursuing the Master's degree, and in such a way that its subject matter will be concentrated as far as possible within a general area of study. Each program must include at least thirty semester hours of approved course work. If a student's preparation is inadequate for him to begin study at the graduate level in certain aspects of his program, additional undergraduate courses will be required.

In order to insure effective planning of a graduate program for the degree of Master of Education, not more than twelve hours credit (fourteen if the maximum eight hours of transfer credit is offered) will be accepted in partial fulfillment of degree requirements for courses taken prior to acceptance to candidacy. A prospective candidate should therefore make application for acceptance to candidacy not later than his first semester of residence, or, if he has been a student in summer session, prior to his second summer in residence. Candidates must expect to earn on the University of Vermont campus a part of the credit to be applied to a graduate degree.

Before acceptance to candidacy for the degree of Master of Education, the student must present a satisfactory score in the Miller Analogies Test, and must demonstrate satisfactory proficiency in written composition. Before the degree is awarded, the candidate must have completed one year of successful teaching experience or other educational service.

Master of Arts in Teaching

The program leading to the degree of Master of Arts in Teaching is designed primarily for teachers with the purpose of enhancing their teaching ability and strengthening their background in their subject matter field. A minimum of thirty semester hours is required in courses numbered above 200, of which not less than six semester hours shall be in Education. Apart from this requirement, a student will specialize in a single department offering courses for graduate credit or in any acceptable combination of such departments. In order to be accepted to candidacy for this degree, a student must have completed an under-

graduate major within the area of his specialization and must be acceptable to the department or departments concerned.

In his undergraduate and graduate work a student must complete eighteen semester hours in Education which must include the following courses or their equivalent: history or philosophy of education, general methods and procedures, student teaching, and educational psychology or principles of education.

Master of Extension Education

A minimum of thirty hours is required in courses numbered above 200. Nine semester hours are required as follows: political science 241, philosophy 214, economics 204 or equivalent courses; a minimum of twelve semester hours of course credit in agriculture or home economics or related basic courses; and a minimum of six semester hours of course credit in agricultural education, extension education, or home economics education.

The candidate must have completed one year of successful professional experience before the degree is granted.

The candidate is at liberty to select the manner in which he or she will complete the requirements for the degree from the alternatives of: (1) combination of three-week and six-week summer sessions, (2) combination of summer session and extension course offerings in the state, (3) full-time residence on the campus, and (4) combination of one term of residence and summer sessions.

A high degree of program flexibility may be realized by the candidate in meeting his professional needs.

Final Examinations

The examinations culminating the program of graduate study for the Master's degree are as follows:

- I. *For the Degrees of Master of Arts and Master of Science:*
 - a. A written comprehensive examination (two-hour minimum) in the field of specialization.
 - b. An oral examination (one-hour minimum) in defense of the thesis.
- II. *For the Degree of Master of Education:*
 - a. A written comprehensive examination (three-hour minimum) in the field of Education.
- III. *For the Degree of Master of Arts in Teaching:*
 - a. A written comprehensive examination (two-hour minimum) in the field of Education.
 - b. A written comprehensive examination (two-hour minimum) or a comprehensive oral examination (one-hour minimum) in the field of specialization. The choice between written and oral examination is to be determined by the department after consultation with the candidate.
- IV. *For the Degree of Master of Extension Education:*
 - a. A written comprehensive examination (two hour minimum) in the technical and social science areas.

- b. A comprehensive oral examination (one hour minimum) in the field of specialization.

Success in the written examinations is prerequisite to taking the oral examinations. One re-examination only is permitted for any final comprehensive examination. All examinations are to be taken at the University of Vermont.

Professional Degrees in Engineering

The advanced degrees of Civil Engineer, Mechanical Engineer, and Electrical Engineer will be granted only to engineering graduates of The University of Vermont. At least four years must have elapsed since the candidate graduated. For at least three years the candidate must have held positions of responsibility in his profession and have shown ability to design and execute important engineering work.

At least six months before the end of the year in which the degree is sought the candidate must present to the Dean of the Graduate College a statement of his technical training and experience, together with the topic upon which he proposes to submit a thesis. The thesis must embody the results of original investigation upon some technical subject. The professional record and thesis topic must be approved by the faculty of the major department and by the Executive Committee of the Graduate College.

The thesis must be presented to the Dean of the Graduate College not later than three weeks prior to commencement. The thesis must then be approved by the College of Technology and by the Executive Committee of the Graduate College.

College Regulations Concerning the Degree of Doctor of Philosophy

At the present time The University of Vermont offers five academic programs leading to the degree of Doctor of Philosophy. Programs are offered in biochemistry, chemistry, microbiology, pharmacology, and physiology and biophysics.

Acceptance to Candidacy

In addition to being fully eligible for acceptance to candidacy for a Master's degree (cf. p. 99), a student must have completed satisfactorily one year of graduate study at The University of Vermont before he is eligible for acceptance to candidacy for the degree of Doctor of Philosophy.

Upon admission to the Graduate College, the prospective candidate for the Doctor of Philosophy degree will be assigned an interdepartmental Studies Committee by the Dean. This committee will meet at least once a semester with the candidate to advise him and to help plan his program of study. All courses taken in the program must be approved by this committee, the department chairmen concerned, and the Dean of the Graduate College. This committee will also be responsible for administering and evaluating language examinations.

Upon submission of the completed thesis, the Dean of the Graduate College will appoint a Thesis Committee for the oral examination of the candidate.

The committee shall consist of the Dean, the members of the Studies Committee, and at least two other faculty members nominated by the chairman of the department concerned. The acceptability of the thesis and the number of credits to be awarded for it will be determined by the Thesis Committee.

Transfer of Credit

Not more than twenty-five hours of credit for appropriate graduate courses taken in residence at other institutions will be acceptable for transfer into a doctoral program.

Minimum Academic Requirements

The degree of Doctor of Philosophy requires of candidates a minimum of seventy-five credit hours to be earned in courses and in thesis research.

COURSES At least forty hours must be earned in courses and seminars. The first year of each doctoral program consists almost entirely of required courses: in the following years appropriate courses are selected by the individual Studies Committees in consultation with the candidate. Details of each program can be obtained from the appropriate department chairman or from the Dean.

RESEARCH AND THESIS Each candidate, while in residence at The University of Vermont, must complete an acceptable original research project which contributes new knowledge or techniques in his academic field. The candidate must submit three bound type-script copies of the completed thesis to the Dean of the Graduate College. A minimum of twenty credits will be allowed for thesis research.

LANGUAGE REQUIREMENTS In order to satisfy the language requirements, each candidate must be able to comprehend the literature of his field in at least two foreign languages or demonstrate fluent command (ability to read, write and converse) of one foreign language appropriate to his field. The choice of the languages is to be determined by the candidate's department, and the testing of the candidate is to be the joint responsibility of the candidate's department and the language departments involved. These examinations will be given only during the months of October and April.

The language requirements must be completed before the comprehensive examination is taken.

EXAMINATIONS

- (a) A comprehensive written examination in the field of study must be passed by the candidate at least six months before the thesis is submitted. This examination will be prepared by the Department concerned, in consultation with the candidate's Studies Committee. One re-examination only will be permitted.
- (b) An oral examination, in which the candidate will be expected to defend his thesis, will be scheduled no sooner than one month after the three copies of the thesis have been submitted to the Dean. One re-examination only will be permitted.

Expense and Financial Aids

For information concerning tuition, deposits and other fees, see pages (47-49). Graduate students may receive financial aid on the same basis as undergraduate students, see pages (50-51). Information on loans may be obtained from the Dean of Men or the Dean of Women.

Fellowships

The Graduate College offers each year four Graduate Fellowships, each of \$500 plus a tuition scholarship, which are open to applicants in any field in which the University offers a graduate degree program. Holders of Graduate Fellowships are expected to carry a full-time graduate program towards an advanced degree. Applications for Graduate Fellowships should be addressed to the Dean and must be completed not later than March 15 of the academic year preceding the year for which the application is made.

The George H. Walker Dairy Fellowship is awarded every third year, the next award to be made in 1965-66. It provides a stipend not less than \$700 plus a tuition scholarship. It is available to graduate students who during their undergraduate courses have studied "agriculture, chemistry, and bacteriology" and who desire to study the problems relating to the production of a sanitary milk supply on comparatively small plants and farms. Applications should be addressed to the Chairman of the Department of Animal and Dairy Science.

Residence hall counselorships are open to either married or single men who qualify for graduate work at The University of Vermont. Leadership experiences are desirable. Selection is based on character, academic record, recommendations and a personal interview. Residence hall counselors receive for the first year a stipend of \$1,900 plus a tuition scholarship for a ten month period. Room and board will be deducted from this stipend. Requests for applications and additional information should be addressed to the Dean of Men.

The College was assigned in 1959 and in 1960 three National Defense Fellowships for prospective Ph.D. candidates in biochemistry. For 1961-62, three National Defense Fellowships for prospective Ph.D. candidates were awarded to the department of chemistry and two Fellowships have been assigned to the department of physiology and biophysics. Three additional Fellowships were assigned to the department of chemistry starting with the academic year 1962-63. Application should be made to the chairman of the department concerned.

Teaching Fellowships and Research Fellowships

Graduate Teaching Fellows are normally appointed for nine months with an initial stipend of at least \$1,900, Graduate Research Fellows for eleven months with an initial stipend of at least \$2,200. Teaching and Research Fellows are awarded scholarships to cover tuition up to twelve hours a semester; they are eligible also for reappointment for a second year.

A maximum of half-time assistance in the department is expected of Graduate Teaching Fellows and Graduate Research Fellows, and they must expect that more than one academic year will be necessary to complete the requirements for the Master's degree. If a Teaching Fellow or Research Fellow is a candidate for the Ph.D. degree, he must expect to spend at least four calendar years

before his academic program can be completed. While it is customary, it is not obligatory that Fellows select their fields of concentration in the departments in which they are appointed; for example, foreign-born students appointed Graduate Teaching Fellows in the Department of Romance Languages may be accepted as degree candidates by the Department of English.

Applications for Graduate Teaching Fellowships and Graduate Research Fellowships should be addressed to the chairman of the department concerned and should be filed not later than March 15 of the academic year preceding that for which the application is made. Fellowships for the year 1962-63 are offered by the following departments: agriculture, biochemistry, agricultural economics, agronomy, animal and dairy science, biochemistry, botany, chemistry, economics, education, electrical engineering, English, experimental medicine, geology, German, graphics, history, horticulture, mathematics, mechanical engineering, medical microbiology, music, pathology, pharmacology, physics, physiology and biophysics, political science, poultry science, psychology, romance languages and zoology.

The College of Medicine

Requirements for Admission

The College of Medicine requires that an applicant hold a Bachelor's degree, and that his four years of college work be taken in an institution listed among the "Accredited Institutions of Higher Education," compiled and published by the National Committee of Regional Accrediting Agencies of the United States. The College of Medicine requires one year each of: biology; English; physics, including laboratory; general chemistry; organic chemistry; a satisfactory one-semester course in quantitative chemistry or physical chemistry including laboratory work; and fundamental mathematical principles at the college level.

The College strongly recommends that the applicant, while in college, study in depth one or more fields of interest to him.

Students must complete satisfactorily all requirements for admission to the College of Medicine in any given year by July 1 preceding the September admission. Ordinarily courses taken in other than a liberal arts college will not meet our admission requirements.

Eligibility for admission to the College of Medicine of an applicant is determined by the Admissions Committee of the College of Medicine on the basis of the following:

1. The scholastic record of the applicant in his premedical work.
2. Personality and general fitness of the applicant for the study and practice of medicine as determined by recommendations of the applicant's college teachers and others, and by personal interview with the Admissions Committee.
3. The applicant's scores on the Medical College Admission Test. Such scores are taken into consideration but are not used as a final determinant in accepting students.

A maximum of fifty students is admitted to the entering class. Preference for admission is according to the following priorities:

1. Qualified residents of Vermont.
2. Qualified residents of other New England states having contractual arrangements with the College of Medicine through the New England Board of Higher Education. Contracts are presently in force

with the states of Maine, New Hampshire, Massachusetts and Rhode Island.

3. Qualified residents of other areas.

Sons and daughters of the alumni of the College of Medicine of the University of Vermont are given special consideration within the framework of the above policy.

Applications for admission to the class entering in September of any year will close January 1 preceding the September admission. Application blanks should be in by December 1 for early consideration.

An application fee of ten dollars, payable to The University of Vermont and State Agricultural College, must accompany all applications and is not refundable.

The Curriculum

FIRST YEAR Anatomy, physiology and biochemistry are integrated in such a fashion that topics are considered simultaneously by all departments in so far as possible. Thus when the abdomen is being dissected, the physiology of the gastro-intestinal system and the biochemistry of digestion are being considered at the same time. The students are introduced to psychobiology and epidemiology and community medicine during the first year.

SECOND YEAR The curriculum is divided into three parts and correlated in time.

Course A: Morphology, Physiology, and Chemistry of the Abnormal; runs throughout the entire year and includes pharmacology, pathology, clinical pathology, medical microbiology, psychopathology, epidemiology and community medicine and surface anatomy.

Course B: Elicitation of Data; includes history taking and examination which are taught cooperatively by the various specialists under the general supervision of an internist. This is given in the second semester only.

Course C: Introduction to Clinical Medicine; consists of didactic lectures and case presentations covering elementary medicine, pediatrics, surgery, obstetrics, gynecology and oral medicine, and is given in the second semester.

The schedule varies from week to week because the subject material presented by the different departments is correlated.

THIRD AND FOURTH YEARS The third and fourth years provide a continuing clinical clerkship under the direction of the major clinical departments. A one and a half-month vacation is afforded during the summer at the end of the third year. The schedule provides for clerkship experience in general and specialty hospitals, and includes ambulatory patient services in the Family Care Unit, the outpatient departments of the general hospitals, and in the home. Up to three months of elective time is provided for the student to pursue in depth an area of his interest.

Teaching Facilities

The College of Medicine Building, the College of Medicine Annex, Mansfield House, Phase I and Phase II of the new College of Medicine building contain offices, lecture rooms, medical library, student and research laboratories. Clinical facilities for teaching in the third and fourth years include the two Burlington hospitals with a total of 610 beds (not including bassinets) and 132,170 patient days.

In Burlington there are three outpatient departments with 18,249 patient visits annually, which includes the Home Care Service with 1,500 home visits annually. Elective preceptorships with general practitioners are available.

STATE SCHOLARSHIPS

There are a limited number of state scholarships of \$200.00 a year each available to Vermont residents enrolled in the College of Medicine.

The University Extension

The University through its extension services aims to broaden the horizon of those who have not attended college and to afford an opportunity for those who have attended college to keep in touch with academic thought in their favorite fields or to gain information about subjects which were not studied in college.

The Summer Session

Summer Session offers courses on both the graduate and undergraduate level in many subjects, including art, botany, chemistry, commercial subjects, conservation, dramatic art, economics, education, English, French, geography, German, history, home economics, mathematics, music (instrumental and vocal), philosophy, physical education, physics, political science, psychology, sociology, Spanish, speech and zoology.

The offerings are diversified to meet the needs of the following various groups of students: those with adequate preparation who desire courses leading to a bachelor's degree; those with adequate preparation who wish to do graduate work for the master's degree; principals and superintendents of schools who desire fundamental or specialized courses in the fields of educational administration and supervision; teachers in elementary or secondary schools who seek credit toward state teachers' certificates or who desire to broaden their knowledge of special subjects; persons who desire college level courses for self-improvement. Students must have sufficient maturity and background to profit from the courses in which they enroll.

Through work in the Summer Session it is possible to earn the degrees of Master of Arts, Master of Science, Master of Arts in Teaching, and Master of Education. A special bulletin giving a full description of courses will be sent upon application to the Director of the Summer Session.

Evening Division

Continuing education for adults in the State of Vermont is provided under the Evening Division Program offered by the University. Members of the faculty at the University and others working under temporary appointment offer evening or extension courses in arts and sciences and education. A variety of courses is presented in evening sessions on campus throughout the college year. Some of these may be taken for credit while others are non-credit and are designed for the adult who is interested in continuing his education for the pleasure of self-improvement.

Courses are given in towns and cities throughout the state wherever a group of ten or more individuals register for a course.

Arrangements for Evening Division courses are made through the Evening Division, 147 Waterman Building. Length of courses varies from five to eighteen weeks.

Any person taking a course for credit towards a degree at the University is advised to secure the approval of the appropriate dean. All persons desiring graduate credit must secure the approval of the Dean of the Graduate College.

The Government Clearing House

The Government Clearing House, established in 1950, provides research and informational services for students, state and local officials, members of civic groups, and the public. Activities include the following: developing opportunities for students to become acquainted with, and to gain practical experience in, the operation of government; maintaining liaison with state and local officials relative to the use of University resources for the development of in-service training programs and for the study of problems in state and local government; operating a public affairs research center, conducting research projects, and publishing studies in state and local government; and preparing background materials for conferences on public questions.

Most of the activities of the Government Clearing House are sponsored in cooperation with state officials, local officials, or civic groups. The annual Listers' Schools are sponsored jointly with the Governor and the Vermont State Tax Department. Many state and local officers participate in the series of one-day Town Officers Educational Conferences, which originated in the late 1930's and which are held annually in several locations throughout Vermont. A two-day conference on citizenship, in which high school juniors, high school faculty members and administrators, and University personnel participate, has become an annual event, with the cooperation of the State Department of Education and various educational associations.

A Public Affairs Library collection is maintained as a memorial to the late James P. Taylor, whose effort to expand citizen interest in effective government is well known throughout the State. The Government Clearing House also sponsors the annual Taylor Town Report Contest in Vermont and cooperates with the New England Council relative to the region-wide contest.

The World Affairs Center

The World Affairs Center, located in the Old Mill on the University campus, is the focus for programs and services to further greater understanding of world affairs and responsible citizens' participation in U. S. foreign policy. The Center is staffed jointly by the University and the Vermont Council on World Affairs. A library on world affairs, national foreign policy, and international organizations is maintained at the Center for the use of Vermont citizens and University members. Advice and services for foreign students and staff as well as international visitors are part of the Center's responsibility on the University campus.

The Center cooperates with the United States Department of State, the United Nations, and many other national and local organizations in arranging speakers, programs, material for distribution, hospitality for visitors from abroad, and consultations with Vermont groups on various aspects of world affairs. The Center serves as a coordinating agent and occasionally sponsors activities such as specialized conferences, courses and contests throughout the State of Vermont.

Program of Non-Western Studies

A Program of Non-Western Studies is conducted at the University with the purpose of increasing and improving the instruction about areas of the world other than North America and Europe. Under the Program, selected faculty members are released from some regular teaching duties in order to conduct research and to share in a Seminar. The Program includes representatives from several Vermont colleges and universities. Visiting professors are brought to the University campus to serve as expert consultants to the Program and occasionally to offer courses on aspects of the Non-Western world for University undergraduates and in the Evening Division. The faculty participants in the Program, as well as the visiting professors, are available for public appearances individually or as an inter-disciplinary group. A particular effort has been made to improve the holdings of the University Library for the areas studied. In 1959 the Program emphasized the Middle East, in 1960 South Asia, in 1961 Southeast Asia, in 1962 China, in 1963 Latin America, and in 1964 Africa.

Center for Area Studies

The development of a Center for Area Studies was authorized by the Trustees of the University of Vermont in February, 1962. The purposes of the Center are to encourage and coordinate interdisciplinary study of selected foreign areas, to promote research on foreign areas, and to stimulate general interest in these areas. The Committee on Area Studies plans for and proposes course offerings on various foreign areas under the respective departments.

For 1962-63 the Center for Area Studies has planned programs of undergraduate study on two areas, Latin America, and Russia and Eastern Europe. Each program is based on a combination of appropriate courses in foreign language, history, political science, economics, and sociology, and will provide the concentration required of candidates for the A.B. degree.

Undergraduates interested in taking area studies should, as early as possible in their college careers, consult the Chairman of the Committee on Area Studies or the Dean of the College of Arts and Sciences.

Junior Year Study Abroad

A University of Vermont student who wishes to attend a foreign university in his junior year and receive transfer credit should consult with the dean of his college and receive approval, in advance, of his plan and program. In general to gain approval a student will be expected:

- a) to have completed two full years (sixty semester hours) of work;
- b) to have an average of not less than 80;
- c) to have a valid objective, appropriate to his academic program and not available at the University of Vermont;
- d) to have a good working knowledge of the language of the country to which he proposes to go.

Definite preference will be given to programs sponsored by approved Universities and Colleges in this country.

Conferences and Institutes

Conference activity is a rapidly increasing part of University life, both throughout the regular college year and during the summer, when many conference groups make use not only of University classroom and auditorium facilities but also of University dormitories and dining service. Groups interested in arranging for meetings or conferences at the University should contact the Conferences and Institutes Office, Waterman Building.

The Audio-Visual Services Division

The Audio-Visual Services Division, located in The Old Mill Building, includes an Audio-Visual Aids Library, an Audio-Visual Equipment Service and a Photographic Service.

The Aids Library owns over 1600 sound 16mm, educational films; 1200 $3\frac{1}{4} \times 4$ slides; and a growing collection of 2×2 slides, filmstrips and filmstrip sets, tape and disc recordings. New college level materials are purchased annually. The Vermont State Department of Education contributes aids for elementary and secondary schools which are distributed as an extension service of the University.

Equipment Service makes available to campus and outside users projection equipment for 16mm sound motion pictures, slides and filmstrips; opaque and large transparent materials; tape recorders and record players. Lamps and other projector parts, as well as maintenance service, are supplied by this Department.

Photographic Service, on assignment from administrative departments and faculty, produces motion and still pictures, lantern slides and transparencies, and maintains a file of photographs and negatives from which selections may be made for University publications.

Courses of Instruction

The University reserves the right to change these course offerings at any time.

The departments and areas of instruction are arranged alphabetically, and the college in which each is located is indicated.

Courses numbered from 1 to 99 are elementary and intermediate courses. Those numbered from 100 to 199 are advanced undergraduate courses. Those numbered from 200 to 299 are advanced courses for undergraduates which also may be taken for graduate credit by qualified graduate students. Courses numbered from 300 to 399 are limited to graduate students. Courses numbered above 400 are limited to candidates for the degree of Doctor of Philosophy.

A separate number is used for each semester course and for each semester of a year course.

The form 17, 18 indicates that the separate semester courses may be taken independently for credit.

The form 17-18 indicates that the semester courses may not be taken independently for credit and, unless otherwise stated, they must be taken in the sequence indicated.

Odd numbered courses are offered the first semester; even numbered courses the second semester, unless otherwise indicated by the Roman numeral I for the first semester or II for the second semester.

The letter "S" preceding the course number indicates the course is offered normally in the Summer Session.

The letter "A" preceding the course number indicates the course is offered normally in the Evening Division program.

The number of credit hours *per semester* is stated in each course description.

The form (2-3) immediately following the course title indicates the number of class hours respectively of lecture and of laboratory.

Agricultural Biochemistry

COLLEGE OF AGRICULTURE AND HOME ECONOMICS

Professor Johnstone (Chairman); Associate Professors Foote and Racusen

172 GENERAL BIOCHEMISTRY (3-4) Broad coverage of fundamentals of biochemistry for science students, including the chemistry of carbohydrates, proteins, lipids, vitamins, enzymes, and hormones and their relation to processes of biological significance. Basic principles of analytical procedures involved in biochemical methods. *Prerequisite:* Chemistry 131. Five hours. Dr. Foote.

197, 198 SENIOR RESEARCH Work on a research problem under the direction of a qualified staff member. Findings submitted in written form as prescribed by the department. *Prerequisite:* senior standing. Three hours. The staff.

251 MODERN BIOCHEMICAL TECHNIQUES (1-4) Laboratory work and supplementary lectures on radioisotopic tracer techniques, paper chromatography, radioautography and biochemical preparation. *Prerequisite:* 172 or Medical Biochemistry 201 and departmental permission. Three hours. Dr. Racusen.

252 PLANT BIOCHEMISTRY The composition, energy utilization, and metabolism of plant cells with emphasis on the leaf. Special topics include the chemistry and action of growth substances and herbicides, the origin of life, and comparative biochemistry of plant and animal cells. *Prerequisite:* 172 or Med. Biochem. 201 and departmental permission. Three hours. Dr. Racusen. Alternate years, 1964-65.

253 MICROBIAL BIOCHEMISTRY (2-3) The chemical composition, energy utilization and metabolism of microbial cells. *Prerequisite:* 172 or Medical Biochemistry 201, Botany 116; and departmental permission. Three hours. Dr. Johnstone. Alternate years, 1963-64.

381, 382 GRADUATE SEMINAR Topical seminar with discussion of assigned and collateral reading. Required of departmental graduate students. No credit for Ph.D. candidates. One hour. The staff.

391, 392, 393, 394 MASTER'S THESIS RESEARCH Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

491 through 499 DOCTOR'S THESIS RESEARCH Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Agricultural Economics

COLLEGE OF AGRICULTURE AND HOME ECONOMICS

Professors Sargent (Chairman) and Samenfink; Associate Professors Sinclair, Tremblay and Webster

2 WORLD FOOD AND AGRICULTURE (2-2) Historical development and pattern of agriculture to the present. Emphasis on the adjustment of agriculture to natural and economic phenomena. Present pattern of crop and livestock production, trade, and consumption in Vermont, the United States, and the world. Three hours. Dr. Tremblay.

51 AGRICULTURAL FINANCE (2-2) Capital requirements of American agriculture; analysis of the financial problems of farmers; types and sources of credit and the lending problems and practices of farm credit institutions. *Prerequisite:* sophomore standing. Three hours. Dr. Sinclair.

66 AGRICULTURAL BUSINESS (2-2) Management problems of rural business firms including agricultural cooperatives, especially those handling farm produce and supplies. Theoretical and practical considerations in the organization and operation of agricultural businesses with emphasis on financial and legal organization, accounting and budgeting procedures, and tax policies. *Prerequisite:* sophomore standing. Three hours. The staff.

103 **RURAL SOCIOLOGY** The origin, characteristics, forms of organization, levels of living, mobility, and geographic distribution of rural people, and their relationship to urban society. *Prerequisite:* junior standing or permission of the department. Three hours. Dr. Samenfink.

159 **LAND ECONOMICS** The field of land economics, benefit-cost analysis, economic appraisal of public resource development investments, water problems, the legal framework of resource development, economics of recreational land use, economic aspects of rural development, land classification, rural zoning, land use planning. *Prerequisite:* Economics 11-12. Three hours. Dr. Sargent.

197, 198 **SENIOR RESEARCH** Work on a research problem under the direction of a qualified staff member. Findings submitted in written form as prescribed by the department. *Prerequisite:* senior standing. Three hours. The staff.

201-202 **FARM MANAGEMENT (2-2)** Organization and operation of a successful farm business. *Prerequisite:* Economics 11-12 or concurrent enrollment; junior standing. Three hours. Dr. Tremblay.

207 **AGRICULTURAL MARKETING AND PRICES (2-2)** Market structure, prices, and economic forces involved in the movement of farm products from producers to consumers. Emphasis on the New England situation. *Prerequisite:* Economics 11-12 or permission of the instructor. Three hours. Dr. Webster.

208 **AGRICULTURAL POLICY** The role of government, farm organizations, and other institutions in the development of agricultural policy. An economic analysis of the price and income problems of American agriculture and alternatives to their solution. *Prerequisite:* Economics 11-12 or permission of the instructor. Three hours. Dr. Sinclair.

251 **RESEARCH METHODS** Philosophy of scientific research, research project organization and procedures, analysis and reporting of research results. *Prerequisite:* Senior standing and permission of the department. Three hours. I or II. Dr. Sargent.

253 **THEORY OF AGRICULTURAL PRODUCTION ECONOMICS** Application of the theory of the firm to agricultural production units. Emphasis on resource allocation and production efficiency. Principles of marginal analysis applied to production problems in a static and dynamic economy. *Prerequisite:* twelve hours in agricultural economics and/or economics, senior standing, and permission of the department. Three hours. I or II. Dr. Sinclair.

256 **SPECIAL TOPICS IN AGRICULTURAL ECONOMICS** Readings and discussion of specific topics in agricultural economics at advanced level. *Prerequisite:* Permission of the department. Three hours. I or II. The staff.

270 **AGRICULTURAL DEVELOPMENT** Problems of economic development of underdeveloped agricultural countries. Measures of levels of economic development, prerequisites to development, land reform, theories of development, the role of agriculture, investment priorities, terms of trade of the rural sector, agricultural development programs, and national development programs. Case studies. *Prerequisite:* twelve hours in economics and agricultural economics. Two hours. Dr. Sargent.

281, 282, 283, 284 **AGRICULTURAL ECONOMICS SEMINAR** Discussion of problems and research in agricultural economics and other social sciences. *Pre-*

requisite: senior or graduate standing, or permission of the department. One hour. The staff.

391, 392, 393, 394 **MASTER'S THESIS RESEARCH** Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Agricultural Education

COLLEGE OF AGRICULTURE AND HOME ECONOMICS

Associate Professor Gaylord (Chairman); Mr. Davison

102 **EXTENSION METHODS (1-2)** Methods and techniques of extension teaching. *Prerequisite:* junior standing. Two hours. Mr. Davison. Alternate years, 1964-65.

104 **LEADERSHIP TRAINING AND ORGANIZATION METHODS (2-2)** Methods and techniques by which officers, group members and administrators may increase the effectiveness of organizations. The course is designed to provide experience in applying the methods treated. *Prerequisite:* junior standing, or permission of department. Three hours. Dr. Gaylord.

152 **INTRODUCTION TO TEACHING VOCATIONAL AGRICULTURE (1-2)** An introduction to the vocational education acts and major program objectives; the determination of instructional needs, and development of farming programs for high school students. Development of the philosophy of problem solving in agricultural education, and a general orientation to the work of the teacher of vocational agriculture. *Prerequisite:* junior standing, or permission of the department. Two hours. Dr. Gaylord.

155 **DIRECTED PRACTICE TEACHING IN VOCATIONAL AGRICULTURE** Ten weeks of practice teaching in high school departments of vocational agriculture under guidance of experienced teachers and the teacher trainer. One week for home visits to supervised farming programs during the summer, and the first week of high school. *Prerequisite:* 251 and 253 or permission of the department. Eight hours. Dr. Gaylord.

197, 198 **SENIOR RESEARCH** Work on a research problem under the direction of a staff member. Findings submitted in written form as prescribed by the department. *Prerequisite:* senior standing. Three hours. Staff.

251 **METHODS OF TEACHING VOCATIONAL AGRICULTURE (2-2)** Making farm surveys, analyzing farm businesses, developing the course of study and farming programs. Developing teaching plans; techniques and visual aids; advising the FFA chapter; evaluating student progress; providing counseling; guidance and maintaining discipline. *Prerequisite:* senior standing. 104 and 152 or permission of the department. Three hours. Dr. Gaylord.

253 **METHODS OF TEACHING YOUNG AND ADULT FARMER CLASSES IN VOCATIONAL AGRICULTURE (2-2)** Determining needs, problems and objectives for education of young and adult farmers; selecting positions, planning courses, and developing teaching plans; use of on-farm instructions; demonstrations and other suitable methods, techniques and instructional materials; use of advisory

groups; progress evaluation; role of young farmer associations. *Prerequisite:* 104 and 152 or permission of the department. Three hours. Dr. Gaylord.

282 SEMINAR Evaluation of student teaching experiences; in-school and out-of-school public relations; placement and follow-up of students; department management; planning and maintaining facilities; overall program; summer program and professional responsibilities. Required of Agricultural Education majors. *Prerequisite:* senior standing; 155 or permission of the department. One hour. Dr. Gaylord.

301, 302, 303, 304 RESEARCH IN AGRICULTURAL EDUCATION Investigation of a research topic under the direction of an assigned staff member. Credit as arranged.

Agronomy

COLLEGE OF AGRICULTURE AND HOME ECONOMICS

*Professor Midgley (Chairman); Associate Professors Bartlett and Wood;
Assistant Professor Flanagan*

1 INTRODUCTORY CROP SCIENCE Basic principles involved in the establishment and management of agronomic crops. *Prerequisite:* Botany 1 or permission of department. Three hours. Dr. Wood.

21 FIELD CROPS (2-2) Theory and practice of producing, improving and managing field crops. *Prerequisite:* Botany 1 or permission of department. Three hours. Dr. Flanagan. Alternate years, 1963-64.

22 FORAGE AND PASTURE CROPS (2-2) Theory and practice of producing, improving and managing forage and pasture crops including study of silage and hay making. *Prerequisite:* Botany 1 or permission of department. Three hours. Dr. Wood.

52 GENERAL SOILS An introduction to the chemistry, physics, and biology of soil in its role as a substrate for plants. Three hours. Dr. Midgley.

103 SOIL CHEMISTRY AND FERTILITY (2-2) Chemistry of soils and fertilizers in relation to nutrient uptake, plant growth, and the management of soil fertility. Colloidal properties of clays and humus and their effects on soil acidity and ion availability; soil and plant analysis and its application. *Prerequisite:* 52; Chem. 1-2 or 11-12. Three hours. Dr. Bartlett. Alternate years, 1964-65.

105 SOIL PHYSICS (2-2) Physical properties of soils and their influence on plant growth. Retention and movement of heat, gas, water and ions in soils are studied together with management operations such as plowing, tillage, drainage, and irrigation. *Prerequisite:* 52; Physics 5-6, or Chem. 1-2 or 11-12. Three hours. Dr. Bartlett. Alternate years, 1963-64.

153 CONSERVATION OF NATURAL RESOURCES A study of natural resources including soils, water, atmosphere, wild life, and minerals. Interrelationships, management, and the social and economic aspects of depletion and conservation are emphasized. *Prerequisite:* Junior standing. Three hours. Dr. Flanagan. Alternate years, 1963-64.

197, 198 SENIOR RESEARCH (0-3) Work on a research problem under the direction of a qualified staff member. Findings submitted in written form as prescribed by the department. *Prerequisite:* senior standing. Three hours. The staff.

226 SPECIAL TOPICS IN SOILS AND CROPS Correlation of advanced information in soils with that of crops. Soil chemistry, physics, microbiology and soil management are related to crop production, other topics suited to the needs of the students. *Prerequisite:* 103 or 105; Chem. 21 or 131, and permission of department. Three hours. Dr. Midgley. Alternate years, 1964-65.

281, 282 AGRONOMY SEMINAR Discussion of agronomic topics. Students present papers on selected subjects. *Prerequisite:* senior or graduate standing or permission of the department. One hour. The staff.

391, 392, 393, 394 MASTER'S THESIS RESEARCH Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Animal and Dairy Science

COLLEGE OF AGRICULTURE AND HOME ECONOMICS

*Professor Bradfield; Associate Professors Atherton and Smith (Chairman);
Assistant Professors Balch, Fitzsimmons, Merrill and Simmons*

1 INTRODUCTORY DAIRY SCIENCE (2-3) Fundamental principles of management, feeding, selection, and breeding of dairy cattle. Three hours. Mr. Fitzsimmons.

2 MILK AND MILK PRODUCTS (2-2) Introduction to products made from milk. History, development, role of these products in the dairy industry, markets, and principles of processing. Three hours. Mr. Bradfield.

4 INTRODUCTORY ANIMAL SCIENCE (1-3) Size, scope and functions of our modern livestock industry. The types and breeds of livestock of major economic importance; horses, beef cattle, sheep, and swine. Practical application of selection and management principles. Two hours. Mr. Balch.

21 DAIRY PRODUCTS JUDGING AND SELECTION (2-1) Critical study of the various dairy products; relation of judging and selection to consumer acceptance; market standards and grading. *Prerequisite:* sophomore standing. Two hours. Mr. Bradfield.

44 DAIRY CATTLE JUDGING (0-6) Judging, fitting, and showing of dairy cattle. *Prerequisite:* 1. Two hours. Mr. Fitzsimmons.

95 LIGHT HORSE PRODUCTION AND MANAGEMENT (2-3) A detailed study of the problems of light horse production. Practical application of the principles of selection, management and horsemanship. Three hours. Dr. Balch. Alternate years, 1964-65.

97 BEEF CATTLE AND SHEEP PRODUCTION (2-3) The organization and operation of beef cattle and sheep enterprises. Theory and practical application of feeding, breeding, and management programs and principles. Three hours. Dr. Balch. Alternate years, 1963-64.

104 **DAIRY TESTING AND QUALITY CONTROL (2-3)** The composition and properties of milk. Standard methods of bacteriological and chemical analysis. General laboratory testing procedures for milk and milk products and their importance in quality control. Three hours. Dr. Atherton.

105 **FEEDS AND FEEDING (3-2)** Fundamentals of livestock feeding and evaluation of livestock rations with emphasis on ingredients and nutritive value. Four hours. Dr. Smith.

109 **DAIRY BACTERIOLOGY (1-4)** Relation of microorganisms to milk and milk products, methods of examination and control. Three hours. Dr. Atherton.

114 **MANUFACTURED DAIRY PRODUCTS (2-3)** Methods and technical problems in manufacturing milk products such as cheese, butter, evaporated and dry milks. *Prerequisite:* 2, junior standing. Three hours. Dr. Merrill. Alternate years, 1963-64.

153 **MILK PROCESSING (2-2)** Technical aspects of processing fluid milk and fluid milk products. *Prerequisite:* permission of the department. Three hours. Dr. Merrill.

197, 198 **SENIOR RESEARCH** Work on a research problem under the direction of a qualified staff member. Findings submitted in written form as prescribed by the department. *Prerequisite:* senior standing. Three hours. The staff.

206 **ANIMAL NUTRITION** Nutrients, their function and utilization, and requirements for growth, reproduction and lactation. *Prerequisite:* 105; Chem. 131 or permission of the instructor. Three hours. Dr. Smith.

211 **ICE CREAM AND FROZEN DAIRY PRODUCTS (2-3)** Fundamentals of ice cream manufacturing, the physico-chemical and biological factors involved; calculation of formulas; sherbets and specialties; merchandising, soda fountain management and sanitary control. *Prerequisite:* 104; credit or concurrent enrollment in 109; junior standing. Three hours. Mr. Bradfield. Alternate years, 1963-64.

251 **DAIRY CATTLE AND MILK PRODUCTION (2-2)** Advanced principles of dairy cattle feeding and management. *Prerequisite:* 105. Three hours. Mr. Fitzsimmons.

256 **DAIRY PLANT MANAGEMENT** Organization and operation of milk processing and manufactured milk products plants. *Prerequisite:* 153; Economics 11-12; junior standing. Two hours. Mr. Bradfield. Alternate years, 1964-65.

260 **DAIRY CATTLE BREEDING (2-3)** Theory and application of genetic principles to breeding of dairy cattle. *Prerequisite:* 1, Zool. 115 or permission of department. Three hours. Mr. Fitzsimmons.

271 **ENDOCRINOLOGY** Anatomy, physiology, glandular interrelationships, and assay methods of the endocrine glands and their hormones. *Prerequisite:* Zoology 1 and the permission of the department. Three hours. Dr. Simmons.

276 **PHYSIOLOGY OF REPRODUCTION AND LACTATION** Fundamental principles of the physiology of reproduction and lactation with the primary emphasis on farm animals. *Prerequisite:* 271 or permission of the department. Three hours. Dr. Simmons.

281, 282 **ANIMAL AND DAIRY SCIENCE SEMINAR** Reports and discussions of problems and special investigations in selected fields. One-two hours. Maximum credit 1 hour senior, 3 hours graduate. The staff.

291, 292 **SPECIAL PROBLEMS IN ANIMAL AND DAIRY SCIENCE** Reading, discussion, and special laboratory investigation in the field of Animal and Dairy Science. Three hours. The staff.

391, 392, 393, 394 **MASTER'S THESIS RESEARCH** Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Animal Pathology

COLLEGE OF AGRICULTURE AND HOME ECONOMICS

Professor Bolton (Chairman); Associate Professor Durrell¹

105 **ANATOMY AND PHYSIOLOGY** Structure and function of the various parts of the animal body with emphasis on cattle. *Prerequisite:* junior standing. Three hours. Dr. Durrell.

106 **ANIMAL DISEASES** Fundamentals of disease control and prevention. Special disease problems in cattle, sheep, horses, and swine with emphasis on control measures. *Prerequisite:* 105 strongly recommended; junior standing. Three hours. Dr. Durrell.

116 **POULTRY DISEASES (2-2)** Anatomy and physiology of the fowl. General principles of sanitation. Major diseases of chickens and turkeys. *Prerequisite:* Botany 115. Three hours. Dr. Durrell.

197, 198 **SENIOR RESEARCH** Work on a research problem under the direction of a qualified staff member. Findings submitted in written form as prescribed by the department. *Prerequisite:* senior standing. Three hours. The staff.

391, 392, 393, 394 **MASTER'S THESIS RESEARCH** Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Art

COLLEGE OF ARTS AND SCIENCES

Professor Colburn²; Associate Professors Janson and Mills (Chairman); Assistant Professors Hampel and Davison; Instructor Aschenbach

1 **GREEK ART** History of art in Greek lands in ancient times, with principal emphasis on sculpture, architecture, and vase painting. *Prerequisite:* sophomore standing. Three hours. Dr. Davison.

2 **RENAISSANCE ART** The origin and development of the Renaissance in painting, sculpture, and architecture in Italy and its spread throughout Europe, from the early 15th century to the 17th century and the Baroque. Studies of

¹ Sabbatical leave second semester 1963-64.

² Sabbatical leave 1962-63.

original material in the museum collection. *Prerequisite:* sophomore standing or permission of instructor. Three hours. Dr. Janson. Alternate years, 1964-65.

3 **MEDIEVAL ART** Architecture, sculpture, and painting in Western Europe from the year 1000 to the early 15th century. *Prerequisite:* sophomore standing or permission of instructor. Three hours. Dr. Janson. Alternate years, 1964-65.

4 **MODERN ART** Painting and sculpture from the period of French Impressionism to the present time; emphasis on European influences. *Prerequisite:* junior standing. Three hours. Mrs. Mills.

5 **ROCOCO AND ROMANTIC ART** Architecture, painting and sculpture from the late Baroque to the Age of Steam, 1700-1850. Studies of original material in the museum collection. *Prerequisite:* sophomore standing or permission of the instructor. Three hours. Dr. Janson. Alternate years, 1963-64.

6 **MODERN ARCHITECTURE** Major masters and movements in modern architecture from 1850 to the present. *Prerequisite:* sophomore standing or permission of instructor. Three hours. Dr. Janson. Alternate years, 1963-64.

7 **PAINTING IN AMERICA** Development of painting in America from colonial times to 1900. Social and economic forces which at times channelled American artistic expression. *Prerequisite:* sophomore standing. Two hours. Mr. Colburn.

8 **AMERICAN ARCHITECTURE** American building and design from colonial times to Frank Lloyd Wright. Major trends and their reflection on the Vermont scene. *Prerequisite:* sophomore standing. Two hours. Dr. Janson.

11, 12 **ARTS AND CRAFTS** Basic creative experiences in ceramics, enamels, and silver jewelry are used to develop individual ability in design, appreciation and technical skill. Aspects of related historical and contemporary crafts are included. *Prerequisite:* sophomore standing. Three hours. Mrs. Mills.

21, 22 **DRAWING AND PAINTING** Composition and painting techniques. Emphasis on a clearer understanding of modern schools of painting and on individual development. By permission, the course may be taken a second time for credit. *Prerequisite:* sophomore standing. Three hours. Mr. Colburn.

41, 42 **SCULPTURE** An introductory course in sculpture, dealing with both formal and technical problems. *Prerequisite:* sophomore standing. Three hours. Mr. Aschenbach.

For courses in Art Education, see Elementary Education 170.

Botany

COLLEGE OF AGRICULTURE AND HOME ECONOMICS

Professors Marvin (Chairman), Gersbory, Sproston and Taylor¹; Associate Professors Raynor and Vogelmann; Assistant Professors Cook and Fisher

1 **INTRODUCTORY BOTANY (3-3)** Fundamental principles of biology illustrated by the morphology, physiology, and reproduction of vascular plants. Study of forms and functions, leading to an understanding of the plant as a dynamic unit. Four hours. I, II. The staff. (An equivalent course is offered in Summer Session.)

¹ Sabbatical leave first semester 1963-64.

2 GENERAL BOTANY (2-4) Plant groups: their relationships to one another, based on structure and patterns of reproduction. Plant distribution in time and space *Prerequisite*: 1. Four hours. Dr. Raynor.

S10 FIELD BOTANY (2-4) Native plants and their habitats. Field identification and laboratory study. A projected series of courses encompassing the plant kingdom. Four hours. The staff. Summer Session only.

51 PLANTS AND MAN The place of plants in man's affairs. The influence of plants on exploration, migration and the development of civilizations. The role of plants in the world today, with special emphasis on food, drug, fiber, and other useful plants and on the botanical features which contribute to their usefulness. *Prerequisite*: 1. Three hours. (Offered in second semester, 1963-64; in first semester thereafter.) Dr. Taylor.

103 PLANT PHYSIOLOGY (2-6) Mechanisms of absorption, translocation, synthesis, and utilization of materials. The role of internal and external factors in growth. *Prerequisite*: 1; credit or concurrent enrollment in Chem. 131. Five hours. Dr. Marvin.

110 TAXONOMY (1-4) Principles of classification; phylogeny of vascular plants, the evolution of the angiosperms; the species concept; variation; development and migration of floras; modern techniques and biosystematics. *Prerequisite*: 1; junior standing. Three hours. Dr. Vogelmann. Alternate years, 1963-64.

113 ECOLOGY (2-2) Structure and organization of plant communities; succession, climax formations; effect of environmental factors; quadrating and other field techniques. *Prerequisite*: 103 or permission of the department; junior standing. Three hours. Dr. Vogelmann. Alternate years, 1964-65.

115 INTRODUCTORY MICROBIOLOGY (2-4) Systematic study of microorganisms, predominantly bacteria, emphasizing fundamental principles and basic laboratory techniques. Relationships of microbiology to public health, food spoilage, fermentations, soil enrichment, and sanitation. *Prerequisite*: 1 or Zool. 1, or permission of the department; Chem. 1-2. Four hours. Dr. Fisher.

117 PLANT PATHOLOGY (2-4) Diagnosis, life history, and control of plant diseases caused by fungi, viruses, bacteria, nematodes. *Prerequisite*: 1. Four hours. Dr. Sproston.

197, 198 SENIOR RESEARCH Work on a research problem under the direction of a qualified staff member. Findings submitted in written form as prescribed by department. *Prerequisite*: senior standing. Three hours. The staff.

252 PLANT ANATOMY AND HISTOLOGY (2-4) Development of the organism and accompanying integration of cellular tissues. Ontogeny of vegetative tissues; modifications of the cell wall. *Prerequisite*: 2; senior standing or permission of the department. Four hours. Dr. Taylor. Alternate years, 1964-65.

253 FUNGI (2-4) The reproductive processes of the common molds, yeasts, and actinomycetes and their classification. Physiological studies; antibiosis. *Prerequisite*: 103 or permission of the department. Four hours. Dr. Sproston. Alternate years, 1963-64.

255 GENETICS AND CYTOGENETICS (3-2) Fundamental principles of genetics. Analysis of concepts of variation, mendelian inheritance, cytoplasmic inheritance, gene action, population genetics, and biometry; meiotic chromosome

behavior in diploids, polyploids and species hybrids. *Prerequisite:* 1; Zool. 1; Bot. 2 and a second course in Zoology, 31 or 41, are strongly recommended; senior standing. Four hours.

256 **CYTOLOGY (2-4)** Dynamics of the protoplast; nuclear division, gamete formation, syngamy and substitute methods of reproduction. Interrelation of chromosomal and genetic phenomena. *Prerequisite:* 255 or Zool. 115; Chem. 131, 132 or permission of the department. Four hours. Alternate years, 1963-64.

258 **PLANT GROWTH (2-4)** The nutrition of plant cells, growth hormones, cyclic variation of environmental factors, morphogenesis. *Prerequisite:* 103; Chem. 131, 132 or permission of the department. Four hours. Dr. Marvin. Alternate years, 1964-65.

259 **MORPHOLOGY AND EMBRYOLOGY (2-4)** Comparative study of body form, ontogeny of reproductive structures and phylogenetic relationships in the embryophytes; emphasis on seed plants. *Prerequisite:* 2; senior standing or permission of the department. Four hours. Dr. Raynor. Alternate years, 1964-65.

381, 382 **BOTANY SEMINAR** A topical seminar with discussion of assigned and collateral reading. Required of botany graduate students. One hour. The staff.

391, 392, 393, 394 **MASTER'S THESIS RESEARCH** Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Chemistry

COLLEGE OF TECHNOLOGY

Professors Cook (Chairman), Braun and Gregg¹; Associate Professors Crooks and Whitcher; Assistant Professors Brown, Criss, Flanagan, Krapcho, Kuebne and Lucarini

Note: Credit cannot be granted for: 1-2 and also 11-12; 3-4 and also 1-2; 35 and also 131, 132; 140 and also 141-142.

1-2 **INTRODUCTORY CHEMISTRY (3-3)** General inorganic chemistry. Lectures, recitations and laboratory, including elementary qualitative analysis. Acceptable prerequisite to advanced courses. *Prerequisite:* at least one year of high school mathematics. Four hours. Dr. Gregg, Dr. Crooks and Miss Brown.

3-4 **OUTLINE OF CHEMISTRY (3-2)** Backgrounds of inorganic, organic, and biochemistry, primarily for students in nursing or for dental hygienists. Elective for others with the approval of the dean of their college and the chemistry department. *Prerequisite:* at least one year of high school mathematics. One year of high school chemistry or physics recommended. Four hours. Dr. Crooks and staff.

11-12 **GENERAL CHEMISTRY (3-6)** Lectures, recitations and laboratory, including general experiments in elementary qualitative analysis. Recommended for those concentrating in physical science. *Prerequisite:* at least one year of high school mathematics. Five hours. Dr. Cook and staff.

¹ Sabbatical leave 1962-63.

13, 14 THE CHEMICAL BOND Nature of interatomic and intermolecular forces. Stereochemistry, bond energies, and crystal structures are considered. *Prerequisite*: 1-2 or 11-12. One hour. The staff.

21-22 ELEMENTARY QUANTITATIVE ANALYSIS (2-6) Theory and practice of quantitative methods, gravimetric and volumetric. Theoretical discussion of indicators, buffers and pH. *Prerequisite*: 1-2 or 11-12. Four hours.¹ Dr. Whitcher and Mr. Lucarini.

131, 132 ORGANIC CHEMISTRY (3-6) Organic chemistry for chemistry majors, premedical students and those concentrating in the biological and physical sciences. *Prerequisite*: 1-2 or 11-12; 21-22 recommended; 131 for 132. Five hours.² Dr. Krapcho and staff.

140 PHYSICAL CHEMISTRY FOR BIOLOGICAL SCIENCE STUDENTS Aspects of physical chemistry most pertinent to work in the biological sciences: acid-base equilibrium, theory of solutions, thermodynamics and kinetics. *Prerequisites*: 1-2, Physics 5-6 or the equivalent. Three hours. Dr. Cook.

141-142 PHYSICAL CHEMISTRY (3-6)³ The kinetic theory and its application to gases; thermodynamics and the application to liquids and solutions; chemical equilibria; fundamentals of electrochemistry and atomic structure. *Prerequisite*: Physics 21-22; Math. 12, 21; Chem. 1-2 or 11-12; Chem. 21-22 recommended. Five hours.² Dr. Criss and Dr. Flanagan.

Advanced Inorganic Chemistry

108 INORGANIC PREPARATIONS Laboratory preparations of inorganic compounds. *Prerequisite*: 1-2. Two hours. Dr. Crooks.

212 ADVANCED INORGANIC CHEMISTRY Chemistry of the elements; relation of structure to properties and to coordination compounds, complex ions, radioactivity, and stereoisomerism. *Prerequisite*: credit or concurrent enrollment in 141-142. Three hours. Dr. Criss.

Advanced Analytical Chemistry

221 ADVANCED THEORETICAL CHEMISTRY Selected topics in theoretical chemistry with reference to analytical applications. *Prerequisite*: credit or concurrent enrollment in 141-142. Three hours. Dr. Whitcher.

Advanced Organic Chemistry

231-232 SPECIAL TOPICS IN ORGANIC CHEMISTRY An elaboration of structural and configurational isomerism, modern acid-base theory, molecular rearrangements and organic free radicals. *Prerequisite*: 131, 132; credit or concurrent enrollment in 141-142. Three hours. Dr. Gregg. Alternate years, 1962-63.

233-234 PHYSICAL ORGANIC Physical organic chemistry, emphasis on structural aspects and reaction mechanisms. *Prerequisite*: 131, 132; credit or

¹ May be taken by certain students for three hours credit, with only one three-hour laboratory period.

² May be taken by certain students for four hours credit, with only one three-hour laboratory period.

³ May be taken without the laboratory work for three hours credit by permission of the department.

concurrent enrollment in 141-142. Three hours. Dr. Cook or Krapcho. Alternate years, 1963-64.

237 IDENTIFICATION OF ORGANIC COMPOUNDS AND ADVANCED TECHNIQUES IN ORGANIC CHEMISTRY (3-8) Methods, both chemical and physical, of identifying organic compounds, their separation, and the determination of their functional groups. Experiments with infrared and ultraviolet spectroscopy, vapor phase chromatography, thin layer, paper and column chromatography, selective oxidations and reductions, synthetic reactions, isolation and purification of a natural product. *Prerequisite:* 131, 132; credit or concurrent enrollment in 141-142. Five hours. Dr. Krapcho or Dr. Kuehne.

238 ORGANIC REACTIONS Discussion, from the preparative viewpoint, of applications, limitations, and experimental conditions of the more important reactions of organic chemistry. *Prerequisite:* 131, 132; credit or concurrent enrollment in 141-142. Three hours. Dr. Krapcho or Kuehne. Not offered every year.

251, 252 ADVANCED ORGANIC CHEMISTRY A more detailed description of reactions encountered in basic organic chemistry. Topics include mechanisms of important classes of organic reactions, condensation reactions, synthetic methods, stereochemistry, electronic theory, tautomerism, free radicals; kinetic, radioisotope and stereochemical approaches to mechanism studies, and the application of acid-base theory to organic mechanisms. *Prerequisite:* 131, 132; credit or concurrent enrollment in 141-142, 251 for 252. Three hours. Dr. Krapcho.

332 NATURAL PRODUCTS—THE ALKALOIDS The major classes of alkaloids will be surveyed from a biogenetic point of view. Classical and modern degradation methods, total syntheses and biosynthetic incorporation of labeled compounds will be discussed. *Prerequisite:* 251-252; or concurrent enrollment in 252 or the equivalent with permission of the instructor. Three hours. Alternate years, 1962-63. Dr. Kuehne.

334 NATURAL PRODUCTS—THE TERPENES Chemistry of mono-sesqui-di and triterpenes, including degradations, structure proofs, total syntheses, rearrangements reactions and biogenesis. *Prerequisite:* as for chemistry 332. Three hours. Dr. Kuehne. Alternate years, 1963-64.

Advanced Physical Chemistry

247-248 ADVANCED PHYSICAL CHEMISTRY Higher level consideration of the topics discussed in 141-142. Emphasis on thermodynamics, kinetics and spectra. Statistical mechanics and quantum theory introduced. *Prerequisite:* 141-142; concurrent enrollment in Math. 22. Three hours. Dr. Flanagan.

246, 249 SPECIAL TOPICS IN PHYSICAL CHEMISTRY Advanced level discussion of specific topics in physical chemistry; molecular and atomic spectra, theory of solutions, quantum theory or statistical mechanics. *Prerequisite:* 247-248 or its equivalent. Three hours. The staff.

341 CHEMICAL THERMODYNAMICS Systematic study of the application of thermodynamics in the solution of chemical problems. *Prerequisite:* 247-248. Three hours. Dr. Criss or Dr. Flanagan.

342 CHEMICAL KINETICS Velocity of chemical reactions in homogeneous and heterogeneous systems. *Prerequisite:* 247-248. Three hours. The staff.

Seminars and Research

Seminars are required of graduate students and juniors and seniors concentrating in chemistry.

181-182 JUNIOR SEMINAR (2-0) One hour. Mr. Lucarini.

183-184 SENIOR SEMINAR (2-0) One hour. The staff.

197-198 SENIOR RESEARCH (0-6, 0-12) The student elects a field for special study in inorganic, analytical, physical or organic chemistry and works under the direction of a staff member. Findings submitted in written form and suitably bound. Required of seniors in the Chemistry Curriculum. Two hours. I. Four hours. II. The staff.

381, 382, 383, 384 GRADUATE SEMINAR (2-0) One hour. The staff.

391, 392, 393, 394 MASTER'S THESIS RESEARCH Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Classics

COLLEGE OF ARTS AND SCIENCES

*Professor Kent¹ (Chairman); Associate Professors Pooley and Gilleland;
Assistant Professor Davison; Instructor Ambrose*

Greek

1-2 ELEMENTARY GREEK Essentials of Attic Greek. Prose compositions and selected readings from Greek authors. No prerequisite. Four hours. Dr. Kent.

11-12 INTERMEDIATE GREEK Plato's *Euthyphro* and *Apology*; selections from the *Iliad* and the *Odyssey*. *Prerequisite:* 1-2 or its equivalent. Three hours. Mr. Pooley and Dr. Davison.

111-112 PROSE COMPOSITION *Prerequisite:* 11-12. One hour. Dr. Gilleland.

201 GREEK ORATORS Selected speeches of Lysias and Demosthenes. *Prerequisite:* 11-12. Three hours. Dr. Gilleland. Alternate years, 1964-65.

202 GREEK COMEDY Two plays of Aristophanes. *Prerequisite:* 11-12. Three hours. Dr. Davison. Alternate years, 1963-64.

203 GREEK HISTORIANS Thucydides, Books I and II; selections from Herodotus and Xenophon's *Hellenica*. *Prerequisite:* 11-12. Three hours. Dr. Kent. Alternate years, 1963-64.

204 GREEK TRAGEDY Sophocles' *Antigone* and Euripides' *Medea*, or two equivalent plays. *Prerequisite:* 11-12. Three hours. Dr. Ambrose. Alternate years, 1963-64.

205 GREEK PHILOSOPHERS Plato, *Republic*, Books I and II; selections from the pre-Socratics and from Aristotle. *Prerequisite:* 11-12. Three hours. Dr. Kent. Alternate years, 1964-65.

¹ Sabbatical leave second semester 1963-64.

252 GREEK EPIGRAPHY Introduction to Greek inscriptions, with emphasis on those of historical interest. *Prerequisite:* 201 or 203. Three hours. Dr. Kent. Alternate years, 1964-65.

381, 382 SEMINAR Graduate level study of Greek authors not read in the candidate's undergraduate program. Credit as arranged. The Staff.

391, 392, 393, 394 MASTER'S THESIS RESEARCH Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

For Greek Literature in Translation, see General Literature 51; for Greek Philosophy, see Philosophy 107.

Latin

1-2 ELEMENTARY LATIN Essentials of Ciceronian Latin. For students who present less than two years of high school Latin.¹ *Credit is allowed only if Latin 11-12 is also completed.* Four hours. Mr. Pooley.

11-12 INTERMEDIATE LATIN Extensive review of Latin syntax. Cicero, *In Catilinam* I, II; *Pro Archia*. Vergil, *Aeneid*, Books I and II. *Prerequisite:* 1-2, or two years of high school Latin. Three hours. Staff.

32 ETYMOLOGY Derivation of English words from Greek and Latin bases. Training in analysis of unfamiliar words; special attention to scientific vocabulary. No previous knowledge of Greek or Latin required. Three hours. Staff.

101, 102 SURVEY OF LATIN LITERATURE Selections from the principal Roman authors, with particular attention to Livy and Horace. The development and decline of various prose styles and poetic forms. *Prerequisite:* 11-12 or three years of high school Latin. Three hours. Drs. Kent and Gilleland.

111-112 LATIN PROSE COMPOSITION May be taken concurrently with Latin 101-102. Required of students who major in Latin and of those who wish to be recommended to teach Latin. *Prerequisite:* 11-12 or three years of high school Latin. One hour. Dr. Ambrose.

203 REPUBLICAN PROSE Reading in Caesar and Sallust, and in the speeches of Cicero. *Prerequisite:* 101, 102. Three hours. Dr. Gilleland.

204 EPIC POETS Reading in Lucretius, Vergil, Ovid, and others. *Prerequisite:* 101, 102. Three hours. Dr. Ambrose.

223 ADVANCED PROSE COMPOSITION *Prerequisite:* 111-112. Three hours. Mr. Pooley.

251 ROMAN LETTERS Selected letters of Cicero, Pliny, and Fronto. *Prerequisite:* 203, 204 or concurrent enrollment. Three hours. Mr. Pooley. Alternate years, 1963-64.

252 COMEDY Two plays of Plautus and Terence. Development of this literary form. *Prerequisite:* 203, 204 or concurrent enrollment. Three hours. Mr. Pooley. Alternate years, 1963-64.

253 ROMAN ORATORY Selections from Cicero's *De Oratore*, *Orator*, and *Brutus*, and from his speeches. Historical development of forensic and other

¹ Students who have completed two years of high school Latin more than two years prior to their entrance into the University may be permitted by action of the department to enroll in Latin 1-2 for credit.

rhetorical canons. *Prerequisite:* Latin 203, 204 or concurrent enrollment. Three hours. Dr. Gilleland. Alternate years, 1964-65.

255 HISTORIANS OF THE EMPIRE Augustus, *Res Gestae*; Tacitus, *Annals*, I-IV; selections from Suetonius and Ammianus Marcellinus. *Prerequisite:* 203, 204 or concurrent enrollment. Three hours. Mr. Pooley. Alternate years, 1964-65.

256 SATIRE Selections from Horace and Persius; Juvenal, *Satires*, I, III, X. Development of this literary form. *Prerequisite:* 203, 204 or concurrent enrollment. Three hours. Dr. Kent. Alternate years, 1964-65.

381, 382, 383, 384 SEMINAR Graduate level study of Latin authors not read in the candidate's undergraduate program. Credit as arranged. The staff.

391, 392, 393, 394 MASTER'S THESIS RESEARCH Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

For Latin Literature in Translation, see General Literature 52; for The Teaching of Latin, see Secondary Education 252.

Commerce and Economics

COLLEGE OF TECHNOLOGY

Professors Lobman (Chairman), Greif, Nadworny and Woodard; Associate Professors Dellin, Huq, LeSourd, Maybury and Nyquist; Assistant Professors Squire, Wick and Wolotkin; Instructors Eldridge, Mills and Widicus

1-2 WORLD ECONOMIC GEOGRAPHY Geography as a basis for economic development; importance of resources to production, exchange, consumption, population, and national economies. Three hours. Dr. Woodard and Dr. Dellin.

11-12 PRINCIPLES OF ECONOMICS Fundamental economic principles as an aid to the understanding of modern economic society. *Prerequisite:* sophomore standing. Three hours. The staff.

13-14 PRINCIPLES OF ACCOUNTING (2-4) Problems of financial control of business, with laboratory practice. *Prerequisite:* sophomore standing. Four hours. Messrs. Nyquist and Wolotkin.

15, 16 ECONOMIC HISTORY OF THE UNITED STATES Analysis of capitalism as first developed in Western Europe and later in the United States as a basis for understanding our modern economic systems. *Prerequisite:* sophomore standing. Concurrent enrollment in 11-12 recommended. Three hours. Dr. Woodard and Mr. Eldridge.

49 GENERAL TYPING Typing techniques and mastery of the keyboard to develop accuracy in typing skill for personal use. Open to all students except secretarial studies majors and business education teacher trainees. Two hours. I and II. Dr. Maybury.

136 ALPHABETIC SHORTHAND AND TRANSCRIPTION Principles of writing shorthand, using letters rather than the traditional shorthand symbols. Writing combined with typing skill through instruction in transcribing on the typewriter. For students who wish skill competency for general or vocational use in a short time. *Prerequisite:* Consent of instructor. Four hours. Dr. Maybury.

165, 166 **BUSINESS COMMUNICATIONS** Principles involved in solving business problems through written communication. Format and composition are considered. Practice in writing letters and reports required. *Prerequisite:* junior standing. Three hours. Dr. Maybury.

169 **OFFICE MANAGEMENT** Organization and supervision of office activities from the standpoint of the office manager; principles and procedures of office job analysis; selection and training of personnel; office structure with regard to production standards, office forms, systems, equipment and supplies, flow of work, physical layout; cost control. *Prerequisite:* senior standing. Three hours. Dr. Maybury.

Banking, Finance, and Insurance

109, 110 **BUSINESS LAW I** First Semester: fundamental legal concepts of the American system of law as related to business, as the law of contracts, sales, bailments, and negotiable instruments. Second semester: the legal aspects of business with reference to the law of agency, partnerships, and corporations. *Prerequisite:* 11-12. Three hours. Mr. Wick.

111 **ECONOMICS OF LIFE INSURANCE** Types of life insurance contracts and their application; premium and reserve computation, social security, and other forms of life insurance. *Prerequisite:* 11-12. Three hours. Dr. Lohman.

112 **PROPERTY AND CASUALTY INSURANCE** Principles underlying property and casualty insurance. *Prerequisite:* 11-12. Three hours. Dr. Lohman.

120 **BUSINESS LAW II** Law in relation to financial instruments; documents of title for collateral security, chattel mortgages, real estate mortgages, and suretyship and guaranty. *Prerequisite:* 109. Two hours. Mr. Wick.

201-202 **MONEY AND BANKING** Functions of money, credit, and banking in modern economic society. The theory of the internal and external value of money; control of the money market; interrelationship of monetary and fiscal policies and their effects upon national and international price movements. *Prerequisite:* 11-12. Three hours. Dr. Lohman and Mr. Widicus.

203 **ECONOMICS OF TAXATION** Revenues and expenditures of federal, state, and local governments and their effects upon individuals, business institutions, and the national economy. *Prerequisite:* 11-12. Three hours. Dr. LeSourd.

204 **STATE AND LOCAL FINANCE** Revenues, expenditures, and debt management problems of state and local governments; analysis of state and local fiscal relationships. Problems, policies and practices in Vermont and neighboring states. *Prerequisite:* 11-12. Three hours. Dr. LeSourd.

205 **INTERNATIONAL TRADE AND FINANCE** Theory of international values, mechanism of adjustment of international balances, foreign exchange theory, international aspects of monetary and banking theory, and tariff theory. *Prerequisite:* 11-12, and a year of history. Three hours. Dr. Huq.

206 **SECURITIES MARKETS** Organization and operation of organized and over-the-counter securities markets; types of securities; primary and secondary markets in the process of capital formation; securities price behavior; government and selfregulation of securities markets. *Prerequisite:* 11-12 and 13-14. Three hours. I. Dr. Lohman.

207 **FINANCIAL MANAGEMENT** The finance function in business: funds procurement and their effective utilization. Case analyses. *Prerequisite:* 11-12 and 13-14 or equivalent. Three hours. II. Dr. Lohman.

208 **INVESTMENT ANALYSIS** Standards used in the analysis of securities; supervision of individual and institutional security investments; current factors influencing security values. *Prerequisite:* 206. Three hours. Dr. Lohman.

Marketing and Merchandising

121 **PRINCIPLES OF MARKETING** The place of marketing in our economy. Analysis of the marketing structure by functions, institutions, and commodities. *Prerequisite:* 11-12. Three hours. Mr. Greif.

122 **PROBLEMS IN MARKETING** Application of the case method to discover solutions to problems which challenge producers and middlemen in marketing goods and services. *Prerequisite:* 121. Three hours. Mr. Greif.

123 **PERSONAL SALESMANSHIP** A practical approach to modern salesmanship through class participation and individual demonstration, emphasizing the approach to, presentation, and close of the sale. *Prerequisite:* 121. Three hours. Mr. Greif.

131 **SALES MANAGEMENT** New and established trends of the sales manager's job. Method of selection, training, testing, compensation, and control; including marketing policies and the coordination of related departmental functions. *Prerequisite:* 121. Three hours. Mr. Greif.

132 **FUNDAMENTALS OF ADVERTISING** Advertising as an economic and social influence. Principles and techniques of copy preparation, media of selection and advertising activities. Practice in preparation of advertising copy and layout. *Prerequisite:* 121. Three hours. Mr. Greif.

228 **ANALYSIS OF CURRENT MARKETING DEVELOPMENTS** Exploration of current marketing developments to gauge their force, direction, and consequences. Topics include: the nature of changes and concentrations in population; income levels; decentralization of shopping centers; government regulation of business and the maintenance of competition. Individual projects required. *Prerequisite:* 121. Three hours. Mr. Greif.

329 **MARKETING MANAGEMENT** Integration and coordination of the marketing function: planning and developing the product; testing, branding, packaging, and labeling; sales program and campaign; sales organization and management; and, control of sales functions. Case analyses. *Prerequisite:* 121 and 228. Three hours. Mr. Greif.

Industrial and Personnel Management

For Motion and Time Study, and Plant Organization, required of students in this option, see Engineering, Mechanical (M.E. 175, 176).

141 **LABOR ECONOMICS** Labor as an economic factor: the labor force, wages, productivity, and income. Wage and hour legislation, social security, and unemployment insurance. History of the American labor movement. *Prerequisite:* 11-12. Three hours. Dr. Nadworny.

143 INDUSTRIAL MANAGEMENT Principles and practices employed in the direction and operation of industrial organizations. Techniques of organization and control of operations. Personnel function in an industrial structure. *Prerequisite:* 11-12. Three hours. Dr. Nadworny.

242 COLLECTIVE BARGAINING Subject matter, problems, and issues of union-management relationships. Structure and functions of collective bargaining in the economy. The grievance process and arbitration. Laws of collective bargaining. *Prerequisite:* 141. Three hours. Drs. Nadworny and Squire.

243 DEVELOPMENTS IN LABOR-MANAGEMENT RELATIONS Analysis of issues in collective bargaining; impact of long-term agreements; shifting wage and related benefits demands; impacts of shifting industrial and occupational structures on collective bargaining; interpretation of federal labor laws in relation to collective bargaining procedures; implications, and limits, of mediation and arbitration in disputes settlement. *Prerequisite:* 242. Three hours.

251 PERSONNEL ADMINISTRATION The field and organization of the personnel function; selecting and training employees; job analysis and evaluation; evaluating employees; wages and wage administration; problems of morale; human relations in the supervision of personnel. *Prerequisite:* 141. Three hours. Dr. Nadworny.

252 EXECUTIVE DECISION-MAKING Synthesis of the management and operation of a firm in terms of production, marketing, personnel, and finance. The process of decision-making, planning and execution of policies. *Prerequisite:* 121, 143, and a course in finance, or consent of instructor. Three hours. Dr. Nadworny.

254 SCIENTIFIC MANAGEMENT AND LABOR Development of scientific management; reactions and relationship of organized labor to it. Long-range effects of scientific management on the structure and policies of industry and organized labor. *Prerequisite:* 143. Three hours. Dr. Nadworny.

256 AMERICAN BUSINESS HISTORY Evolution of firms and industries from relatively small and undifferentiated establishments to large, highly complex institutions of the present day. Selected studies in textiles, machinery, transportation, steel, coal, electric machinery, insurance, communication, retail, and others. The roles of Federal and state governments and of legislation. Developments in American management. *Prerequisite:* 143 or consent of instructor. Three hours.

Accounting

161 INTERMEDIATE ACCOUNTING Accounting records, end-of-year procedures, statements, analysis of working capital, profit and loss analysis, corporations, current and fixed assets, investments, liabilities, reserves, determination of net income, and the statement of application of funds. *Prerequisite:* 13-14. Three hours. Mr. Nyquist.

162 ADVANCED ACCOUNTING Accounting for partnerships, ventures, consignments, installment sales, insurance, statement of affairs, receivers, realization and liquidation, estates, trusts, home offices and branches, and parent and subsidiary accounting. *Prerequisite:* 161. Three hours. Mr. Nyquist.

163 **FINANCIAL STATEMENT ANALYSIS** Analytical study of the balance sheet and income statement. Trend percentages, common-size statements, working capital analysis, ratios, and other methods of analysis. *Prerequisite:* 13-14. Three hours. Mr. Wolotkin.

164 **BASIC FEDERAL TAXES** The federal income tax law; regulations covering taxable income, exclusions and inclusions, allowable deductions, exemptions, gains and losses, accounting methods, and computation of tax for all classes of taxpayers; Federal payroll taxes. Assigned research problems and preparation of tax returns. *Prerequisite:* 13-14. Three hours. Mr. Nyquist.

271 **AUDITING** Theory and practice of auditing applicable to the work of the internal and external auditor; auditor's responsibility, types of audits, and audit programs. Illustrative audit working papers, financial statements, and audit reports prepared and discussed. *Prerequisite:* 162. Three hours. Mr. Nyquist.

272 **COST ACCOUNTING** Manufacturing costs; nature and uses of cost accounting; job-lot cost plan; cost accounting for materials; labor; factory burdens; process manufacturing costs; operational cost accounting; cost standards; residual and by-products; joint products. *Prerequisite:* 13-14. Three hours. Mr. Wolotkin.

276 **C.P.A. PROBLEMS** Review of questions and problems from past C.P.A. examinations. Including: partnerships, corporations, financial statements, auditing, cost accounting, insolvencies, receiverships, liquidations, consolidations, estates, trusts, governmental and institutional accounting methods. *Prerequisite:* 162. Three hours. Mr. Nyquist.

353 **BUDGET PROCEDURE AND CONTROL** Principles and procedures of preparing budgets and analyzing performance under a budgetary program. Development of sales, production, materials, purchases, labor, capital additions, and cash budgets is demonstrated by coordinated problems assignment. *Prerequisite:* 161 or equivalent and 272. Three hours. Mr. Nyquist.

Economics

181 **TRANSPORTATION** Social and economic aspects of transportation problems as revealed by analysis of the nature, history, and problems of transportation agencies of the United States. *Prerequisite:* 11-12; Pol. Sci. 1, 2. Three hours. Staff.

183 **ECONOMIC LIFE AND GOVERNMENT CONTROL** Economic causes and consequences of government regulation and control of business activities. *Prerequisite:* 11-12; Pol. Sci. 1, 2. Three hours.

187, 188 **ELEMENTARY STATISTICS (2-2)** Theory and interpretation of statistics. First semester: data collection, graphical presentation, frequency distribution, measures of central tendency and dispersion, tests of significance, and analyses of variance. Second semester: index number theory and construction, time series, the fitting of linear and non-linear trend lines, and two-variable, multiple and partial correlation. *Prerequisite:* 11-12; Math. 7, 8 or 11. Three hours. Dr. Huq.

286 **ECONOMIC ANALYSIS** Analysis of consumer demand, supply, market price under competitive conditions and monopolistic influences, and the theory of income distribution. *Prerequisite:* 11-12 and one other semester course. Staff.

288 **QUALITY CONTROL (2-2)** Application of statistical tools to industrial problems. Control charts, sampling plans, index numbers, and measurement of trends. *Prerequisite:* 187. Three hours. Dr. Huq.

290 **THE SOVIET ECONOMY** Economic development of the USSR, resource planning and sector growth, geonomic foundation, and foreign economic policies. Seminar. *Prerequisite:* six hours of advanced courses in economics, and six hours of political science or European history; senior standing. Three hours. Dr. Dellin.

291 **ECONOMIC PATTERNS AND POLICIES OF EASTERN EUROPE** An area approach to the resources, organization, and domestic and foreign economic policies of the Communist countries of Eastern Europe, with special emphasis on recent changes. *Prerequisite:* six hours of advanced courses in economics and six hours of political science or European history; senior standing. Three hours. Dr. Dellin.

292 **INTERNATIONAL ECONOMIC PROBLEMS AND POLICIES** Important aspects of international cooperation and conflict in the economic sphere; quest for foreign markets, raw materials, investment opportunities, and population outlets. *Prerequisite:* 11-12. Three hours. Dr. Huq.

293-294 **MONEY, INCOME AND PRICES** Analysis and description of cyclical fluctuations. Second semester: problems of cyclical control, employment, price levels, overall planning. *Prerequisite:* 201-202 or concurrent enrollment. Dr. LeSourd.

295 **HISTORY OF ECONOMIC THOUGHT** Development of economic ideas from classical antiquity to modern times. The Classical, Historical, Socialist, Optimist, Marginalist, and Neoclassical Schools. *Prerequisite:* 286 or 201-202 and consent of instructor. Three hours. Dr. Huq.

296 **MODERN ECONOMIC THOUGHT** Survey of the leading 20th Century economists and their doctrines including: J. B. Clark, Thorstein Veblen, Alfred Marshall, W. C. Mitchell, J. A. Hobson, J. M. Keynes and J. R. Hicks. *Prerequisite:* 295. Three hours. Dr. Huq.

297, 298 **SEMINAR** For students concentrating in the department. Review of recent books and periodical literature; discussions of topics of contemporary interest; student reports based upon personal investigation. *Prerequisite:* senior standing; consent of chairman. Three hours. Staff.

300, 301 **INDEPENDENT READING AND RESEARCH** Designed to meet the special research problems of graduate students. Consent of the department required. Hours to be arranged. The staff.

341 **MANAGERIAL ECONOMICS** Techniques used in management decision-making and forward planning. Demand and cost analysis, forecasting methods, capital management and budgetary planning. *Prerequisite:* 187, 188 or its equivalent and 286. Three hours. Dr. Squire.

342 **OPERATIONS RESEARCH FOR MANAGERIAL ECONOMICS** Application of advanced quantitative methods to operating problems in business. Operations research techniques including programming, both linear and curvilinear, and queuing theory are presented. *Prerequisite:* 341 and mathematics 7, 8 or 11, 12. Three hours Staff.

367 ADVANCED ECONOMIC STATISTICS Theories and techniques of statistical analysis; probability, sampling, design of experiments, tests of statistical hypotheses, statistical estimation, regression, correlation, statistical demand and cost functions, econometric methods and models as tools of structural analysis, economic projections and decision-making. *Prerequisite:* 187, 188 or its equivalent and mathematics 7, 8 or 11, 12. Three hours. Dr. Huq.

377 ADVANCED ECONOMIC THEORY Macro- and micro-economic models presented and analyzed. Advanced market structure theories; theory of games, general equilibrium, and dynamic models. *Prerequisite:* 286. Three hours. Dr. Huq.

391, 392, 393, 394 MASTER'S THESIS RESEARCH Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Secretarial Studies

Students who have had instruction in typing and shorthand in high school will be enrolled in the proper level typing and shorthand courses on the basis of qualifying tests administered during the second semester by the department.

133 ELEMENTARY TYPING Typing technique for beginners. Emphasis on speed and accuracy. Experience with business material, letters and reports, tabulation, typing from rough draft. *Prerequisite:* junior standing or the consent of the instructor. Three hours. Staff.

134 INTERMEDIATE TYPING Further development in typing business forms, statistical matter, and documents. *Prerequisite:* 133 or the consent of the instructor. Three hours. Staff.

135 ADVANCED TYPING Development of typing skills in the production of advanced business projects. Speed and accuracy in production emphasized. *Prerequisite:* 134 or the consent of the instructor. Three hours. Staff.

137 ELEMENTARY SHORTHAND Gregg shorthand writing for the beginner. Shorthand fundamentals and a basic shorthand vocabulary. Application to business material. *Prerequisite:* junior standing or consent of the instructor. Four hours. Staff.

138 INTERMEDIATE SHORTHAND Development of the principles of Gregg shorthand writing. Writing speed and reading ability through dictation and transcription of business material. *Prerequisite:* 137 or the consent of the instructor. Four hours. Staff.

139 ADVANCED SHORTHAND Advanced Gregg shorthand writing; development of word construction in an extensive vocabulary, dictation and transcription practice with a variety of more difficult business and professional material. *Prerequisite:* 138 or the consent of the instructor. Four hours. Staff.

140 TRANSCRIPTION Correlating the skills of shorthand and typing, in transcription of a variety of business problems. *Prerequisite:* 135 and 139 or the consent of the instructor. Seven hours. Staff.

179 SEMINAR Study of basic principles governing secretarial activity on the executive level. A problem solving experience which relates office tasks in proper sequence as found in the functioning office. Development of judgment, initiative, and responsibility for making decisions and executing them. Visits of

specialists in business and field trips for observation of offices are arranged. *Prerequisite:* senior standing. Three hours. Dr. Maybury.

180 EXECUTIVE SECRETARIAL PROCEDURES Synthesis of skills and job knowledge obtained from professional courses efficiently applied to a variety of secretarial duties. Experience in organizing and executing production jobs; delegating tasks to others and supervising them. *Prerequisite:* 179. Three hours. Dr. Maybury.

Dental Hygiene

SCHOOL OF DENTAL HYGIENE

Assistant Professors Sawabini (Chairman) and Quinby; Instructors Bannister, Conklin, Faigel, M. C. Heininger, P. L. Heininger, Howe, Miller, Reiman and Slack

1 ORIENTATION TO DENTAL HYGIENE (1-0) The dental hygiene movement; history, growth, status of dental hygienist, scope of operations, standards and ethics, personal qualifications and personality traits. One hour. Miss Quinby.

2 INSTRUMENTATION (0-6) Principles and technics of instrumentation for scaling and polishing teeth with use of manikins. Examination and charting of mouth and general clinical procedures. Three hours. Miss Quinby and staff.

11 DENTAL ANATOMY (2-4) Anatomy of head and neck; form and structure of teeth, nomenclature and relationship; calcification and eruption of teeth; drawing, carving, and identification of individual teeth. Four hours. Dr. Heininger.

21 GENERAL AND DENTAL HISTOLOGY AND EMBRYOLOGY (1-2) Microscopic structure and development of the basic tissues of the body with emphasis on dental and oral material. Use of microscope, colored slide projections and drawings. Two hours. Dr. Reiman.

32 FIRST AID (1-0) Basic principles of first aid taught to prevent and cope with emergencies that arise in the dental office. One hour. Mrs. Heininger.

53-54 ORAL PATHOLOGY (2-0) (1-0) General pathology of the more common diseases affecting the human body. Pathology of the teeth and their supporting structures. Two hours, first semester; one hour, second semester. Dr. Sawabini.

52 PHARMACOLOGY AND ANESTHESIOLOGY (2-0) The reactions and uses of drugs. Anesthesia, general and local, as used in dental practice. Two hours. Dr. Faigel.

61-62 RADIOLOGY (1-1) Study, demonstration, and practice of the fundamentals of intra-oral radiographic technic including electrophysics; angulation of machine; placing of films and complete processing of films. One hour. Mr. Bannister and Dr. Slack.

72 DENTAL HEALTH EDUCATION (2-0) Demonstrations and practical applications of modern methods of dental health education. Teaching methods; visual aids; surveys and statistics; materials; campaigns; school dental programs. Two hours. Miss Quinby and staff.

74 PUBLIC HEALTH (2-0) Public health as it applies to community sanitation; communicable disease control; organization, powers and function of health departments and voluntary health agencies; relation of dentistry to public health. Two hours. Dr. Howe.

81-82 DENTAL HYGIENE CLINIC PRACTICE (0-15) Clinical practice on patients from simple to more difficult cases with children and adults. Field practice at local dental clinics, hospitals and in Children's Homes. Five hours. Miss Quinby and staff.

91-92 DENTAL ASSISTING, DENTAL MATERIALS, ETHICS AND OFFICE MANAGEMENT (1-0) Principles of professional ethics and economics; office management and essentials of practice building; dental assistant and materials used in dental practice. One hour. Dr. Conklin.

Education

COLLEGE OF EDUCATION AND NURSING

Professors King (Chairman), Kent, Lidral and Pappoutsakis; Associate Professors Mills, Rippha and Steeves; Assistant Professors Adams, Boller, Christensen, Keppel, Leggett, Mour, Petrusich, Ruffer, Schultz, Weinrich and Wills; Instructors Gardner, Greig, Stauff, Marberger and McDonald

1, 2 ORIENTATION TO EDUCATION Orientation to education as a career; consideration of courses and experiences in education curricula, introduction to education as a profession. One hour; two hours. The staff.

7 EDUCATIONAL PSYCHOLOGY Principles of educational psychology as drawn from research, theory, and educational practice. A study of the learning process, its determining conditions, and its results. *Prerequisite:* junior standing (not open to students who take Ed. 145-146). Three hours. Mr. Gardner.

41, 42, 43, 44 TECHNIQUES OF COACHING—FOOTBALL; TRACK AND CROSS COUNTRY; BASKETBALL; BASEBALL Lecture and laboratory. *Prerequisite:* Sophomore standing. Credit only for students in the physical education minor. One hour. Staff.

116 HEALTH EDUCATION Role of the classroom teacher in the program of school and community health. Physical development and well-being of the human body. Two hours or three hours. Mr. Christensen and Mr. Ruffer.

145-146 LEARNING AND HUMAN DEVELOPMENT The developing individual; psychology of learning with particular application to human development; measurement and evaluation of learning and development. *Prerequisite:* junior standing. Three hours. Mr. Gardner and Dr. Rippha.

152 METHODS OF TEACHING SPORTS Fundamental skills, techniques, and teaching methods in team, dual, and individual sports. One hour. The staff.

153 METHODS OF TEACHING DANCE Methods, procedures, and devices in teaching creative rhythm activities and all forms of dance; folk, square, ballroom and modern, for men and women. One hour. Staff.

154 RECREATIONAL LEADERSHIP Recreation and recreation education; theory and practice of recreational activities for youth and adults. Two hours. Mr. Greig.

155 **PHYSICAL EDUCATION IN SECONDARY SCHOOLS** Practice in activity and activity-teaching skills in team, individual, dual, recreational sports and other media of physical education suitable for secondary grades. Two hours. Dr. Leggett.

156 **HISTORY AND PRINCIPLES OF PHYSICAL EDUCATION** The development of physical education; functions of physical education in society; underlying principles and concepts. Three hours. The staff.

158 **ORGANIZATION AND ADMINISTRATION OF HEALTH AND PHYSICAL EDUCATION** Organization and administration of instructional programs, intramurals, interscholastic athletics, school recreational programs, schedules, personnel, budgets, equipment, records, tests, and public relations. Three hours. The staff.

202 **PHILOSOPHY OF EDUCATION** Educational theory and philosophy past and present; contributions of leading educational philosophers; the interrelationships of education, society, and philosophy. *Prerequisite:* senior standing; 12 semester hours in education and psychology or permission of instructor. Three hours. Drs. Boller and Keppel.

205 **HISTORY OF AMERICAN EDUCATION** History of principles and practices in American education as they relate to social, economic, political, and cultural developments. *Prerequisite:* 12 hours in education and psychology, or a major in history. Three hours. Dr. Keppel.

211 **EDUCATIONAL MEASUREMENTS** Essential principles of measurement in education; test construction, application, and analysis. *Prerequisite:* senior standing and 12 semester hours in education and psychology. Three hours. Dr. Steeves.

217 **SECONDARY SCHOOL CURRICULUM** Principles and problems in curriculum development for secondary schools. *Prerequisite:* senior standing and 12 hours of education and psychology. Three hours. Dr. Rippa.

222 **READING PROBLEMS—UPPER GRADES AND JUNIOR HIGH SCHOOL** Principles of remedial teaching, causes of reading difficulties, and materials for remedial work in reading. *Prerequisite:* 12 hours in education and psychology, including an introductory course in the teaching of reading. Three hours. (Not offered 1962-63.)

255 **THE SCHOOL AS A SOCIAL INSTITUTION** The development of a sociological perspective for the analytical exploration of selected public school practices and problems. Sociological and sociopsychological concepts and methods will be drawn from research in other institutional spheres and applied to the study of the school. *Prerequisite:* 12 semester hours in education and psychology or 9 semester hours in sociology. Three hours. The staff.

297, 298 **PROBLEMS IN EDUCATION** Individual research problem to be selected by the student in consultation with a staff member. Enrollment by permission of the Dean and the staff member who will direct the study. Open to seniors and graduate students who have at least 12 hours in education and psychology. Credit to be arranged. The staff.

391, 392, 393, 394 **MASTER'S THESIS RESEARCH** Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Elementary Education

3, 4 CHILD AND COMMUNITY Supervised experiences with children's groups in the community. One hour. Dr. Boller.

100 PHYSICAL EDUCATION IN THE ELEMENTARY SCHOOL Development of a program of physical education for the elementary school. Principles, methods and materials appropriate for the several age and grade groups. Two hours. Miss Stauff.

113 SCHOOL MUSIC Basic principles in elementary school music teaching. *Prerequisite:* Music 9-10 or 1, 2 and 5-6. Three hours. Miss Marberger.

121 TEACHING READING Principles underlying teaching reading; materials of instruction; reading readiness; vocabulary development; development of correct study skills; observation in elementary schools. Three hours. Mrs. Adams.

134 CHILDREN'S LITERATURE Traditional and modern children's literature in prose and poetry; appreciation and evaluation of literature for children of all age levels; techniques of story telling. Three hours. Mrs. Adams.

144 METHODS AND MATERIALS I Curriculum, teaching methods, materials in language arts, social studies, science, and arithmetic in the elementary school. Observations and participation in elementary schools. Three hours. Dr. Boller and Miss Petrusich.

160 METHODS AND MATERIALS II Classroom management, instructional planning, and methods of teaching in all core subjects in the elementary school. Three hours. Dr. Boller and Miss Petrusich.

161 STUDENT TEACHING Seven full weeks of teaching in the elementary schools of Burlington and vicinity under the guidance of cooperating teachers and college supervisors. *Prerequisite:* senior standing; approval of the supervisors of student teaching. Seven hours. Dr. Boller and Miss Petrusich.

170 ART FOR THE ELEMENTARY SCHOOL Purposes and methods of contemporary art education in the development of the child. Lectures, discussions, and direct experience in creative art for classroom teachers. Three hours. Mrs. Mills.

Secondary Education

15 PARTICIPATION Thirty clock hours of observation and participation in classroom work in junior and senior high schools. Discussion meetings on campus. *Prerequisite:* permission of the Department of Education. Two hours. Dr. Steeves and staff.

180 SECONDARY METHODS AND PROCEDURES General methods of secondary school instruction; classroom problems common to all teachers. *Prerequisite:* satisfactory completion of 6 hours in education; senior standing; permission of the Department of Education. Three hours. Dr. Steeves.

181 STUDENT TEACHING IN SECONDARY SCHOOLS Seven weeks of teaching in the public schools of Vermont under the guidance of cooperating teachers, principals, and college supervisors. *Prerequisite:* 15, 180 and Ed. 145-146; high achievement in professional courses and in appropriate teaching fields; approval by the chairman of the Department of Education. Candidates must

make written application at least one full semester in advance of the teaching assignment. Six hours. Drs. Keppel, Rippa and Steeves.

250 GUIDANCE IN EDUCATION Introduction to guidance as an organized function of education; bases of modern guidance practices; the school testing program; relationship of guidance to the curriculum; current approaches to guidance problems of the intellectually gifted; counseling techniques for classroom teachers. *Prerequisite:* senior standing and 12 semester hours in education and psychology. Three hours. Dr. Rippa.

252 TEACHING LATIN Seminar on problems of language, literary interpretation and criticism, Roman civilization, bibliography, with allied studies helpful to prospective teachers. *Prerequisite:* Latin 102 and 112. Three hours. Dr. Kent.

Business Education

104 PRINCIPLES OF BUSINESS EDUCATION Basic principles, practices, problems and trends in business education. *Prerequisite:* Psychology 1. Two hours. Mr. McDonald.

105 TEACHING BUSINESS SUBJECTS Principles and techniques in the organization and the teaching of business subjects in the high school. *Prerequisite:* 104. Two hours. Mr. McDonald.

Music Education

For applied music class study see Music 71, 72 under Music Department.

131 MUSIC METHODS Methods and materials in the teaching of vocal and instrumental music in elementary and secondary schools. *Prerequisite:* Education 145-146 and senior standing in music education. Five hours. Mr. Schultz.

151 STUDENT TEACHING IN MUSIC Seven weeks of teaching in the public schools of Vermont under the guidance of cooperating teachers, principals, and college supervisors. *Prerequisite:* concurrent enrollment in Music Education 131 and approval of the instructor. Seven hours. Mr. Schultz.

290 BASIC CONCEPTS IN MUSIC EDUCATION Disciplinary backgrounds; historical and philosophical foundations; fundamental considerations of the functions of music in the schools; development of a personal philosophy. *Prerequisite:* senior standing as a music education major. Three hours. Dr. Lidral.

291 PSYCHOLOGY OF MUSIC Psychological dimensions of tone and rhythm; the learning process in music; emotional and aesthetic response; musical ability; musical behavior and its measurement; American and European viewpoints and contributions. *Prerequisite:* Education 145-146 or Psychology 1 and 205. Three hours. Dr. Lidral.

Other Courses in Education

In addition to the courses offered during the academic year, the following courses are offered in summer sessions and in the evening division program.

Number	Title	Credit Hours
S7	Educational Psychology	3
S75	Driver Education Workshop, Basic	2
S109	Science Methods	3

S110	Teaching Social Studies (elementary)	3
S114	Music for the Junior High School	3
S115	Guidance of Music Activities—Grades III-VI	3
S117	Alcohol Education	3
S118	Guiding Elementary School Pupils in Music Experiences	3
S119	Elementary School Music (Music for grades I-III)	3
S122	Developmental Reading	3
S127	Science for Teachers	3
S132	Teaching Arithmetic	3
S142	Audio-Visual Materials and Methods	3
S150	Intensive Teacher Training	3
S172	The Creative Process Through Art	3
S175	Driver Education, Advanced	2
S200	The History of Arithmetic	3
S201	Administration of the Athletic Program	3
S203	Principles of Physical Education	3
S204	History of European Education	3
S206	Comparative Education	3
S209	Workshop in the Education of Teachers of the Mentally Retarded	6
S210	Workshop in the Education of Teachers of the Mentally Retarded II	6
S212	Child Development (Adolescent Development)	3
S213	Statistical Methods in Education and Guidance	3
S214	The Slow Learner (Education of the Exceptional Child)	3
S215	The Gifted Child	3
S216	Health Education	6
S218	Workshop in Curriculum	4
S219	Workshop in Economic Education	4
S220	Personality Development and Mental Hygiene	3
S223	Reading Clinic	2-4
S225	Teaching Social Studies in the Secondary School	3
S226	Conservation	6
S227	Teaching Science in the Secondary School	3
S228	Literature in the Junior-Senior High School Curriculum (Literary Criticism for Teachers)	3
S229	Communicative Arts in Secondary Schools (Teaching English in Secondary Schools)	3
S230	The Elementary School Principalship	3
S231	The Secondary School Principalship	3
S232	School Administration	3
S233	Elementary School Supervision	3
S234	Secondary School Supervision	3
S237	Public Relations in Education	3
S241	Science Methods (Science for Elementary Schools)	3
S242	Modern Trends in Elementary Education	3
S243	Reading and Study in the Secondary School	3
S244	Social Studies in the Elementary School	3
S256	Basic Concepts of Mathematics	3

S257	Teaching Mathematics in the Secondary Schools	3
S259	Teaching Foreign Language in the Elementary (Secondary) School	3
S260	Improvement in Teaching Bookkeeping and Basic Business Subjects	3
S261	Seminar in Business Education	3
S262	Principles, Problems, and Trends in Business Education . . .	3
S263	Improvement in Teaching Secretarial Subjects	3
S264	Business Education Curriculum	3
S270	Kindergarten Methods and Organization	4
S271	Laboratory Experiences in Kindergarten Education	4
S275	Analysis of Reading Problems	3
S277	Seminar in Educational Psychology	3
S280	Professional Problems in Education	3
S301	Research Methods in Education	3
S307	Counseling (Techniques and Group Procedures in Guidance)	3
S308	Group Testing in Guidance	3
S309	Administration of the Guidance Program	3
S310	Occupational Information	3
S312	Individual Testing	3
S330	Seminar in Educational Administration (Supervision) . . .	3

Engineering, Agricultural

COLLEGE OF AGRICULTURE AND HOME ECONOMICS

Associate Professors Schneider (Chairman) and Arnold; Assistant Professor Bornstein

1 FARM POWER, MACHINERY AND ELECTRICITY (2-2) Operation and maintenance of internal combustion engines and farm tractors; operation and the maintenance of farm machinery; electricity and the utilization of electricity and electrical equipment on the farm. Not for credit for B.S.A.E. degree candidates. Three hours. Mr. Schneider.

2 FARM STRUCTURES AND UTILITIES AND SOIL AND WATER ENGINEERING (2-2) Construction on the farm; planning and selection of materials. Operation, selection and maintenance of farm water systems and sewage disposal systems. Operation of refrigeration units used on the farm. Soil conservation practices and surveying. Not for credit for B.S.A.E. degree candidates. Three hours. Mr. Schneider.

101 FARM SHOP (0-6) Wood and metal working by hand and machine methods, sheet metal work, welding, rope work and tool fitting, demonstrations and methods of teaching. Problems in safety, shop care, layout, and selection of equipment. *Prerequisite:* sophomore standing. Three hours. Mr. Schneider.

115 DAIRY PRODUCTION ENGINEERING (2-2) Theory, principles, and practices in the operation and selection of milk production and handling equipment. *Prerequisite:* Physics 5 or 14, or permission of the instructors. Three hours. Given jointly with the Animal and Dairy Science Department. Dr. Arnold and Department of Animal and Dairy Science staff. Alternate years, 1963-64.

116 DAIRY PLANT ENGINEERING (2-2) Theory and practical problems in the operation and selection of dairy processing equipment. *Prerequisite:* 115. Three hours. Given jointly with Animal and Dairy Science Department. Dr. Arnold and Mr. Bradfield. Alternate years, 1963-64.

151 FARM STRUCTURES (2-2) Design of farm structures, materials, structural requirements, functional requirements, insulating, heating, and ventilating. *Prerequisite:* C.E. 131 or concurrent enrollment. Three hours. Dr. Arnold. Alternate years, 1964-65.

152 FARM UTILITIES (2-2) Water systems; plumbing; sewage disposal; refrigeration. *Prerequisite:* M.E. 142 or C.E. 162 or concurrent enrollment; Physics 16. Three hours. Dr. Arnold. Alternate years, 1964-65.

154 AGRICULTURAL MACHINERY AND EQUIPMENT (2-2) Theory, design, operation and maintenance of agricultural machinery and equipment. *Prerequisite:* C.E. 130 and C.E. 131. Three hours. Dr. Arnold. Alternate years, 1963-64.

155 SOIL AND WATER ENGINEERING (2-2) Study of hydrologic, hydraulic, and agronomic principles as related to design and installation of drainage and irrigation systems, erosion control facilities, farm and small watershed flood control reservoirs, and stream channel improvements. Philosophy of soil and water conservation. *Prerequisite:* Agronomy 52, C.E. 53 or permission of the department. Three hours. Mr. Bornstein. Alternate years, 1963-64.

156 ELECTRICITY IN AGRICULTURE (2-2) Theory and engineering practices in the application of electricity to agriculture. *Prerequisite:* E.E. 101. Three hours. Dr. Arnold. Alternate years, 1964-65.

158 FARM POWER MACHINERY (2-2) Theory, design, operation, and maintenance of tractors and their engines. *Prerequisite:* M.E. 113, C.E. 131 or concurrent enrollment. Three hours. Dr. Arnold. Alternate years, 1963-64.

181, 182 JUNIOR SEMINAR (1-0) Review and discussion of current agricultural engineering research, student reports and studies of agricultural engineering problems. *Prerequisite:* junior standing and permission of the department. One hour. The staff.

183, 184 SENIOR SEMINAR (1-0) Review and discussion of current agricultural engineering research, student reports and studies of agricultural engineering problems. *Prerequisite:* 181, 182 or permission of the department. One hour. The staff.

Engineering, Civil

COLLEGE OF TECHNOLOGY

Professor Milbank (Chairman); Associate Professors Knight, Root and Fay; Instructors Eldred and Tortoriello

24 STATICS (3-0) Fundamentals of statics; composition and resolution of forces; the analysis of force systems in two and three dimensions, centroids and moments of inertia. *Prerequisite:* Math. 21 or concurrent enrollment. Three hours. I, II.

51, 52 SURVEYING (3-4) First semester: fundamental surveying methods; measurement of lines, angles and difference in elevation; surveying; areas; topo-

graphic plotting; elementary engineering astronomy; electronic computer application. Second semester: elements of photogrammetry and photo interpretation; geodetic surveying; theory of curves; earthwork calculations. *Prerequisite:* Math. 11; 51 or 53 for 52. Four hours.

53 PLANE SURVEYING (3-4) Use of the steel tape, level, and transit; elements of topographic surveying; special problems as presented and solved in fields affected. For those not enrolled in civil engineering. *Prerequisite:* Math. 10 or 11 or 2. Four hours.

113 CONCRETE AND BITUMINOUS LABORATORY (0-3) Testing materials used in concrete and bituminous mixtures; design of mixes to obtain specified compressive and flexural strengths; investigations of durability, yield, economy, and the effect of admixtures. *Prerequisite:* 131 and 173 or concurrent enrollment. One hour.

114 MECHANICS OF MATERIALS LABORATORY (0-3) Experimental stress analysis methods; fundamental properties of metals, plastics, and wood; the effects of size, shape, method and speed of loading, and strain history on these properties. *Prerequisite:* 131. One hour.

130 DYNAMICS (3-0) Fundamentals of kinematics covering rectilinear and curvilinear motion, relative motion, Coriolis acceleration, translation, rotation, and plane motion. Fundamentals of kinetics covering translation, rotation, and plane motion of particles and rigid bodies; work, energy, power; impulse and momentum; simple harmonic motion. *Prerequisite:* 24, also Math. 21. Three hours. I, II.

131 MECHANICS OF MATERIALS I (3-0) The elastic and plastic behavior of materials; normal and shearing stresses from axial, torsional, and flexural loading combinations; deflections due to torsion and bending; applications to statically indeterminate members; analysis of plane stress and strain; failure theories, and design criteria. *Prerequisite:* 24; also Math. 21. Three hours. I, II.

140 STATICALLY DETERMINATE STRUCTURES (3-3) Analysis and design of statically determinate structures; prefaced by consideration of function, expected loads, reactions, material choice, and layout of members. Influence lines; criteria for positioning moving loads; design of steel and timber members under combined bending and axial load; base plates; eccentric connections. Laboratory practice in graphic statics and design computations, including use of electronic computation methods. *Prerequisite:* 131. Four hours.

151 ENGINEERING CONTRACTS (2-0) Contract law and engineering specifications, ethics and professional conduct. *Prerequisite:* junior standing. Two hours. II.

155 REINFORCED CONCRETE (3-0) Analysis of stresses in plain and reinforced concrete members. Design of reinforced concrete structures. Theory of prestressed concrete. *Prerequisite:* concurrent enrollment in 175. Three hours.

158 SUBSTRUCTURE ANALYSIS AND DESIGN (3-3) Evaluation of subsoil conditions and earth pressures; design of retaining walls, substructures for buildings and bridges, and cofferdams. *Prerequisite:* 155 and 173. Four hours.

162 HYDRAULICS (3-0) Mechanics of liquids; flow meters; flow in pipe systems; flow in open channels; elements of fluid mechanics; elements of hydraulic machinery. *Prerequisite:* 130 and M.E. 113. Three hours.

165 **SANITARY ENGINEERING I (3-0)** Quantities of water and waste water; the role of the earth sciences in the development and control of surface and ground water supplies, transmission of water and waste water. *Prerequisite:* 162. Three hours.

166 **SANITARY ENGINEERING II (2-3)** Characteristics of water and waste water; study of basic mechanisms involved in treatment, role of microbiology in waste stabilization, natural purification of streams. Laboratory pilot plant studies, chemical and biological analyses. *Prerequisite:* 162, 165, Chem. 1-2. Three hours.

168 **HYDRAULICS LABORATORY (0-3)** To be taken in conjunction with 162. Laboratory studies for illustration of theory and behavior of metering devices; pipe line flow and hydraulic machinery. One hour.

173 **SOIL MECHANICS I (2-3)** Identification, description, and physical properties of soils; subsurface exploration; engineering characteristics of natural deposits of soil. Stress distribution, consolidation of soil masses, shear strength evaluation, and stability of slopes. Laboratory practice in sampling, classification, and testing for index properties. Introduction to experimental methods in permeability, consolidation, and shear testing. *Prerequisite:* 140. Three hours.

174 **TRANSPORTATION ENGINEERING (3-0)** Relation of highway, waterway, railway, pipeline, and airway transportation. Consideration of economic and planning studies, soils, drainage, highway and airport surfaces, geometric design of modern highways. Design of municipal airports with access roads. *Prerequisite:* 173. Three hours.

175 **INDETERMINATE STRUCTURES I (3-0)** Analysis of statically indeterminate structures by consistent deformation, least work, slope deflection, and moment distribution; prefaced by determinations of deflections by virtual work, moment area, conjugate beam, and Williot-Mohr diagram. Continuous structures and rigid frames considered. *Prerequisite:* 140. Three hours.

176 **ADVANCED STRUCTURAL DESIGN (3-3)** Advanced theory and design of structures with emphasis on continuous frames and trusses. Consideration of wind stress analysis, space frames, moment connections, and camber diagrams. Comparative studies of specifications for design in steel; aluminum design. Laboratory problems in design of steel building frames and continuous highway girder and truss bridges. *Prerequisite:* 175. Four hours.

231 **MECHANICS OF MATERIALS II (3-0)** Study of stresses and strains at a point under plane and three-dimensional loading using Mohr's circle; failure theories; energy methods; plastic design; buckling of plates and shells. *Prerequisite:* 176 or concurrent enrollment. Three hours.

232 **ADVANCED DYNAMICS (3-0)** Study of Coriolis acceleration; gyroscopic forces; dynamic measurements; vibrations, earthquakes, and blast shocks on structures. *Prerequisite:* 130, 131, Math. 211. Three hours.

234 **ADVANCED MECHANICS OF MATERIALS (3-0)** The theory of elasticity with applications to curved beams, combined stresses, torsion of non-circular sections; relaxation procedures. *Prerequisite:* 131, Math. 212. Three hours.

235 **PHOTOELASTICITY (2-3)** Development of the theories of photoelastic stresses analysis; model similitude; correlation with other stress analysis techniques. Laboratory work on two-dimensional applications such as stress con-

centrations around holes, notches, and fillets. *Prerequisite:* 131, Math. 211. Three hours.

261 **HYDROLOGY (3-0)** Basic theory of precipitation, run-off infiltration and ground water; precipitation and run-off data; application of the data for use in development of natural water resources. *Prerequisite:* 162 or M.E. 142. Three hours.

262 **WATER POWER ENGINEERING (3-0)** Hydrologic, hydraulic, and geologic studies of water power sites; selection of turbines and equipment; economic considerations. *Prerequisite:* 162 or M.E. 142. Three hours.

273 **SOIL MECHANICS II (3-0)** Index and engineering properties of soils with emphasis on current research problems. Critical evaluation of the theories of ground water movement, frost action, consolidation, shearing strength, and stress distribution. Case histories and comparison of failure conditions with predictions based on laboratory tests. *Prerequisite:* 173. Three hours.

274 **SOIL ENGINEERING (3-0)** Applications of soil mechanics to special problems of earth structures and foundations. Topics considered include bearing capacity evaluation, earth pressures, stabilization, effects of vibratory loading, earth dam and roadway construction. *Prerequisite:* 273. Three hours.

275 **INDETERMINATE STRUCTURES II (3-0)** Analysis of trusses with redundant members, elastic weights and column analogy methods for indeterminate frames, plastic methods for gable frames. *Prerequisite:* 175. Three hours.

391, 392, 393, 394 **MASTER'S THESIS RESEARCH** Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Engineering, Electrical

COLLEGE OF TECHNOLOGY

Professors Essler (Chairman) and Smith; Associate Professors Hoilman¹, Rush and Shorey; Assistant Professor Dudevoir

25-26 **ELECTRIC CIRCUITS I (3-3)** Basic electric circuit elements and their behavior in d-c and a-c circuits with lumped constants. Magnetic circuits and electro-magnetic interactions. *Prerequisite:* Physics 14, concurrent enrollment in Math. 21 and Physics 15 for 25, Math. 22 and Physics 16 for 26. Four hours.

101, 102 **ELECTRICAL ENGINEERING PRINCIPLES (3-3)** Principles of electric and magnetic circuits; application of these principles to the theory and performance of selected power, control and communication equipment. *Prerequisite:* Math. 22 and Physics 15, 101 for 102. Four hours.

109, 110 **ELECTRONICS I (3-0), (3-3)** Physical principles of vacuum tubes, gas tubes and solid-state devices. Analysis and design of circuits used in communication equipment. *Prerequisite:* 26 or 102 or Physics 242 and permission of instructor for 109; and 125 or Physics 115 and permission of instructor for 110. Three hours for 109, four hours for 110.

¹ On Sabbatical leave second semester 1962-63.

116, 117 ELECTRIC MACHINES (3-3) A study of the principal types of rotating machinery from the physical and mathematical standpoint. *Prerequisite:* E.E. 125. Four hours.

125 ELECTRIC CIRCUITS II (3-3) Polyphase electric circuits, non-sinusoidal waves, coupled circuits and transformers, and applications. *Prerequisite:* 26 or Physics 242 and permission of instructor; concurrent enrollment in Math. 211. Four hours.

126 CIRCUITS AND FIELDS I The transient behavior of electro-mechanical circuits and of electromagnetic wave theory. *Prerequisites:* 125 or Physics 242 and permission of instructor; Math. 211. Three hours.

203 ELECTRONICS II Analysis and design techniques for transistor and vacuum tube circuits. Fourier and graphical representation of signals. Relation of gain, band width and noise to signal amplification and transmission. *Prerequisite:* 110. Four hours.

204 ELECTROMAGNETIC WAVE THEORY Maxwell's equations, the Poynting vector, guided waves and radiation. Engineering applications are stressed. *Prerequisite:* 110 and Math. 211. Three hours.

206 U.H.F. CIRCUITS (3-3) Circuits and techniques for use at ultra-high frequencies. *Prerequisite:* 203 and 225. Four hours.

207, 208 SPECIAL TOPICS (2-3) Formulation and solution of theoretical and practical problems dealing with electrical circuits, apparatus, machines or systems. *Prerequisite:* 125. Three hours.

209 TRANSIENT PHENOMENA (2-2) Mathematical investigation of transient phenomena in electrical and electromechanical circuits. *Prerequisite:* 126. Three hours.

210, 311 SERVOMECHANISMS First semester: A study of the theory, performance and stability of servomechanism systems of control. Second semester: Multiple loop systems; position control systems with load disturbances; synthesis of servo systems. *Prerequisite:* 101 or 116, 126 or Physics 242, Math. 211 and permission of instructor; 210 for 311. Three hours.

211 ELECTRIC UTILITIES (3-0) Organization of the electrical utility; elementary corporate finance; economics of location, conductor size, station and line costs; rate structures; regulatory bodies. *Prerequisite:* senior standing in electrical engineering and permission of the instructor. Three hours.

212 POWER SYSTEMS (3-0) Machine and line transients; steady state and transient stability of power systems; relay systems; circuit breakers; lightning; fault studies; coordination of power and telephone systems. *Prerequisite:* senior standing in electrical engineering and permission of the instructor. Three hours.

214 INDUSTRIAL POWER APPLICATION (3-0) Design and application of d-c and a-c motor drives for industrial plants; magnetic and electronic controls; duty cycles; acceleration, retardation and braking; power supplies and distribution systems. *Prerequisite:* 102 or 117, and permission of instructor. Three hours.

225, 226 CIRCUITS AND FIELDS II (3-3), (3-0) Behavior of electric filters, lines and fields with applications to power, communication and control systems. *Prerequisite:* 125 and 126, 225 for 226. Three hours.

230 CREATIVE ENGINEERING (4-0) Creative techniques and problems approach to applications of these methods to current industrial problems. *Prerequisite:* Math. 211, at least four hours in Electricity and Magnetism or Electrical Engineering in courses numbered above 100, and permission of instructor. Three hours.

231 TRANSISTORS (2-0) Fundamental principles of semi-conductor operation. P and N type conductivity; the PN junction; construction of the junction transistor. Circuit analysis of transistor operation in terms of hybrid parameters. Biasing methods for stabilization in multistage amplifiers. Equivalent circuits for high frequency operation; oscillators and pulse switching circuits. *Prerequisite:* 110. Two hours.

235 NETWORK SYNTHESIS (3-0) Basic principles of passive electrical network synthesis; energy relations, physical realizability, two terminal network synthesis; approximation methods; properties and synthesis of four-terminal networks. *Prerequisite:* 126. Three hours.

241 DIGITAL COMPUTER LOGIC, CIRCUITS, AND SYSTEMS The logical design of automatic digital computers treats computers as tools of applied mathematics. Brief review of the arithmetic and numerical analysis the designer needs; Boolean algebra as an aid to circuit design. Circuits and components for the transmission, storage and modification of information are discussed, and their combination into arithmetic units, memory devices, program controls and other major mechanisms is studied. Reference is made to the existing computer art as it appears in patents and in commercially available computers for business and scientific computation. *Prerequisite:* 110 or Physics 171 and Math. 121. Three hours.

245 INFORMATION-TRANSMISSION SYSTEMS (3-0) Introduction to information transmission; modulation and demodulation; noise and noise figures; comparison of information transmission systems and statistical methods used in information systems. *Prerequisite:* 126. Three hours.

246 INFORMATION THEORY (3-0) Introduction to probability concepts of information theory; entropy of probability models; theoretical derivations of channel capacity; coding methods and theorems, sampling theorems. *Prerequisite:* Math. 22. Three hours.

261 RADIATION ELECTRONICS (1-3) Electronic techniques for the detection and measurement of radioactivity: ionization chambers, geiger counters, proportional counters, scintillation counters, neutron counters, coincidence circuits, ratemeters, and scalars. *Prerequisite:* Physics 16 or 172. Two hours.

275 SOLID STATE PHYSICAL ELECTRONICS Electrical conduction phenomena in semi-conductors, junction transistors and thermionic emitters. The ideas developed are applied to various solid state devices. *Prerequisite:* 102 or 109 or Physics 172. Three hours.

281, 282, 283, 284 SEMINAR Presentation and discussion of advanced electrical engineering problems and current developments. *Prerequisite:* senior or graduate engineering enrollment. One hour.

301 NONLINEAR SYSTEM ANALYSIS Principal methods of solving nonlinear problems. Topological, analytical, graphical, and numerical methods; the general theory of nonlinear oscillation and stability; application of theory to numer-

ous oscillatory problems. *Prerequisite:* Math. 211 and degree in Physical Sciences or Engineering. Three hours.

391, 392, 393, 394 **MASTER'S THESIS RESEARCH** Investigation of research topic under the direction of an assigned staff member culminating in an acceptable thesis. Credit as arranged.

Engineering, Mechanical

COLLEGE OF TECHNOLOGY

Professors Outwater (Chairman) and Tutbill; Associate Professors Carpenter, Duchacek and Marshall

3 **ENGINEERING PROBLEMS** Nature of engineering principles and the kinds of work done in the fields of engineering. Development of skill and systematic methods in the solution of problems related to engineering. Enrollment restricted to freshman engineering students. One hour.

51, 52 **MANUFACTURING PROCESSES (1-3)** Metal machining, casting, welding forming and inspection methods including economic factors and choice of methods. Laboratory involves further study of variables, applications and limitations of some of the more common processes. *Prerequisite:* E.G. 2; 51 for 52. Two hours.

84 **MECHANICAL INSTRUMENTATION (1-0)** Engineering measurement, laboratory instruments, their use, limitation and calibration. *Prerequisite:* concurrent enrollment in 92. One hour.

92 **THERMODYNAMICS I (2-0)** Engineering thermodynamics with particular emphasis on energy forms, the development of thermodynamics laws, equilibrium, fixed and variable mass systems, reversibility, and entropy. *Prerequisite:* Math. 21, Physics 15. Two hours.

111 **THERMODYNAMICS II (3-3)** Properties and processes of fluids; the perfect gas, and approximate relationships for real gases; application of thermodynamics principles to areas such as combustion, mixtures, power cycles, gas compression, and refrigeration. Laboratory on problems and analysis. *Prerequisite:* 92. Four hours.

113 **THERMODYNAMICS AND HEAT TRANSFER (3-0)** Fundamental principles of engineering thermodynamics; application of these principles to thermodynamic cycles, prime movers, compressors, heat transfer. *Prerequisite:* Physics 15; Math. 21. Three hours.

117 **MECHANICAL ENGINEERING LABORATORY (0-3)** Coordinated with M.E. 111 to verify and demonstrate thermodynamic principles and applications. Steam calorimetry, the first law with both fixed and variable flow, combustion, air compression, refrigeration. *Prerequisite:* concurrent enrollment in 111. One hour.

132 **MECHANISMS (3-3)** Analysis and synthesis of displacements, velocities, and acceleration in machines; application of analyses to cams, gears, and other mechanisms, with emphasis on graphical methods. Study of rolling contact, cam and gear design, flexible connectors, computing mechanisms, and miscellaneous mechanisms. *Prerequisite:* E.G. 2; C.E. 130. Four hours.

135 MACHINE DESIGN I (3-0) Statically indeterminate members, deflection of beams, columns, connections, energy methods, theories of failure, continuous beams, thick-walled cylinders. *Prerequisite:* 132, C.E. 131. Three hours.

142 FLUID MECHANICS (3-0) Fluid statics. Kinematics of fluid flow; thermodynamics of steady flow of any fluid; dynamics of an ideal fluid; viscosity; dimensional analysis and dynamic similarity; pipe and channel flow for incompressible fluids; momentum and propulsion; resistance and lift of immersed bodies; compressible fluid flow in nozzles; mathematical study of fluid motion. *Prerequisite:* 111 or 113; C.E. 130. Three hours.

164 AIR CONDITIONING (3-3) Application of the fundamental principles of thermodynamics, heat transfer and fluid mechanics to the design and performance of air conditioning systems and equipment. *Prerequisite:* 111 or 113; 142. Four hours.

174 INDUSTRIAL ENGINEERING (3-0) Principles of industrial organization, plant facilities and layout, production and quality control, motion and time study, wage incentives and job evaluation. *Prerequisite:* Inspection trip. Three hours.

175 MOTION AND TIME STUDY (2-3) Principles and methods of analyzing work; job improvement; stop watch studies; elemental and predetermined time standards and miscellaneous related topics. *Prerequisite:* junior or senior standing. Three hours.

176 PLANT ORGANIZATION (2-6) Analysis of plant requirements as to location, layout and materials handling; plant services and maintenance. *Prerequisite:* junior or senior standing. Four hours.

191, 192 THESIS (0-9) Investigation of a research or design project under the supervision of an assigned staff member culminating in an acceptable thesis. *Prerequisite:* senior standing and the approval of the department. Three hours.

202 ADVANCED MECHANICS (3-0) Development of the foundations of mechanics leading to Hamilton's principle and LaGrange's equations; vibration and stability of systems with many degrees of freedom; gyroscopic effects in mechanical systems; systems with variable co-efficients and non-linear systems. *Prerequisite:* 252. Three hours.

211 ADVANCED MECHANICAL STRUCTURES I (3-0) The torsion problem and membrane analogy; thick cylinders and rotating discs; beams on elastic foundation and the bending of plates and shells. *Prerequisite:* 252, Math. 211. Three hours.

222 ADVANCED MECHANICAL STRUCTURES II (3-0) Stress and strain at a point in three dimensions; the theory of elasticity with two-dimensional examples; development of strain energy method with applications to beams, curved bars and plates; elastic bodies in contact. Advanced properties of materials. *Prerequisite:* 211. Three hours.

232 COMPRESSIBLE FLOW (3-0) One-dimensional compressible flow; unsteady fluid motions; two-dimensional flow at subsonic and supersonic speeds. *Prerequisite:* 243. Three hours.

243 ADVANCED FLUID MECHANICS AND FLUID MACHINERY (3-3) Steady compressible flow; compressible flow in pipes and channels with heat and friction; boundary layer effects; general features and factors influencing design of fluid machinery; performance features of pumps, compressors, fluid couplings, torque converters, turbines; fluid vibrations; mathematics of two-dimensional flow, vorticity and circulation, stream functions. *Prerequisite:* 142 and Math. 211. Four hours.

246 AERODYNAMICS (3-0) Application of the principles of fluid mechanics to the design and performance of aircraft; fluid dynamics; experimental facilities; airfoil characteristics; aspect ratio and plan-form influences; viscosity phenomena as applied to boundary layer; transition and separation on various shapes; compressibility phenomena; the optimum airfoil; performance. *Prerequisite:* 142. Three hours.

252 MACHINE DESIGN II (3-3) A continuation of 134 with emphasis on the dynamics and vibration of machines. Design problems correlating various engineering fundamentals and considering practical limitations. *Prerequisite:* 52, 135. Four hours.

262 ADVANCED HEAT POWER ENGINEERING (3-3) Application of theoretical thermodynamic cycles to actual plant and machine; analysis of the elements of internal combustion engines, gas turbines, and steam power plants; investigation of nuclear and other energy sources; development of station energy balances; economic factors. *Prerequisite:* 111 or 113, 266. Four hours.

266 HEAT TRANSFER (3-0) Fundamental principles of heat transfer; conduction, convection, radiation; steady and unsteady state; the electric analogy; applications to heat transfer equipment. *Prerequisite:* 111 or 113 and Math. 211. Three hours.

267 ADVANCED THERMODYNAMICS (3-0) A rigorous, detailed study of the laws of thermodynamics and of ideal and actual thermodynamic processes. *Prerequisite:* 111 or 113 and Math. 211. Three hours.

271 INDUSTRIAL MATERIALS (3-0) Fundamentals of ferrous and non-ferrous physical metallurgy, and non-metallic materials. The correlation of the microscopic structure and physical properties of metals, alloys and plastics with their heat treatments and uses. *Prerequisite:* Chem. 2; Physics 16. Some laboratory work required. Three hours.

272 MECHANICAL BEHAVIOR OF MATERIALS (3-0) Elastic and plastic behavior of single crystals and polycrystals; dislocations; approximate plastic analysis; anisotropic materials; hardness; residual stress; brittle, transitional and ductile fractures; fatigue; damping; creep and surface phenomena. *Prerequisite:* 271. Three hours. Some laboratory work will be required.

284 ADVANCED HEAT ENGINES (3-0) Application of engineering science to specific types of heat engines according to the interest of the students. *Prerequisite:* 111, 142, 266. Three hours.

294 ENGINEERING ANALYSIS (0-3) Application of scientific principles to the analysis of comprehensive engineering problems. Emphasis given to the development of a well ordered logical approach to the statement and solution of problems and to the conclusions and decisions involved. *Prerequisite:* senior standing. One hour.

301 ADVANCED MACHINE DESIGN (3-0) Advanced mechanics of materials and applications to mechanical design according to the interests of the student. *Prerequisite:* 136. Three hours. I or II.

391, 392, 393, 394 MASTER'S THESIS RESEARCH Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Engineering Graphics

COLLEGE OF TECHNOLOGY

Associate Professor Paquet

1 MECHANICAL DRAWING (0-6) Fundamentals of drafting; use of instruments, freehand lettering, orthographic projection, sections, auxiliary views, dimensioning, screw threads and elementary pictorials. Two hours.

2 DESCRIPTIVE GEOMETRY (0-6) The fundamentals of descriptive geometry; point, line and plane problems, revolution, single curved, warped and double curved surfaces, intersection and development of surfaces. Two hours.

3 GRAPHICS (0-3) Use of drafting methods in solving engineering, scientific and mathematical problems to supplement the conventional representational uses. Topics covered include projective constructions, periodic curves, empirical equations and graphical calculus. *Prerequisite:* 1 or concurrent enrollment. One hour.

4 ADVANCED GRAPHICS (0-3) Advanced descriptive geometry, graphical scales, elementary nomography, and new methods in the field of pictorials. *Prerequisite:* 1; 2 or concurrent enrollment. One hour.

6 NOMOGRAPHY (0-3) Theory and construction of graphical computing charts. *Prerequisite:* 1 and 2. One hour.

English

COLLEGE OF ARTS AND SCIENCES

Professors Bogorad¹ (Chairman), Bandel, Hughes², Marston³, Pope and Trevithick; Associate Professors Jones, Long, McArthur and Wainwright; Assistant Professors Caswell, Cochran, Orth and Woodruff; Instructors Arnold, Fosso, Grenthot, Hall, Hopkins, Murbe, O'Hara, Platzker, Poger, Stranberg and Weaver

1-2 FRESHMAN ENGLISH Study and discussion of selected literary works and writing compositions related to them, to encourage reading with understanding and enjoyment and to develop clear and effective expression. Required of all freshmen. Three hours. The staff.

16 EXPOSITORY WRITING Writing and analysis of expository essays. *Prerequisite:* 1-2. Three hours. I, II. Dr. Long.

18 CREATIVE WRITING Writing short stories, novels, poetry, plays, and imaginative essays. Instruction is guided by the particular needs and talents of the students. *Prerequisite:* 1-2. Three hours. Dr. Bandel.

¹ Sabbatical leave first semester 1963-64.

² On leave second semester 1962-63.

³ Sabbatical leave first semester 1962-63.

25, 26 **WORLD LITERATURE** A detailed study, in English translation, of selected masterpieces of world literature. Lectures, discussions, and reports. *Prerequisite:* 1-2. Three hours. The staff.

27, 28 **ENGLISH-AMERICAN LITERATURE** Selected English and American authors from early to modern times. Required of students concentrating in English. Lectures, discussions, and reports. *Prerequisite:* 1-2. Three hours. The staff.

102 **MEDIEVAL LITERATURE** The forms (in translation) of medieval literature and middle English texts, excluding Chaucer. Lectures, discussion, and reports. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Hughes. Alternate years, 1963-64.

133, 134 **THE DEVELOPMENT OF AMERICAN LITERATURE** The emergence and growth of a national literature, including both major and minor figures. First semester: Colonial times to the Civil War; second semester: from the Civil War to the present. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Orth.

192 **MAJOR CONCEPTS IN ENGLISH LITERARY HISTORY** Twelve to fifteen broad studies of literary genres, trends, influences, periods, movements, and ideas. Lectures by various members of the Department on the broad aspects of their special fields. Discussions, seminars, and student papers under the direction of a coordinator. *Prerequisite:* 25, 26 or 27, 28. Three hours. Coordinator and staff.

201 **CHAUCEER** The principal works of Chaucer, with emphasis on Chaucer's literary scope, talents, and position in medieval literature. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Hughes.

206 **ELIZABETHAN DRAMA** Drama in England from its beginning to 1642, exclusive of Shakespeare. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Long. Alternate years, 1963-64.

207-208 **SHAKESPEARE** Literary study and textual interpretation of most of Shakespeare's works. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Bandel.

209, 210 **ELIZABETHAN PROSE AND POETRY** The major writers of the Tudor and Stuart periods: English prose from the early humanists to the Restoration; English poetry from Wyatt and Surrey to Donne and his followers, including the development of Elizabethan lyric poetry. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Long. Alternate years, 1964-65.

212 **MILTON** The works of Milton including *Paradise Lost*, *Paradise Regained*, *Samson Agonistes*, some of the minor poems, and selections from the prose works. Lectures, discussions, and reports. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Bogorad. Alternate years, 1963-64.

217 **RESTORATION AND EIGHTEENTH-CENTURY DRAMA** Development of English drama from Dryden to Sheridan. The lectures, discussions, and reports consider the literary and theatrical qualities of representative plays. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Bogorad. Alternate years. 1964-65.

218 **RESTORATION AND EIGHTEENTH-CENTURY PROSE AND POETRY** The works, including selected novels, of significant writers from Dryden to Johnson. Particular emphasis on the development of the essay, the satires of Pope and Swift, and the works of the Johnson-Boswell circle. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Bogorad. Alternate years. 1964-65.

221, 222 **THE ROMANTIC PERIOD** First semester: development of the Romantic Movement through Wordsworth and Coleridge; second semester: Byron, Shelley, Keats, and other Romantic poets and prose-writers. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Jones.

227, 228 **ENGLISH NOVEL** English fiction from its origins through the nineteenth century. Masterpieces are stressed and read critically. *Prerequisite:* 25, 26 or 27, 28. Three hours. Mr. Wainwright. Alternate years, 1963-64.

231, 232 **VICTORIAN LITERATURE** A study of the lives and the works, except the novels, of the significant writers from 1832 to 1900. *Prerequisites:* 25, 26 or 27, 28. Three hours. Mr. Wainwright. Alternate years, 1964-65.

237 **MODERN NOVEL** Representative British and American novelists since 1915. Limited to seniors, except with permission of the instructor. *Prerequisite:* 25, 26 or 27, 28. Three hours. Drs. Cochran and Marston.

238 **MODERN DRAMA** European and American plays which represent the principal trends in the dramatic renaissance of the late nineteenth and the twentieth centuries. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Bandel.

239 **MODERN POETRY** *Prerequisite:* 25, 26 or 27, 28. Three hours. Mr. Wainwright.

240 **MODERN SHORT STORY** Short stories of outstanding modern writers; recent techniques and trends in this type of literature. Limited to seniors, except with permission of the instructor. *Prerequisite:* 25, 26 or 27, 28. Three hours. Mr. Wainwright.

244 **MODERN IRISH LITERATURE** A study of Irish literature from 1890 to the present with emphasis on Yeats and Joyce. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Caswell. Alternate years, 1963-64.

251, 252 **AMERICAN NOVEL** Masterpieces of nineteenth-century American fiction selected on the basis of literary merit. Lectures, class discussions, oral and written reports. First semester: Hawthorne, Melville, and others; second semester: Mark Twain, Howells, James and others. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Trevithick. Alternate years, 1964-65.

253 **AMERICAN COLONIAL LITERATURE** Intellectual and literary origins, in the seventeenth and eighteenth centuries, of American culture. Works of Edwards, Taylor, Franklin, Woolman, Hamilton and Jefferson. Lectures, discussions, oral and written reports. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Trevithick. Alternate years, 1963-64.

254 **EMERSON, THOREAU AND THEIR CIRCLE** The essays, journals, and poetry of Emerson, and Thoreau's *Walden*. Minor writers in the group will receive briefer treatment. Lectures, discussions, oral and written reports. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Trevithick. Alternate years, 1963-64.

256 **LITERATURE OF THE AMERICAN FRONTIER** Frontier, local-color and regional writing in America from the eighteenth century to the First World War, including Parkman, Harte, Mark Twain, Garland and others. Lectures, discussions and reports. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Marston. Alternate years, 1963-64.

258 AMERICAN POETRY Major American poets from the 18th century to the First World War, including Poe, Whitman, Emily Dickinson, Robinson, Frost, and others. Lectures, discussions and reports. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Marston. Alternate years, 1964-65.

260 MODERN ENGLISH Descriptive study of the structure of Modern American English. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. McArthur.

261 OLD ENGLISH The sounds, words and structure of Old English; simple prose texts and selected passages from *Beowulf*. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. McArthur. Alternate years, 1964-65.

271 BIBLIOGRAPHY Methods of literary study, research, and scholarship. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Pope.

272 HISTORY OF CRITICISM Principles and theories of criticism from Aristotle to the twentieth century. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Jones. Alternate years, 1963-64.

273 TECHNIQUE AND CRITICISM OF POETRY Poetic theory with close analysis of selected poems, past and present, designed to show their organic structure, the relation between poetic effect and sense, mood, tone, imagery, stanzaic form, and meter. Lectures, discussions, reports. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Bogorad.

275, 276 CONTEMPORARY CRITICISM A seminar in selected topics of contemporary critical interest (for example, myth and tragedy); discussion and criticism of selected major works both contemporary and traditional. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. McArthur.

277-278 ADVANCED CREATIVE WRITING Development of extended projects in creative writing such as a novel, a group of short stories or plays, or a sequence of poems. *Prerequisite:* 25, 26 or 27, 28, and one of the following: 16 or 18. Three hours. Dr. McArthur.

281 SEMINAR FOR PROSPECTIVE TEACHERS OF ENGLISH Grammar and language; literary interpretation and criticism; allied problems useful to teachers of English. *Prerequisite:* 25, 26 or 27, 28; and 260. Three hours. Dr. Hughes.

302 GRADUATE SEMINAR Discussion topics vary from year to year. Recommended for all first-year graduate students in English. Three hours.

391, 392, 393, 394 MASTER'S THESIS RESEARCH Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Forestry

COLLEGE OF AGRICULTURE AND HOME ECONOMICS

Professor W. R. Adams (*Chairman*); Associate Professors Whitmore and Zai

1, 2 INTRODUCTION TO FORESTRY (0-6) (2-0) First semester: Field identification and characteristics of the more important forest trees; forestry and conservation sciences. Second semester: Introduction to specialization in forestry and conservation. *Prerequisite:* 1 for 2. Two hours. Dr. Adams, Mr. Whitmore and Dr. Zai.

4 DENDROLOGY (3-3) Classification and silvical characteristics of the more important native and exotic forest trees. Twig identification. *Prerequisite:* 1. Four hours. Dr. Zai.

21 FOREST FIRE CONTROL Forest fire behavior as influenced by fuels, weather, topography; causes and effects of fire; fire danger measurement; methods of preventing and controlling fires; use of fire in forest management. *Prerequisite:* sophomore standing. Two hours. Mr. Whitmore.

26 FOREST PRODUCTS (2-3) Forest products other than lumber. Wood products manufacture including veneer and plywood, pulp and paper. Wood preservation; naval stores; maple products. Forest products marketing practices. *Prerequisite:* 2 or 103. Three hours. Mr. Whitmore.

29, 30 FOREST MENSURATION (2-3) (1-3) First semester: Tree measurement techniques, volume determination of standing timber and wood products; growth and yield determinations. Second semester: Methods of mathematical and graphical analysis of forest tree stand and product measurements, continuous forest inventory. *Prerequisite:* 4 or 103; 29 for 30. Three hours; two hours. Dr. Zai.

103-104 WOODLAND MANAGEMENT (2-3) Establishment, protection, and management of farm woodlands and small forest areas. Characteristics, qualities, uses, and identification of commercial timbers. *Prerequisite:* junior standing. Three hours. Dr. Adams and Mr. Whitmore.

197, 198 SENIOR RESEARCH Work on a research problem under the direction of a qualified staff member. Findings submitted in written form as prescribed by the department. *Prerequisite:* senior standing. Three hours. The staff.

208 BIOLOGICAL STATISTICS Application of statistics to the analysis of biological data; interpretation of statistical analysis. *Prerequisite:* Math. 9; senior standing. Three hours. Dr. Adams.

381, 382 SPECIAL TOPICS Advanced readings and discussion of forestry research literature. Three hours. The staff.

391, 392, 393, 394 MASTER'S THESIS RESEARCH Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

General Literature

COLLEGE OF ARTS AND SCIENCES

51 GREEK LITERATURE IN TRANSLATION Lectures on the development of various branches of Greek literature and on its chief authors, with emphasis on Homer and the drama. Readings in standard translations from the major authors. No knowledge of Greek required. *Prerequisite:* junior standing and one survey course in any literature. Three hours. Dr. Davison.

52 LATIN LITERATURE IN TRANSLATION Lectures on the development of Latin literature and on the principal Latin authors. The relation of Latin literature to Greek and English literature. Readings in standard translations from the major authors. No knowledge of Latin required. *Prerequisite:* junior standing and one survey course in any literature. Three hours. Dr. Davison.

62 GERMAN LITERATURE IN TRANSLATION Lectures on the development of German literature; reading and discussion of representative works. No knowledge of German required. *Prerequisite:* junior standing and one survey course in any literature. Three hours. Mr. Kahn.

72 ROMANCE LITERATURE IN TRANSLATION Comparative study of various literary movements in France, Spain, and Italy. *Prerequisite:* junior standing and one survey course in any literature. Three hours. Dr. Parker.

Geography

COLLEGE OF ARTS AND SCIENCES

Associate Professor Miles

1, 2 HUMAN GEOGRAPHY Man's occupation of the earth's surface. An integrated treatment of the human occupancy of the major regions of the world against the background of the characteristics of the natural environment. Emphasis on the problems of population distribution and pattern of land utilization through time. *Prerequisite:* sophomore standing or permission of the instructor. Three hours. Dr. Miles.

3 WORLD GEOGRAPHY A survey of the major regions and nations of the world, their peoples, problems, and potentialities. The physical and cultural factors which have been influential in shaping present-day economic, social and political patterns. Three hours. Dr. Miles.

Geology

COLLEGE OF ARTS AND SCIENCES

Professor Doll (Chairman); Associate Professor Doten; Assistant Professor Hunt

1-2 INTRODUCTORY GEOLOGY (3-2) Composition, structure, and surface forms of the earth, and the agencies active in their production; general survey of the earth's history as recorded in the rocks. Field trips. Four hours.

11 MINERALOGY (2-3) Crystallographic, chemical and physical properties of minerals, and their identification. *Prerequisite:* 1-2. Three hours.

14 PETROLOGY (2-2) Origin and characteristics of igneous, sedimentary, and metamorphic rocks and related ore deposits. *Prerequisite:* 11. Three hours.

21 ENGINEERING GEOLOGY (2-2) The recognition of common minerals and rocks; rock structures and their effects on engineering problems. Required of students in civil engineering, elective by permission to students in Agricultural Engineering, not open to others. Three hours.

101 OPTICAL MINERALOGY (1-4) Optical properties of non-opaque minerals and their determination by means of the polarizing microscope. *Prerequisite:* 14. Three hours.

102 PETROGRAPHY (1-4) Classification, origin and composition of the more important igneous, sedimentary and metamorphic rocks, by means of the polarizing microscope and thin sections. *Prerequisite:* 101. Three hours.

111 **STRUCTURAL GEOLOGY (2-2)** Structural features of the earth's crust produced by earth movements. Mechanics of folding, fracturing, faulting, and rock flowage, and the relation of such structures to mountain building. *Prerequisite:* 14. Three hours.

112 **FIELD GEOLOGY (1-6)** Field methods in the geologic mapping of an assigned area. Conference weekly on the problems and progress of the field work; written report and a field map of the area. *Prerequisite:* 111. Three hours.

121 **PALEONTOLOGY (2-2)** Invertebrate fossils; their evolution, morphology and classification; their importance in the interpretation of earth history. *Prerequisite:* 1-2. Three hours.

151-152 **ECONOMIC GEOLOGY (2-2)** Characteristics, occurrence, distribution, production, and uses of the more important mineral resources. First semester: non-metallics; second semester: metallics. Trips to localities of economic interest. *Prerequisite:* 111. Three hours.

207 **IGNEOUS GEOLOGY (2-2)** Paragenesis of igneous rocks; laboratory work on selected suites of specimens. *Prerequisite:* 102. Three hours. Alternate years, 1963-64.

208 **METAMORPHIC GEOLOGY (2-2)** Metamorphic processes and types of metamorphic rocks, with appropriate laboratory study of metamorphic suites. *Prerequisite:* 102. Three hours. Alternate years, 1963-64.

215 **GEOMORPHOLOGY (2-2)** The land forms of the surface of the earth and their origins; external and internal forces modifying the earth. The physiographic provinces of North America. *Prerequisite:* 14. Three hours. Alternate years, 1964-65.

216 **GLACIAL GEOLOGY (2-3)** The origin, mechanics and effects of past and present glaciations. *Prerequisite:* 215. Three hours. Alternate years, 1964-65.

223 **SEDIMENTATION (2-2)** Processes active in the erosion, transportation and deposition of sediments, their consolidation into sedimentary rocks, and methods of sedimentary petrology. *Prerequisite:* 14. Three hours. Alternate years, 1964-65.

224 **STRATIGRAPHY (2-2)** Sequential development and distribution of the sedimentary rocks. *Prerequisite:* 223. Three hours. Alternate years, 1964-65.

281-282 **SEMINAR** Review and discussion of current geological literature. Graduate students and seniors. One hour. The staff.

391, 392, 393, 394 **MASTER'S THESIS RESEARCH** Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

German

COLLEGE OF ARTS AND SCIENCES

Professor White (Chairman); Associate Professor Webster; Assistant Professors Kahn and Wurthmann; Instructor Carpenter

1-2 **ELEMENTARY GERMAN** Emphasis on the spoken language of everyday use. Oral and written practice in speaking, reading, and comprehension,

based on memorization of texts in the form of dialogues. Tape recordings are used in the language laboratory as aids to speaking and comprehension. *Credit is allowed only if German 11-12 is also completed.* Four hours. The staff.

11-12 INTERMEDIATE GERMAN Reading and discussion, as far as possible in German, of selected prose with review of grammar and practice in translating technical expository prose. Emphasis on development of facility in reading; knowledge of idioms; auditory comprehension. *Prerequisite:* 1-2 or equivalent. Three hours. The staff.

81-82 SCIENTIFIC GERMAN Development of ability to read accurately and efficiently original German in the field of each student's scientific interest. *Prerequisite:* 11-12 or equivalent. Three hours. Mr. Wurthmann.

101-102 INTRODUCTION TO GERMAN LITERATURE Selected works of Lessing, Goethe, and Schiller. Survey of the development of German literature from the beginnings to the twentieth century, with practice in hearing, writing, and speaking German. *Prerequisite:* 11-12. Three hours. Dr. Webster.

121-122 COMPOSITION AND CONVERSATION Guided conversation, discussion, and oral and written drill in German with emphasis on increasing oral and written command of the language. Free composition, oral reports, and translation into German are required. *Prerequisite:* 11-12 or equivalent and permission of the instructor. Three hours. Mr. Wurthmann.

205 GOETHE'S FAUST Reading, analysis, and interpretation of Parts I and II of *Faust*. Readings in other works by Goethe and on the Faust theme. *Prerequisite:* 101-102. Three hours. Dr. White. Alternate years, 1963-64.

206 GERMAN LITERATURE: 1800-1850 Reading and interpretation of works representative of the main literary trends of this period. Lectures and reports on selected poetry, prose works and dramas by Kleist, the Romantics, Grillparzer, Heine, and others. *Prerequisite:* 101-102. Three hours. Dr. White. Alternate years, 1963-64.

207 GERMAN LITERATURE: 1850-1900 Reading and interpretation of works of the period in poetry, prose and drama. Lectures and reports on selected works by such representative authors as Hebbel, Keller, C. F. Meyer, Nietzsche, Stifter, and Wagner. *Prerequisite:* 101-102. Three hours. Dr. White. Alternate years, 1964-65.

208 GERMAN LITERATURE: THE 20TH CENTURY Readings, reports, lectures on authors of the period in poetry, prose and drama. Representative works of Brecht, George, Hauptmann, Hofmannsthal, Kafka, Thomas Mann, Rilke, and others will be read. *Prerequisite:* 101-102. Three hours, Dr. White. Alternate years, 1964-65.

221-222 ADVANCED COMPOSITION AND CONVERSATION Guided conversation, discussion and advanced oral and written drill in German. Study of modes of expression and stylistic devices of modern German based on analysis of selected texts. Problems in translating literary and technical English prose into German. *Prerequisite:* 121-122 or equivalent. Three hours. Staff.

232 SEMINAR FOR PROSPECTIVE TEACHERS OF GERMAN Problems in the linguistic structure of German. Elementary introduction to linguistics through analysis of modern, colloquial German with reference to problems useful to

teachers. Open to seniors and graduate students. *Prerequisite:* 121-122 or the equivalent. Three hours. Dr. White.

281-282 SENIOR SEMINAR Readings and research. Required of all senior concentrators. One hour.

381, 382 GRADUATE SEMINAR Readings, conferences, and reports in connection with the work of candidates for the M.A. degree. Three hours.

391, 392, 393, 394 MASTER'S THESIS RESEARCH Investigation of a research topic under the direction of assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Hebrew

COLLEGE OF ARTS AND SCIENCES

Assistant Professor Kahn

1-2 ELEMENTARY HEBREW The spoken language of everyday use with oral, aural and written practice in speaking, reading, and comprehension based on memorization of texts in the form of dialogues. Three hours. Mr. Kahn. Alternate years, 1963-64.

11-12 INTERMEDIATE HEBREW Reading, translation, and discussion in Hebrew of texts selected to show the development of Hebrew culture from Biblical times to the present. Three hours. Mr. Kahn. Alternate years, 1964-65.

History

COLLEGE OF ARTS AND SCIENCES

Professors Schultz (Chairman) and Evans; Associate Professors Daniels, Pooley and Putnam; Assistant Professors Davison, Felt, Hand and Keppel; Instructors Newhall, Schmokel and Spinner

11, 12 EUROPEAN CIVILIZATION European ideas and institutions in world history. *Prerequisite:* 11 for 12. Three hours. Drs. Daniels, Evans and Hand, Messrs. Newhall and Spinner.

21-22 THE AMERICAN COLONIES American history to 1783. *Prerequisite:* sophomore standing. Three hours. Dr. Putnam.

23, 24 HISTORY OF THE UNITED STATES American history since 1783. *Prerequisite:* sophomore standing; 23 for 24. Three hours. Drs. Schultz, Felt, Hand and Keppel.

26 HISTORY OF VERMONT Vermont since its foundation. *Prerequisite:* completion of or enrollment in 23. One hour. Dr. Bassett.

31, 32 ANCIENT HISTORY Ancient Near Eastern, Greek, and Roman worlds. *Prerequisite:* sophomore standing or enrollment in Latin or Greek. Three hours. Dr. Davison.

33, 34 MEDIEVAL EUROPE Europe from the late Roman Empire to the Renaissance, with emphasis on political and cultural developments. *Prereq-*

quisite: sophomore standing or enrollment in Latin; 33 for 34. Three hours. Mr. Pooley.

✓40 BIOGRAPHY The biographical approach to history. *Prerequisite*: senior standing. Three hours. Dr. Schultz.

111 THE RENAISSANCE Fifteenth-Century Europe. *Prerequisite*: six semester hours in European history. Dr. Evans.

112 THE REFORMATION Sixteenth-Century Europe. *Prerequisite*: six semester hours in European history. Three hours. Mr. Newhall.

123-124 AMERICAN HISTORY SINCE 1900 *Prerequisite*: six semester hours in history including 12 or 24. Three hours. Dr. Putnam.

191, 192 SENIOR HONORS RESEARCH *Prerequisite*: three hours of a history course numbered above 250 and permission of the chairman of the department. Three hours.

203 LATIN-AMERICAN HISTORY Political, social and economic development from the conquests to the wars of independence. *Prerequisite*: twelve semester hours in history including 12. Three hours. Dr. Felt.

213-214 CANADIAN HISTORY Canadian development from the French exploration and settlement to the present; evolution of self-government and relations with the United States. *Prerequisite*: junior standing and 11, 12 or 23, 24. Three hours. Dr. Putnam. Alternate years, 1963-64.

243 SOVIET RUSSIA The USSR from the 1917 Revolution to the present. A study of Russia and Communism including: historical and ideological background, Soviet political and economic institutions, Soviet foreign policy and international Communism. *Prerequisite*: twelve semester hours in history including 12, or permission of the instructor. Three hours. Dr. Daniels.

244 ENGLISH HISTORY England in world history to 1715. *Prerequisite*: junior standing and 11, 12. Three hours. I. Mr. Spinner.

251-252 CONTEMPORARY HISTORY The world since 1918, stressing the background of current events. *Prerequisite*: junior standing and 11, 12. Three hours. Drs. Evans and Schmokel.

253 TSARIST RUSSIA History of Russia from the Middle Ages to the Revolution of 1917, with emphasis on the period since Peter the Great. *Prerequisite*: twelve semester hours of history including 11, 12 or permission of the instructor. Three hours. II. Dr. Daniels.

254 ENGLISH HISTORY SINCE 1715 *Prerequisite*: 12 and 244. Three hours. Dr. Schultz.

255, 256 EUROPE IN THE MODERN AGE European political, social, and intellectual history; emphasis on the eighteenth and the nineteenth centuries. *Prerequisite*: junior standing and 11, 12. Three hours. Dr. Schmokel and Mr. Newhall.

257, 258 AMERICAN STATESMEN Thought and practical politics of American statesmen. *Prerequisite*: junior standing, 23 for 257; 24 and 257 for 258. Three hours. Dr. Schultz.

259-260 AMERICAN FRONTIERS The westward movement to the end of the nineteenth century and its influence in shaping American ideals and insti-

tutions. *Prerequisite*: twelve semester hours in history. Three hours. Dr. Putnam. 1964-65.

261 VERMONT HISTORY *Prerequisite*: history 23, 24 and junior standing. Three hours. Dr. Bassett.

264 LATIN AMERICA SINCE 1825 The political, social and economic development during the national period. *Prerequisite*: 203. Three hours. Dr. Felt.

✓277 THE GOVERNMENT OF THE USSR Theoretical background, structure and development of the Soviet state and the Communist Party; economic, social and cultural policies; current changes. *Prerequisite*: 243 or political science 51 and 72. Three hours. Dr. Daniels.

278 FOREIGN POLICY OF THE USSR Theoretical background; history of Soviet foreign relations; development of the international Communist movement; current problems of East-West relations. *Prerequisite*: 243 or political science 51 and 72. Three hours. Dr. Daniels.

281, 282 SEMINAR Advanced study in American history. By permission. Three hours.

391, 392, 393, 394 MASTER'S THESIS RESEARCH Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Home Economics

COLLEGE OF AGRICULTURE AND HOME ECONOMICS

Professors Trotter (Chairman) and Samenfink; Associate Professors Brown, Caldwell, Knowles¹, Morse and Williams; Assistant Professors McCarthy², Newton, Wakefield, Webster and Wilson; Instructors Lepeschkin and Livak; Mmes. Cook and Reeves

Home Management

51 HOUSING Sociological and economic aspects of family shelter including selection of site, problems of financing, utilization of space and materials. Three hours. Miss Knowles.

54 HOUSEHOLD EQUIPMENT (2-2) Application of scientific principles to the selection, operation and care of household equipment. Three hours. Miss Knowles.

101 PRINCIPLES OF HOME MANAGEMENT Family and individual management techniques. Application to use of time, energy and money. Introduction to consumer economics. Three hours. Miss Knowles.

105 EXPERIMENTAL EQUIPMENT (1-4) Performance measurement and rating of household equipment. *Prerequisite*: H.M. 54. Three hours. Miss Knowles.

106 HOUSE PLANNING An advanced study of housing design to meet family requirements, application of home management principles. *Prerequisite*: 51, 101. Three hours. Miss Knowles.

¹ Sabbatical leave second semester 1963-64.

² On leave first semester 1962-63.

153 HOME MANAGEMENT RESIDENCE Practical application of home management and group living in the Home Management Residence. A charge of \$87.50 is made to cover partial cost of board and operating expenses. Students not living on campus are charged for room rent proportional to that paid by students in University residence halls. *Prerequisite:* 101, 137. Three hours. I, II. Miss Hanline.

203 HOME MANAGEMENT PROBLEMS Application of economic and sociological principles to some problems of the home and family. *Prerequisite:* 101, Psychology 1. Three hours. Misses Knowles and Hanline.

204 FAMILY ECONOMICS The consumer and the market. Use of credit, savings and investments, insurance and estate planning for the family. *Prerequisite:* Economics 12, H.M. 101. Three hours. Miss Knowles.

301 READINGS IN FAMILY ECONOMICS Critical survey of the literature and recent research in family economics. Three or four hours. Dr. Trotter and staff.

Home Economics Education

115 INTRODUCTION TO HOME ECONOMICS EDUCATION Homemaking education in relation to philosophy, professional contacts, and growth toward teacher competencies. Observation of secondary school programs, place of homemaking in general education. *Prerequisite:* junior standing. Two hours. Miss Hanline.

165 METHODS OF TEACHING Methods of teaching homemaking in junior and senior high schools, and of general administration of homemaking departments in secondary schools. *Prerequisite:* 115, Psychology 1. Three hours. Miss Brown.

166 SPECIAL PROBLEMS IN HOME ECONOMICS EDUCATION Individual investigation of a problem selected to meet special needs of students. *Prerequisite:* 165. Two or three hours. Misses Brown and Hanline.

168 STUDENT TEACHING Supervised observation and teaching in approved secondary schools in Vermont. *Prerequisite:* 165. Seven hours. Miss Brown.

169 DEMONSTRATION TECHNIQUES (0-4) Practice in the presentation of information and the teaching of skills by visual methods. *Prerequisite:* junior standing. Two hours. I, II. Miss Hanline.

216 TEACHING ADULTS (1-2) Problems of organization and of teaching classes in home economics to meet the needs of adults; supervised experience in techniques of teaching adults. *Prerequisite:* 165; and Education 145-146 or Agricultural Education 104, or equivalent. Two hours. Miss Brown.

Family Living

61 THE FAMILY, THE INDIVIDUAL AND MARRIAGE A functional course designed to aid young men and women to prepare for marriage and family living. Three hours. I, II. Dr. Samenfink.

63 CHILD DEVELOPMENT AND PERSONALITY (2-2) Study of the biological, psychological, and social growth and development of the child and his relationships with his family, peers and institutions. Observation in the pre-school laboratory. Three hours. I, II. Dr. Samenfink, Miss Wilson.

65 EXPERIENCE WITH PRESCHOOL CHILDREN (1-4) An opportunity to more fully understand the toddler and the preschool child as well as oneself while observing and working with the children and parents in the Preschool Laboratory. *Prerequisite:* 61. Three hours. I, II. Miss Wilson, Dr. Samenfink.

67 CREATIVE ACTIVITIES (1-4) A study of the various creative activities used in working with preschool and kindergarten children. *Prerequisite:* 61. Three hours. Miss Wilson. Alternate years, 1963-64.

163 DYNAMICS OF FAMILY DEVELOPMENT Developmental growth of parents and children in the various stages of the family life cycle. *Prerequisite:* Sociology 21. Three hours. I, II. Dr. Samenfink.

164 INTRODUCTION TO PARENT EDUCATION AND FAMILY CONSULTING Principles of parent education and family consulting; formulation and presentation of programs for preschool parents. Two hours. Dr. Samenfink. Alternate years, 1963-64.

172 PRESCHOOL PLANNING AND PRACTICUM (2-14) Preschool theory and philosophy past and present; planning and conducting programs of the preschool laboratory. *Prerequisite:* 63, 65 and 67. Nine hours. Miss Wilson, Dr. Samenfink.

263 SEMINAR IN FAMILY RELATIONS AND HUMAN DEVELOPMENT Theory and research on the family. *Prerequisite:* 63, 163 and Sociology 51. Three hours. Dr. Samenfink. Alternate years, 1963-64.

264 THE AMERICAN WOMAN Focuses on recent literature regarding the role of women and the unique tasks they face in maintaining stability in a dynamic 20th century world. *Prerequisite:* 163 and Sociology 51. Three hours. Dr. Samenfink. Alternate years, 1963-64.

Clothing and Textiles

22 CLOTHING SELECTION AND CONSTRUCTION (1-4) Selection of clothing to meet individual needs in relation to design and appropriateness of dress. Development of clothing construction techniques. Three hours. Miss Newton and Mrs. Webster.

73 PATTERN DESIGN AND ADVANCED CONSTRUCTION (0-6) Techniques of designing and altering flat patterns. Advanced construction techniques and Paris original design. *Prerequisite:* 22. Three hours. I, II. Mrs. Webster.

83 SURVEY OF TEXTILES (2-2) Fibers, their properties and manufacturing processes. Identification, care and use of clothing and household fabrics. Three hours. Miss Newton.

123 TAILORING (0-6) Construction techniques with emphasis on tailoring problems. *Prerequisite:* 73. Three hours. Miss Newton.

182 ADVANCED TEXTILES (1-4) Historical and sociological background to textiles and textile design; testing techniques and recent developments in the field. *Prerequisite:* 83. Three hours. Miss Newton.

221 COSTUME DESIGN AND DRAPING (1-4) Analysis of current fashion. Development of original design by draping techniques. *Prerequisite:* 73, 120, or permission of department. Three hours. Mrs. Webster.

Related Art

21 DESIGN (1-4) Theory and application of the elements and principles of design. Three hours. Miss Caldwell and Mrs. Webster.

71 COSTUME DESIGN (1-4) Application of design fundamentals and principles to fashion planning. Techniques of fashion illustration. *Prerequisite:* 21. Three hours. Miss Caldwell.

120 HISTORY OF COSTUME (2-2) History of costume stressing the background philosophy and events of each period as reflected in dress. Adaptation of historic design to modern fashion. *Prerequisite:* 71 or permission of the instructor. Three hours. Miss Caldwell.

130 HOME FURNISHING I (1-4) Application of design fundamentals to the problems involved in furnishing the home. *Prerequisite:* 21. Three hours. Miss Caldwell and Miss Newton.

230 HOME FURNISHING II (1-4) Interior design; period furnishing, its present use and influence upon modern furnishing. *Prerequisite:* 130. Three hours. Miss Caldwell.

Food and Nutrition

43 BASIC CONCEPTS OF FOOD AND NUTRITION (3-2) Food selection and preparation in relation to human growth and health. Basic principles of food selection presented through demonstration lectures. Four hours. I, II. Miss Williams.

48 ELEMENTARY NUTRITION AND FOOD PREPARATION (3-2) For pre-clinical nursing students only. Not for college credit. Miss McCarthy.

S88 NUTRITION AND FOOD PREPARATION (2-2) Fundamentals of normal nutrition; laboratory experience in calculating food values; planning adequate meals; basic food preparation techniques. For nursing students in summer session. Three hours. Miss McCarthy.

89-90 DIET MODIFICATION IN DISEASE Diet modification in the treatment of disease. The role of diet in the nursing care. Laboratory work is integrated with hospital experience. For students in nursing. Integrated with Nursing Education 19-20 Medical and Surgical Nursing. One hour. Miss McCarthy.

135 ADVANCED FOOD PREPARATION (2-4) Scientific principles and fundamental processes underlying food preparation and preservation with practical applications. *Prerequisite:* 43, chemistry 2. Four hours. Miss Williams.

137 MEAL MANAGEMENT (1-5) Principles and practice in planning, preparing and serving family meals at different cost levels. *Prerequisite:* 35, 43. Three hours. I, II. Miss Williams.

144 APPLIED NORMAL NUTRITION (2-2) Nutrition and the individual; food habits and the problems involved in food selection to promote good nutrition. *Prerequisite:* 43. Three hours. Miss Williams and Miss McCarthy.

236 EXPERIMENTAL FOOD PREPARATION (1-4) Methods and techniques in experimental work in foods. Independent laboratory study of problems in food preparation. *Prerequisite:* 135; agricultural biochemistry 172. Three hours. Miss Williams.

243 NUTRITION AND DIET (3-2) Human nutrition; the nutritive value of foods with application in calculating food requirements; diets for children, adults and family groups. *Prerequisite:* 135; agricultural biochemistry 172; zoology 52. Four hours. Dr. Morse.

244 DIET THERAPY (2-2) Adaptations of the normal diet in conditions affected by or affecting the utilization of food. *Prerequisite:* 243. Three hours. Miss Wakefield.

246 READINGS IN FOODS Critical survey of the literature on the recent developments in food research. *Prerequisite:* senior standing; 135; agricultural biochemistry 172. Two or three hours. The staff.

248 READINGS IN NUTRITION Critical survey of the literature on recent developments in nutrition. *Prerequisite:* 243. Two or three hours. The staff.

Institutional Management

139 FOOD SERVICE MANAGEMENT (1-2) Managerial responsibility, menu planning, cost calculation and organization necessary for preparing and serving food for groups. Basic techniques of organization, management, time and motion studies and floor plans in relationship to school lunch and community feeding problems. *Prerequisite:* 137. Two hours. Miss Wakefield. (Not open to dietetic majors.)

186 QUANTITY FOOD PRODUCTION (1-4) Practical applications of principles, methods, and techniques used in quantity food production. *Prerequisite:* 135. Three hours. Miss Wakefield.

187 INSTITUTIONAL ADMINISTRATION Survey of the field; organization, management and personal problems; time and motion studies; sanitation; food cost control. *Prerequisite:* 186. (May be taken concurrently.) Three hours. Miss Wakefield.

288 INSTITUTIONAL MARKETING AND ACCOUNTING (3-2) Advanced institutional management, marketing, accounting, equipment, floor plans, layouts and related material on design and furnishing in the different types of food services. *Prerequisite:* 186, 187. Four hours. Miss Wakefield.

Home Economics Seminars and Research

1 ORIENTATION Problems of adjustment to college life; evaluation of professional opportunities in home economics. One hour. Dr. Trotter.

151 SENIOR SEMINAR Home economics as a profession. Professional ethics and responsibilities of a home economist. Readings and discussion of research and progress in the field. One hour. Dr. Trotter.

197, 198 SENIOR PROBLEMS Supervised study in a field of home economics. Findings submitted in a form prescribed by the department. One to three hours. The staff.

386, 387 GRADUATE SEMINAR Designed for graduate students concentrating in the department. Advanced study in a special field; opportunities for independent work are provided. Three hours. Dr. Trotter.

391, 392, 393, 394 **MASTER'S THESIS RESEARCH** Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged. The staff.

Horticulture

COLLEGE OF AGRICULTURE AND HOME ECONOMICS

Professors Wiggans (Chairman) and Hopp; Mr. Calahan

51, 52 **GENERAL HORTICULTURE (3-0) (2-2)** First semester: the requirements of horticultural crops for productive growth. Second semester: fundamentals supporting some of the horticultural practices. *Prerequisite:* botany 1 or permission of the department, 51 for 52. Three hours. The staff.

54 **SMALL FRUIT CULTURE (2-2)** Fundamental principles underlying plant growth and fruit production; relation of these principles to practice. *Prerequisite:* botany 1. Three hours. The staff.

56 **PLANT PROPAGATION (2-2)** History, theory, and practice of multiplying plants by various methods. *Prerequisite:* botany 1. Three hours. Staff.

151 **ADVANCED TREE FRUITS (2-2)** Cultural practices and the principles involved in modern fruit production. *Prerequisite:* 52. Three hours. Mr. Calahan. Alternate years, 1964-65.

152 **PLANT BREEDING (2-2)** Application of the principles of genetics to practical plant breeding. *Prerequisite:* zoology 115. Three hours. Staff. Alternate years, 1964-65.

153 **ADVANCED VEGETABLE CULTURE (2-2)** A study of the culture of the more important vegetable crops and a review of some of the recent experimental work. *Prerequisite:* 52. Three hours. Mr. Hopp. Alternate years, 1963-64.

197, 198 **SENIOR RESEARCH** Work on a research problem under the direction of a qualified staff member. Findings submitted in written form as prescribed by the department. *Prerequisite:* senior standing. Three hours. The staff

201 **PLANT NUTRITION (2-4)** Effect of soil management, fertilizers, environmental factors and mineral deficiencies on the functioning and performance of plants. *Prerequisite:* Botany 103, or permission of the department. Four hours. The staff. Alternate years, 1963-64.

281, 282 **HORTICULTURE SEMINAR** Discussion of horticultural topics. Students are required to prepare and present papers on selected subjects. Open to graduate students and seniors by permission. One hour. The staff.

391, 392, 393, 394 **MASTER'S THESIS RESEARCH** Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Mathematics

COLLEGE OF TECHNOLOGY

Professors Schoonmaker (Chairman) and Praleigh; Associate Professors Dwork, Izzo, Moser, Nicholson, and Riggs; Assistant Professor Lighthall; Instructors Bohmont, Merriam, and Wagner

1 ELEMENTARY COLLEGE ALGEBRA Review of fundamental operations and a more extensive study of fractions, exponents, radicals, linear and quadratic equations. Additional topics to be discussed include ratio, proportion, variation, progressions and the binomial theorem. This course covers the topics normally included in intermediate algebra in high school. Students who have satisfactorily completed two years of high school algebra, or the equivalent, will receive no credit for this course. Offered only in Summer Session. Three hours.

2 PLANE TRIGONOMETRY A study of trigonometric functions, their graphs and other properties, logarithms, solution of triangles, trigonometric equations and identities, and inverse trigonometric functions. *Prerequisite:* 1 or 9. Three hours.

4 MATHEMATICS OF FINANCE Mathematical theory of finance applied to interest and investments, annuities, and life insurance. *Prerequisite:* 1 or 9. Three hours.

¹⁵ PLANE ANALYTIC GEOMETRY AND CALCULUS An introduction to plane analytic geometry and calculus. This course prepares students for Mathematics 12. *Prerequisite:* 2, or sufficiently high scores on the algebra and trigonometry placement tests. Three hours. Not offered in 1963-64.

7, 8 FUNDAMENTALS OF MATHEMATICS To provide an understanding of basic logical and mathematical ideas (both ancient and modern) and some of their applications to other fields of knowledge. Emphasis is on fundamental concepts and logical methods of reasoning rather than on the development of techniques. Many topics of algebra, trigonometry and analytic geometry are considered in their relation to certain basic concepts pervading all mathematics. A course for students in the arts, social sciences and others whose programs do not require further study of mathematics. Credit will not be given for both Mathematics 7 and 9. *Prerequisite:* one year each of secondary school algebra and geometry, 7 for 8. Three hours.

¹⁹ COLLEGE ALGEBRA AND TRIGONOMETRY A study of sets, relations, and functions with particular attention to properties of algebraic, exponential, logarithmic and trigonometric functions, their graphs and applications. Students who have earned credit for any higher numbered course in mathematics may not enroll in this course for credit. Credit will not be given for both Mathematics 7 and 9. *Prerequisite:* two years of secondary school algebra and one year of secondary school geometry. Three hours.

¹ The enrollment of students who desire eventually to take Mathematics 12 will depend on their previous record and their score on a mathematics placement test. Students not qualified to enroll in Mathematics 11 will be enrolled in Mathematics 9. A student who takes Mathematics 9 in the fall of his freshman year and who, because of his chosen curriculum, needs to have completed Mathematics 12 prior to the beginning of his sophomore year, will need to take Mathematics 12 during the summer between his freshman and sophomore years. Those who are deficient in high school mathematics are urged to attend summer school prior to their first semester in college.

¹10 PLANE TRIGONOMETRY, ANALYTIC GEOMETRY AND CALCULUS An extensive study of plane trigonometry followed by an introduction to plane analytic geometry and calculus. This course prepares students for Mathematics 12. *Prerequisite:* 9, or a sufficiently high score on the algebra placement test. Five hours. Not offered in 1963-64.

¹11 ALGEBRA, TRIGONOMETRY, ANALYTIC GEOMETRY AND CALCULUS A few topics from College Algebra; review of some plane trigonometry; logic and sets; introduction to plane analytic geometry and calculus. This course prepares students for Mathematics 12. *Prerequisite:* secondary school trigonometry, or equivalent, and a sufficiently high score on the algebra placement test. Five hours. I, II.

¹12 PLANE ANALYTIC GEOMETRY AND CALCULUS A continuation of the study of analytic geometry, differential and integral calculus and their applications. *Prerequisite:* 5, 10 or 11. Five hours.

21, 22 SOPHOMORE MATHEMATICS Vector solid analytic geometry; partial differentiation; multiple integrals; infinite series and elementary differential equations. *Prerequisite:* 12; 21 for 22. Three hours.

125, 126 NUMBERS Discussion of natural numbers, integers, fractions, decimals, and real numbers together with the fundamental operations and fundamental principles involving them. Number bases, sets, measurement and approximation, ratio, proportion, percentage, and selected topics from algebra which are a natural extension of arithmetic. Open only to students in elementary education. *Prerequisite:* junior standing; 125 for 126. Three hours.

181, 182 SENIOR PROBLEM Investigation of some area or problem, under the direction of an assigned staff member, culminating in a report. This course is available only to candidates for the Bachelor of Science degree in Mathematics. *Prerequisite:* Consent of the department. Three hours.

207, 208 ADVANCED CALCULUS The calculus beginning with limits, continuity, differentiation, and Riemann integrals; treatment of those topics not included in the earlier course as a foundation for more advanced courses in analysis and applied mathematics. *Prerequisite:* 22; 207 for 208. Three hours.

209 PROJECTIVE GEOMETRY Principle of duality, perspectivity, projectivity, harmonic sets, cross ratio, the theorems of Pascal and Brianchon, and poles and polars. *Prerequisite:* 12. Three hours. Alternate years, 1964-65.

210 FOUNDATIONS OF GEOMETRY Geometry as an axiomatic science, various non-Euclidean geometries, and relationships existing between Euclidean plane geometry and other geometries. The development of geometry as a science based upon invariant properties. *Prerequisite:* 12. Three hours. Alternate years, 1964-65.

211 DIFFERENTIAL EQUATIONS Solutions of linear ordinary differential equations, the Laplace transformation, and series solutions of differential equations. *Prerequisite:* 22. Three hours.

212 APPLIED MATHEMATICS Boundary-value problems, orthogonal functions and vector analysis. *Prerequisite:* 211. Three hours.

213, 214 APPLIED MATHEMATICS First semester: partial differential equations, solutions of partial differential equations of mathematical physics, and

¹ See footnote p. 168.

functions of a complex variable. Second semester: calculus of variations, difference equations, and integral equations. *Prerequisite:* 212; 213 for 214. Three hours.

220 VECTOR ANALYSIS Introduction to vector methods including the elements of vector algebra and vector calculus with applications to physics and mechanics. *Prerequisite:* 22. Three hours. Alternate years, 1964-65.

221 MATHEMATICAL STATISTICS Frequency distributions including: the calculation of moments, standard deviations and related quantities, the theory of least squares and its application to scientific problems, the Chi-square test and Student's t-test with a discussion of the validity of statistical results. *Prerequisite:* 12. Three hours.

224 THEORY OF PROBABILITY Permutations and combinations, stochastic variables, moments, probability distribution functions, joint distribution functions, normal, binomial and Poisson distributions, Stirling's Theorem, The Central Limit Theorem and the laws of large numbers. *Prerequisite:* 22 and 221. Three hours. Alternate years, 1963-64.

225, 226 TOPOLOGY Introduction to the fundamental concepts of general topology: topological spaces, Moore-Smith convergence, product spaces, quotient spaces, embedding, metrization, and compact spaces. *Prerequisite:* 22, 225 for 226. Three hours. Alternate years, 1964-65.

227 DIFFERENTIAL GEOMETRY Analytic metric differential geometry of curves and surfaces in ordinary three dimensional space; curvature, torsion, Frenet formulas, involutes, evolutes, developable and ruled surfaces, and geodesic curves. *Prerequisite:* 22. Three hours. Alternate years, 1963-64.

228 NUMBER THEORY Divisibility, prime numbers, Diophantine equations, congruence of numbers, and methods of solving congruences. *Prerequisite:* 22. Three hours. Alternate years, 1963-64.

231, 232 FUNCTION OF A COMPLEX VARIABLE Differentiation and integration of a function of a complex variable, mapping of elementary functions, infinite series, properties of analytic functions, analytical continuation, calculus of residues, contour integration, integral functions, meromorphic functions, Riemann surfaces, and conformal representation. *Prerequisite:* 208; 231 for 232. Three hours. Alternate years, 1964-65.

233, 234 THEORY OF FUNCTIONS OF REAL VARIABLES Functions of real variables, including: point sets and measure, transfinite numbers, Riemann and Lebesgue integrals, and sequences of functions. Considerable outside reading is assigned. *Prerequisite:* 208; 233 for 234. Three hours. Alternate years, 1963-64.

241 MODERN HIGHER ALGEBRA Fundamental concepts of modern higher algebra, logic, groups, rings, fields, integral domains, lattices, Boolean algebra and order systems. *Prerequisite:* 12 and consent of instructor. Three hours.

242 THEORY OF DETERMINANTS AND MATRICES Basic concepts, theorems, and applications of determinants and matrices including the theory of vector spaces and quadratic forms. *Prerequisite:* 241. Three hours.

243 THEORY OF GROUPS The study of the various kinds and structures of groups. *Prerequisite:* 241. Three hours. Alternate years, 1963-64.

244 GALOIS THEORY The study of Galois theory leading to the insolubility of general quintic equations by radicals and theorems on constructions with ruler and compasses. *Prerequisite:* 243. Three hours. Alternate years, 1963-64.

251 THE THEORY OF DIGITAL COMPUTING MACHINES AND NUMERICAL ANALYSIS Mathematical theory underlying digital computing machines including assigned problems on the IBM 1620, and 7090 at M.I.T., including programming in machine language, symbolic and fortran languages. The last third of the course is devoted to elementary numerical analysis. *Prerequisite:* 22, Math. 242 highly desirable. Three hours. Alternate years, 1962-63.

252 ADVANCED NUMERICAL ANALYSIS Finite difference methods, numerical solution of differential equations, numerical solutions of systems of linear equations, linear programming and approximations of various types. Problems solved on the 1620 computer. *Prerequisite:* 251 and credit or concurrent enrollment in 242. Three hours. Alternate years, 1964-65.

391, 392, 393, 394 MASTER'S THESIS RESEARCH Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Medical Technology

COLLEGE OF MEDICINE

INTRODUCTION TO MEDICAL TECHNOLOGY During the first semester of the freshman year, the students attend a series of weekly, one-hour sessions held in the medical technology laboratory, Medical Alumni Building. One hour.

101 BASIC TECHNICS (3-6) Principles, procedures, and sources of error in medical laboratory tests. Hematology, serology, parasitology, blood bank, and urinalysis. Fall semester. Six hours. Dr. Heckman.

102 BASIC TECHNICS (1-4) Continuation of 101; histological technic, introduction to diagnostic exfoliative cytology. Spring semester. Three hours. Limited to students of medical technology except by permission of departmental chairman. Dr. Coon and staff.

103 SEMINAR IN CLINICAL PATHOLOGY Limited to students of medical technology. Spring semester. Two hours. Dr. Heckman.

111-112 BIOCHEMISTRY FOR MEDICAL TECHNOLOGISTS Human physiological chemistry; structure, metabolism and regulatory mechanisms. Laboratory: biological reactions, preparation of reagents, instrumentation. Application of sound quantitative principles to analysis of body constituents. Lectures, conferences and laboratory. Limited to students of medical technology except by permission of departmental chairman. Four hours.

HOSPITAL ASSIGNMENTS Rotating assignments in various departments of hospital, medical college, and public health diagnostic laboratories to give experience in medical laboratory procedures. Spring semester. Six hours. Dr. Coon and staff.

Military Science and Tactics

ARMY ROTC

Colonel Blanchard (Chairman); Majors Cram, Hussey and Wenz; Captains Brodin, Fene, Mahoney, Serven and Short; Lieutenant Strickler

1-2 **OUR ARMY AND HISTORY** Organization of the Army and ROTC; rifle marksmanship; American Military History; school of the soldier and exercise of command. Two hours.

11-12 **FUNDAMENTALS FOR SMALL UNIT LEADERS** Military map and aerial photograph reading; United States Army and national security; introduction to operations and basic tactics; school of the soldier and exercise of command. Two hours.

101-102 **THE ARMY LEADER** Leadership; military teaching methods; organization, functions, and missions of the arms and services; small unit tactics and communications; counter-insurgency; school of the soldier and exercise of command. Two hours.

111-112 **COMMAND** Operations; logistics; administration and personnel management; military law; role of the United States in world affairs; service orientation; school of the soldier and exercise of command. Two hours.

Music

COLLEGE OF ARTS AND SCIENCES

Professors Lidral (Chairman), Bennett and Pappoutsakis¹; Associate Professor Kinsey; Assistant Professors Green, Schultz and Weinrich; Instructor Marberger; Part-time Instructors Auchter, Dahl, Green and Kinsey

Students in all music courses are required to attend all major ensemble concerts, faculty recitals, and formal student recitals as part of the course requirements.

Theory and Composition

5-6 **THEORY I (2-3)** Melodic and rhythmic dictation, sight singing, and elementary harmony. Three hours. Messrs. Pappoutsakis and Green.

9-10 **INTRODUCTORY MUSIC** Required of students in elementary education, elective to others. First semester: ear training, music reading and writing, elementary theory; second semester: history and appreciation. Three hours.² Mr. Pappoutsakis and Miss Marberger.

105-106 **THEORY II (2-3)** Contrapuntal and harmonic dictation, advanced harmony, and elementary counterpoint. *Prerequisite:* 5-6. Three hours. Mr. Green and Dr. Kinsey.

201, 202 **ADVANCED HARMONY AND HARMONIC ANALYSIS** *Prerequisite:* 105-106; 201 for 202. Three hours. Dr. Kinsey and Mr. Green.

203, 204 **ORCHESTRATION** First semester: characteristics of instruments, arranging for orchestra; second semester: advanced exercises in orchestral scor-

¹ Sabbatical leave first semester 1963-64.

² Enrollment in Music 5 will cancel credit for Music 9.

ing. *Prerequisite:* 105-106; 203 for 204. Three hours. Messrs. Pappoutsakis and Green.

205-206 COUNTERPOINT First semester: tonal counterpoint; second semester: canon and fugue. *Prerequisite:* 105-106; 205 for 206. Three hours. Messrs. Bennett, Green and Dr. Kinsey.

208 FORM AND ANALYSIS Creative approach to aural and sight analysis of musical construction. *Prerequisite:* 105-106 or the equivalent; 205 recommended. Three hours. Dr. Lidral and Mr. Bennett.

209, 210 ARRANGING, VOCAL AND INSTRUMENTAL First semester: arranging for vocal ensembles of various sizes and functions including mixed groups, men's and women's glee clubs, and chamber groups. Second semester: arranging for instrumental ensembles of various sizes including marching, concert, and school bands, and chamber groups. *Prerequisite:* 203. Three hours. Dr. Lidral and Mr. Schultz. Alternate years, 1962-63.

215, 216 COMPOSITION Creative work in free composition with instruction according to the needs and capabilities of the individual student. *Prerequisite:* 205 and 208 or consent of instructor. Three hours. Mr. Green and Dr. Lidral.

History and Literature

1, 2 SURVEY OF MUSICAL LITERATURE First semester: the Romantic era in songs and piano pieces, program music, the symphony and the concerto, and the opera. Second semester: the Classical era, Gregorian chant to Handel and Bach, modern music, and American music. Three hours. Staff.

221, 222 HISTORY OF MUSIC Changes in musical structure and style in relation to contemporaneous artistic, literary, religious, and social movements. First semester: Gregorian chant to the Baroque era. Second semester: Baroque to Modern. *Prerequisite:* 1, 2 and 5-6 or 7-8. Three hours. Dr. Lidral and Mr. Bennett.

223, 224, 225, 226 MUSIC LITERATURE Advanced studies in the literature of music. *Prerequisite:* 105-106 and 221, 222. Three hours. Mr. Bennett and Dr. Lidral.

281, 282 INDEPENDENT STUDY Studies in theory, composition, history, or literature under the direction of an assigned staff member for advanced students and candidates for honors. Credit as arranged.

381, 382, 383, 384 SEMINAR Study of special topics appropriate to student needs. One hour. Staff.

391 through 399 MASTER'S THESIS RESEARCH Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

For Music Education, see page 140.

For School Music, see Elementary Education 113.

Applied Music

For the fees for instruction, see page 48.

A senior recital in the applied major field is required of all music majors. Regular appearances in informal recitals are required of all applied music stu-

dents. Appearance in one formal departmental recital a semester is required of all music majors. At the end of each semester jury examinations are given in applied music.

All music majors on any curriculum are required to pass a **FUNCTIONAL PIANO FACILITY** examination before certification for graduation. This will include:

- a. Ability to sight-read songs of the type found in a community song book.
- b. Ability to harmonize at sight; to improvise a simple piano accompaniment for songs requiring the use of I, IV, and V chords and some simple modulations; to transpose the songs and harmonizations to other keys.
- c. Ability to sight-read fairly fluently simple accompaniments, vocal or instrumental, and simple piano compositions of the type used for school rhythmic activities.

41, 42 **MAJOR ENSEMBLES (0-3)** University Band, Choir, and Orchestra. *Prerequisite:* consent of instructor. One hour.¹ Mr. Schultz and Dr. Lidral.

45, 46 **CHAMBER MUSIC (0-2)** Study and performance of masterworks for small groups. Outside practice required. *Prerequisite:* consent of instructor. One hour.¹ Mr. Green and staff.

51, 52 **INDIVIDUAL STUDY** Private study in piano, organ, harpsichord, voice, strings, woodwinds, brass, percussion, and harp. One or two hours.¹ Staff.

71, 72 **CLASS STUDY (0-2)** Required of music education students, elective to others. Class study in applied music fields of voice, strings, woodwinds, brass, and percussion. One hour.¹ Staff.

74 **INSTRUMENT REPAIR CLASS (0-2)** A laboratory for music education students in minor repair and adjustment of string, woodwind, brass, and percussion instruments. *Prerequisite:* string, woodwind, brass, and percussion classes or concurrent enrollment and consent of instructor. One hour. Mr. Schultz.

211, 212 **CONDUCTING (2-2)** First semester: Technique of the baton, score reading, laboratory practice. Second semester: preparation and performance of selected scores, including score reading at the piano and rehearsal procedures. Selected students will conduct University major ensembles. *Prerequisite:* 5-6; 211 for 212. Three hours. Mr. Pappoutsakis and Mr. Schultz.

251, 252 **ADVANCED INDIVIDUAL STUDY** Private study in piano, organ, harpsichord, voice, strings, woodwinds, brass, percussion, and harp leading to public recital performance. *Prerequisite:* advanced standing in applied field. One or two hours.¹ Staff.

271, 272 **APPLIED MUSIC PEDAGOGY** Methods of teaching voice, strings, woodwinds, brass or keyboard instruments and advanced class instruction in them. Research paper required. *Prerequisite:* performing ability, teaching experience, and consent of instructor. Two hours.¹ Staff.

¹ Indicated courses in applied music may be taken for several years, but no student may receive credit toward graduation totalling more than six semester hours in major ensembles and six semester hours for individual study. One hour of credit per semester will be given for one private lesson (one half hour) per week under a member of the department, and six hours practice per week, on condition that the instruction be accompanied or preceded by either Music 5-6 or 9-10 and participation in major ensemble (keyboard students excepted); two hours credit will be given for two private lessons per week (one hour) and twelve hours practice per week, on the same condition.

Nursing

COLLEGE OF EDUCATION AND NURSING

Associate Professors Woodruff (Chairman) and Milligan; Assistant Professors Davis, Demers, Emerson, Lombard, Palmer, Phillips, Schwalb and Thompson; Instructors Farrington and Rodgers

1, 2 **ORIENTATION TO NURSING** First semester: Introduction to nursing as a profession including its historical development. Second semester: the influence of environmental factors on an individual and his health practices. 1, one hour; 2, two hours. Miss Milligan.

7 **HOME NURSING (0-2)** Care of the family. *Prerequisite:* junior standing in home economics curriculum. One hour. Miss Milligan.

21-22 **INTRODUCTORY NURSING (2-8) (3-12)** First semester: Development of understandings, attitudes and skills necessary in giving basic nursing care. Laboratory study in classroom and hospital. Second semester: Development of understandings, attitudes, and skills necessary in giving nursing care to people who face illnesses which have a favorable prognosis. 21, four hours; 22, six hours. Misses Demers, Lombard and Thompson; Mrs. Palmer and Mrs. Rodgers.

26 **INTERPERSONAL RELATIONS IN NURSING** Understanding of human relationships in the care of patients; some of the dynamic factors influencing interpersonal relations; development of approaches useful in the solution of common problems in nurse-patient relationships. Three hours. Miss Phillips.

123 **MATERNAL-CHILD NURSING (5-20)** Concepts and skills necessary for promotion of maternal and child health through a family centered approach. Ten hours. Misses Davis and Schwalb.

127 **PSYCHIATRIC NURSING** Psychiatric nursing in a hospital for the mentally ill and in allied community agencies. Interpersonal relationships are explored as they influence patient care. Students participate in varied treatment programs. Presented at Boston University. Six hours.

129 **NURSING IN LONG TERM ILLNESS** Team approach to the nursing care of patients with long term illness. The identification of the elements and principles of administration and application of these in nursing care. Presented at Boston University. Six hours.

136 **PUBLIC HEALTH NURSING (4-8)** Study and discussion of the development and functions of official and voluntary health organizations with emphasis on the role of the nurse at the local, state, national and international level. Laboratory study provided in the community. Six hours. Misses Emerson and Farrington.

181 **ANALYSIS OF SELECTED NURSING SITUATIONS (2-16)** Comprehensive nursing care; concepts of leadership and guidance of learners. Six hours. The staff.

186 **SURVEY OF CONTEMPORARY NURSING** Influence of contemporary social, educational, political and economic developments on nursing; problems and issues in the profession today; fields of work and professional organizations in nursing and responsibilities of the professional nurse. Three hours. Miss Woodruff.

Philosophy and Religion

COLLEGE OF ARTS AND SCIENCES

Professor Dykhuizen (Chairman); Associate Professor Sadler; Assistant Professors Hall and Kahn; Instructors Beckett and Penner

Philosophy

1 INTRODUCTION TO PHILOSOPHY The chief problems of philosophy. *Prerequisite:* sophomore standing. Three hours. Drs. Dykhuizen, Hall and Beckett.

2 LOGIC Principles and conditions of correct thinking with emphasis on the detection of fallacies of thought. *Prerequisite:* sophomore standing. Three hours. Dr. Beckett.

4 ETHICS Examination of the ideas underlying man's moral behavior to develop an acceptable and coherent theory of conduct. *Prerequisite:* sophomore standing. Three hours. Drs. Dykhuizen, Hall and Beckett.

81 SYMBOLIC LOGIC Newer techniques of logical analysis; discussion of logistic systems; general inquiry into the nature of deductive logic. *Prerequisite:* one course in philosophy or permission of the instructor. Three hours. Dr. Beckett.

82 PHILOSOPHY OF SCIENCE Some philosophical problems closely associated with the scientific enterprise: scientific explanation, interpretations of the concept of probability, the justification of induction, causality, space and time, and the relation of science to ethics. Emphasis on current attempts at their solution. *Prerequisite:* a course in philosophy or a science; sophomore standing. Three hours. Dr. Beckett.

102 PHILOSOPHY OF RELIGION A critical analysis of the basic concepts and values which have emerged from man's religious experience. *Prerequisite:* 1, or Religion 1, 2. Three hours. Dr. Hall.

107, 108 HISTORY OF PHILOSOPHY First semester: ancient and medieval philosophy; second semester: modern philosophy. *Prerequisite:* 1; junior standing. Three hours. Dr. Dykhuizen.

109 RECENT AMERICAN PHILOSOPHY The thought of leading contemporary American philosophers. *Prerequisite:* 1; junior standing. Three hours. Dr. Dykhuizen.

113 AESTHETICS An analysis of some principal theories of art and the beautiful as exemplified in music, literature and painting. *Prerequisite:* 1; junior standing or consent of instructor. Three hours. Dr. Hall.

201 CONTEMPORARY PHILOSOPHIC THOUGHT The philosophic ideas of such men as Russell, Dewey, and Whitehead, and of such movements as pragmatism, logical empiricism and existentialism. *Prerequisite:* 1; junior standing. Three hours. Dr. Hall.

206 SOCIAL PHILOSOPHY The meanings and values inherent in social life. *Prerequisite:* 1 or 4; junior standing. Three hours. Dr. Hall.

214 INTELLECTUAL BACKGROUND OF MODERN LIFE Intellectual movements which have influenced the thought and life of today. *Prerequisite:* senior standing or permission of the instructor. Three hours. Dr. Dykhuizen.

215 PLATO A systematic analysis of the Dialogues of Plato on the following topics: theory of knowledge, ethics and political philosophy, and fine art. *Prerequisite:* six hours in philosophy or consent of the instructor. Students concentrating in the classics may be admitted. Three hours. Dr. Hall.

291-292 READINGS IN PHILOSOPHY Selected classics in philosophical literature. The choice of classics will be determined according to the interest of students and instructor. *Prerequisite:* six hours of advanced courses in philosophy or consent of the instructor. Three hours each semester. The staff.

For Economic Philosophy, see Economics 295 and 296; and for Political Philosophy, see Political Science 211, 212.

Religion

1, 2 RELIGIONS OF THE WORLD First semester: Confucianism, Taoism, Hinduism, Buddhism. Second semester: Judaism, Christianity, Islam. *Prerequisite:* sophomore standing. Three hours. Dr. Sadler and Mr. Penner.

11 BIBLE The religious thought of selected writers of the Bible. *Prerequisite:* sophomore standing. Three hours. Mr. Kahn. Alternate years, 1962-63.

101 RELIGION AND SOCIETY A comparative study of the basic types of religious community and religious institution, within various cultural settings. *Prerequisite:* 1, 2 or sociology 31; junior standing. Three hours. Dr. Sadler.

112 RELIGIOUS EXPERIENCE A comparative study of the ways in which the inward dimension of the religious life finds expression. *Prerequisite:* 1, 2 or sociology 21; junior standing. Three hours. Dr. Sadler.

202 READINGS IN ORIENTAL RELIGION Selected primary sources, representing major schools of thought in the religions of India, Japan, and China. *Prerequisite:* 1, junior standing, and consent of the instructor. Three hours. Mr. Penner.

211 CONTEMPORARY TRENDS Significant modern developments in the world religions. *Prerequisite:* 1, 2; junior standing. Three hours. Dr. Sadler.

Physical Education

COLLEGE OF EDUCATION AND NURSING

For requirements in physical education see page 54

MEN

Associate Professors Post and Evans; Assistant Professors Christensen (Chairman), Lapointe, Leggett, Ruffer, Strassburg; Instructors Coons and Greig

The uniform required in this program consists of T-shirt, shorts, supporter, socks, sweat clothes and white tennis shoes. The T-shirt, shorts and sweat clothes *must* be obtained at the University Store. The other items of equipment may be purchased there also.

1-2 FRESHMAN PHYSICAL EDUCATION Two hours weekly. One credit.

11-12 SOPHOMORE PHYSICAL EDUCATION Two hours weekly. One credit.

The program consists of diversified seasonal sports offerings based on the needs and interests of the student. Election of activities is based upon the results of the Cozen's Physical Ability Test and a swimming test.

The purpose of the program is:

1. To develop knowledge of individual physical potentials and limitations.
2. To provide a program of developmental activities based upon needs and interests of the participants.
3. To provide a program of individual and dual activities which will enable the participant to improve his level of competency.

WOMEN

Assistant Professor Wills (Chairman); Instructors Albert, Cochran, Farrell, Mays and Stauff

The uniform required consists of regulation shorts and shirt, white rubber-soled tennis shoes, white ankle socks, black leotard and dance tights. All uniforms must be the regulation style and color.

1-2 FRESHMAN PHYSICAL EDUCATION Two hours weekly. One hour.

11-12 SOPHOMORE PHYSICAL EDUCATION Two hours weekly. One hour.

Provides a seasonal sports program with instruction in a variety of field sports, court games, swimming activities and dance forms. Emphasis is placed on the role of physical education in everyday living.

The physical education program for women is designed to provide a variety of activities for selection by freshmen and sophomore women according to their needs and interests. The purpose of the program is

1. To develop an awareness of the physical self.
2. To provide an opportunity for applying basic movement patterns in new sports and dance activities.
3. To provide an opportunity to increase proficiency in activities already learned.

22 FIRST AID (1-1) Standard and Advanced First Aid Courses of the American Red Cross. Red Cross certificate for successful completion. Open to men and women. One hour credit except in the College of Arts and Sciences.

26 WATER SAFETY (2-2) American National Red Cross Water Safety Instructors' Training Course. Red Cross certificate for successful completion. *Prerequisite:* at least 18 years of age; hold an active Red Cross Senior Life Saving Certificate. Open to men and women. Two hours credit except in the College of Arts and Sciences.

50 DANCE TECHNIQUE AND ANALYSIS (1-4) The history, technique, theory and composition elements of movement as found in dance and the related arts. Training through technique, improvisation, compositional problems and performance. *Prerequisite:* sophomore standing or consent of instructor. Open to men and women. Three hours.

For Physical Education Minor courses, see under Department of Education.

Physics

COLLEGE OF ARTS AND SCIENCES

Professors Crowell (Chairman), Nyborg, Skapski¹ and Walbridge; Associate Professor Rooney; Assistant Professors Foley, Krizan and Sachs

5-6 **ELEMENTARY PHYSICS (3-2)** An introduction to the principles of physics for students not concentrating in physical science or engineering. Mechanics, heat, waves, optics, electricity, magnetism, atomic and nuclear physics. Demonstration lectures coordinated with laboratory work. *Prerequisite:* secondary school algebra and trigonometry. Four hours. Staff.

14-15 **GENERAL PHYSICS (3, 3-2)** For students concentrating in engineering or a physical science. Mechanics, waves, electricity and magnetism, thermodynamics, and geometric optics. *Prerequisite:* for Physics 14, concurrent enrollment or credit in Math. 10 or 11; for Physics 15, 14 and concurrent enrollment or credit in Math. 21. Three hours; four hours. Staff.

16 **GENERAL PHYSICS** Physical optics and modern physics. Includes an introduction to the theory of relativity, electron and atomic physics, and the physics of the nucleus and elementary particles. *Prerequisite:* 15.² Five hours. Staff.

81, 82 **THE CULTURAL BACKGROUND OF THE DEVELOPMENT OF SCIENCE (3-0)** History of formation of the scientific method from the earliest beginning until the present time; rise and fall of different scientific concepts and theories; accumulation of information from observation and experiment and the evolution of the experimental method; relation between science, technology and their contemporary cultural and social environment. *Prerequisite:* a one year college course in mathematics, and either physics or chemistry. Three hours. Dr. Skapski.

115 **ELECTRICITY AND MAGNETISM (3-2)** Fundamental principles of electricity and magnetism with emphasis on electric circuits and electrical measurement. Resistance and direct current circuits; capacitance and inductance with applications to transient phenomena and alternating current circuits. *Prerequisite:* 15²; Math. 22. Four hours. Dr. Sachs.

116 **MECHANICS (3-0)** Mechanics of a particle, including central forces, forced and coupled vibrations; introductory rigid body motion. *Prerequisite:* 15¹; Math. 22. Three hours. Dr. Walbridge.

122 **BIOLOGICAL PHYSICS (3-2)** Physical laws, concepts and methods discussed with respect to their reference to biology. Mechanics of solids, liquids and non-ideal media. Electric and magnetic fields, transport of dissolved gases and ions. Properties of macromolecules, radiation biophysics. *Prerequisite:* 6, Chem. 2, Math. 12. Four hours. Dr. Nyborg.

161 **OPTICS (3-2)** Geometrical theory of reflection and refraction, mirrors and lenses; wave properties of light, interference and diffraction, polarized light. *Prerequisite:* 16² and Math. 21. Four hours. Dr. Sachs. Alternate years, 1964-65.

173 **THERMODYNAMICS (3-0)** Basic concepts of thermodynamics including the characteristic functions, and their application to determination of equi-

¹ On leave 1962-63.

² May be replaced by Physics 5-6 with the consent of the department.

librium conditions in homogeneous and heterogeneous systems. Introduction to kinetic theory and statistical mechanics. *Prerequisite:* 15¹ or 22¹ and Math. 22. Three hours. Dr. Nyborg. Alternate years, 1963-64.

191, 192 (0-4, 0-8) **SENIOR RESEARCH** The student works on a theoretical or experimental project under direction. Written and oral reports are submitted. 191, two hours; 192, four hours. The staff.

212 **MECHANICS AND WAVE MOTION (3-0)** Continuation and developments of the principles and methods of mechanics; integration of fundamental physical principles with mathematics and with the extension of these principles to wave motion. *Prerequisite:* 116; Math. 212 concurrently. Three hours. Dr. Nyborg.

242 **ELECTROMAGNETISM** Fundamental principles of electric and magnetic fields. Electrostatic theory and magnetic fields of steady currents. Electromagnetic energy relationships and introduction to electromagnetic theory. *Prerequisite:* 115; Math. 211. Four hours. Dr. Sachs.

271, 272 **ADVANCED MODERN PHYSICS (3-2)** Background and concepts of relativity, quantum theory, and nuclear physics. First semester: relativity, electron physics, atomic structure and spectra, wave mechanics. Second semester: molecular and solid state physics, X-rays, nuclear physics. *Prerequisite:* 115 and 116 or E.E. 110 or Chem. 142 and Math. 211. 271 for 272. Four hours. Dr. Foley.

275 **KINETIC THEORY AND STATISTICAL MECHANICS (3-0)** Fundamental concepts of statistical theories. Meaning of models and constructs. Partition functions and their application to problems. Classical and non-classical distributions. *Prerequisite:* 116, 173; Math. 211. Three hours. Dr. Krizan. Alternate years, 1963-64.

276 **SOLID STATE PHYSICS** Crystal structure and classification of solids. Mechanical, thermal and electromagnetic properties of solids. Free electron model of conductors and band theory. *Prerequisite:* 212, 242, 271; Math. 212 or 220. Three hours. Dr. Foley. Alternate years, 1963-64.

304 **QUANTUM MECHANICS (3-0)** Development of the Schrodinger theory from DeBroglie's approach, and application of wave mechanics to simple physical systems including hydrogen atom. Characteristic features of Heisenberg matrix mechanics. Relation between wave and matrix mechanics. *Prerequisite:* 271, and either Math. 220 or Math. 212. Three hours. Dr. Krizan. Alternate years, 1964-65.

311 **ADVANCED DYNAMICS (3-0)** Classical Mechanics presented as the basis of the concepts and methods of modern physics. Variational methods. Lagrangian and Hamiltonian formulations, canonical transformations. *Prerequisite:* 212; Math. 211 and either 220 or 212. Three hours. Dr. Krizan. Alternate years, 1964-65.

312 **ELECTROMAGNETIC THEORY (3-0)** Mathematical theory of electricity and magnetism. Field equations, energy and radiation. *Prerequisite:* 242, Math. 211 and 212 or 220. Three hours. Dr. Crowell. Alternate years, 1963-64.

¹ May be replaced by Physics 5-6 with the consent of the department.

281, 282, 283, 284, 285, 286 SEMINAR Members of the staff and graduate students meet weekly to study contemporary advances in physics and for reports on research being done in the department. One hour. The staff.

391, 392, 393, 394 MASTER'S THESIS RESEARCH Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Political Science

COLLEGE OF ARTS AND SCIENCES

Professors Nuquist¹ (Chairman), Babcock, Haugen, G. T. Little and Shen²; Associate Professors Flash, Gould, Hilberg; Assistant Professors Matthews and Simon; Instructors Eastman, Staron and Thompson; Mr. Dunham

1,2 AMERICAN GOVERNMENT First semester: state and local governments; Second semester: national government. Three hours. The staff.

11, 12 INTRODUCTION TO POLITICAL SCIENCE First semester: elements of political science. Second semester: comparative governmental institutions. Students should not elect both 1, 2 and 11, 12. Three hours. The staff.

51, 52 INTERNATIONAL RELATIONS First semester: imperialism and the emergence of Afro-Asia; World War I and the rise of totalitarianism; World War II and the nuclear threat. Second semester: comparative foreign policy; the state system; international cooperation and conflict. *Prerequisite*: sophomore standing. Three hours. Dr. Hilberg and Mr. Staron.

54 GEOGRAPHIC BACKGROUNDS OF POLITICS Elements of political geography; data of physical relations as they affect politics among states. *Prerequisite*: 51. Three hours. Dr. Little.

61, 62 LOCAL GOVERNMENT First semester: government of counties, towns, and other rural units. Second semester: municipal government. *Prerequisite*: sophomore standing. Three hours. Dr. Nuquist.

71 GOVERNMENT OF GREAT BRITAIN Organization, functions, and procedures of the British government. The nature and role of English law. *Prerequisite*: sophomore standing. Three hours. Mr. Staron.

72 GOVERNMENTS OF CONTINENTAL EUROPE *Prerequisite*: sophomore standing. Three hours. Mr. Staron. Alternate years, 1963-64.

74 GOVERNMENTS OF THE BRITISH EMPIRE AND THE COMMONWEALTH Governmental systems in the British Commonwealth and overseas territories, with particular emphasis on Canada and Commonwealth cooperation. *Prerequisite*: sophomore standing. Three hours. Dr. Haugen. Alternate years, 1963-64.

75 GOVERNMENTS OF THE FAR EAST Political development and organization of China, Japan, and some other states of Asia. *Prerequisite*: sophomore standing. Three hours. Dr. Shen. Alternate years, 1963-64.

¹ Sabbatical leave first semester 1963-64.

² Visiting professor.

76 GOVERNMENTS OF LATIN AMERICA Analysis of the formal and informal political structure of the Latin American states with emphasis upon contemporary developments. *Prerequisite:* sophomore standing. Three hours. Dr. Gould. Alternate years, 1964-65.

191, 192 HONORS OR SPECIAL READINGS For undergraduates only. Three to six hours. The staff.

211, 212 POLITICAL THEORY First semester: development of political theory. Second semester: recent political theory. *Prerequisite:* 1, 2 or 11, 12; one other course or one sophomore course in social science; senior standing. Three hours. Dr. Babcock.

216 AMERICAN POLITICAL THOUGHT American political thought from the colonial period to recent times. *Prerequisite:* 1, 2 or 11, 12 and one other course or Economics 11-12 or History 23, 24; junior standing. Three hours. Mr. Simon.

221, 222 CONSTITUTIONAL LAW First semester: historical and analytic study of judicial review, federalism, the taxing power, the commerce power, the suffrage. Second semester: historical and analytic study of the war power, the executive power, due process of law, citizenship, Bill of Rights, equal protection of the laws. *Prerequisite:* 1, 2 or 11, 12; one other course, or Economics 11-12, or History 23, 24; junior standing. Three hours. Dr. Gould.

226 ADMINISTRATIVE LAW A study of judicial decisions affecting the actions of public officials as they relate to the functions and policies of government. *Prerequisite:* 241. Three hours. Dr. Nuquist. Alternate years, 1963-64.

227 INTERNATIONAL LAW Principles and applications of public international law. *Prerequisite:* 51; one other year course in social science; junior standing. Three hours. Dr. Little. Alternate years, 1964-65.

231 THE LEGISLATIVE PROCESS Congressional organization and procedure. *Prerequisite:* 11, 12 or 1, 2; one other course or one sophomore course in social science; junior standing. Three hours. Dr. Haugen. Alternate years, 1963-64.

232 LAWMAKING AND PUBLIC POLICY Influence of the executive and problems of congressional control. *Prerequisite:* 1, 2, or 11, 12; one other course or one sophomore course in social science; junior standing. Three hours. Dr. Haugen. Alternate years, 1963-64.

241 ORGANIZATION AND FUNCTION OF PUBLIC ADMINISTRATION *Prerequisite:* 1, 2 or 11, 12; one other course or one sophomore course in social science; junior standing. Three hours. Dr. Flash.

242 ADMINISTRATIVE PROCEDURES *Prerequisite:* 241 or 263. Three hours. Dr. Flash.

251, 252 AMERICAN FOREIGN POLICY First semester: Constitutional principles, institutional factors, and historic traditions in the formation of foreign policy. Second semester: contemporary policies toward specified countries. *Prerequisite:* 11 and 12, or 2 and 51; junior standing. Three hours. Dr. Hilberg.

253-254 WORLD POLITICS Analysis of the foreign policies of countries other than the United States; selected problems in Europe, Latin America, and the Pacific Area. *Prerequisite:* 51, 52; junior standing. Three hours. Dr. Shen. Alternate years, 1963-64.

256 INTERNATIONAL ADMINISTRATION Theory and practice in international agencies. *Prerequisite:* 51, 52; junior standing. Three hours. Dr. Little. Alternate years, 1964-65.

263 STATE GOVERNMENT Organization and administration of state government. *Prerequisite:* 1, 2 or 11, 12; one other course or one sophomore course in social science; junior standing. Three hours. Dr. Haugen.

265, 266 INTERGOVERNMENTAL RELATIONS First semester: problems of the federal system. Second semester: national-state-local cooperative administration of selected public functions. *Prerequisite:* 1, 2 or 11, 12; one other course or one sophomore course in social science; junior standing. Three hours. Dr. Haugen. Alternate years, 1964-65.

271, 272 POLITICAL PARTIES AND PRESSURE GROUPS First semester: political parties. Second semester: citizen participation and interest groups. *Prerequisite:* 1, 2 or 11, 12; one other course or one sophomore course in social science; junior standing. Three hours. Mr. Matthews.

281, 282 POPULAR GOVERNMENT Seminar for seniors concentrating in political science who intend to pursue graduate study in a branch of this subject or to enter the public service. Three hours. Dr. Hilberg.

291, 292 READING AND RESEARCH For advanced undergraduates and graduate students. Three to six hours. The staff.

391, 392, 393, 394 MASTER'S THESIS RESEARCH Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Poultry Science

COLLEGE OF AGRICULTURE AND HOME ECONOMICS

Associate Professors Donovan (Chairman) and Henderson

1 GENERAL POULTRY SCIENCE (2-2) Principles of poultry science and their application to the poultry industry. Three hours. Mr. Henderson.

56 POULTRY JUDGING AND SELECTION (1-2) Physiological and morphological characters correlated with egg production. Judging of standard bred poultry, laboratory practice in judging both utility and exhibition poultry. *Prerequisite:* 1. Two hours. Mr. Henderson.

102 INCUBATION AND BROODING (2-4) General biology of embryonic development and hatchability; fundamental principles underlying incubation practices; theory and practice of brooding chicks and other poultry. *Prerequisite:* 1; junior standing and permission of department. Four hours. Mr. Henderson.

103 PROCESSING AND PACKAGING POULTRY PRODUCTS (2-2) The principles of marketing of eggs and poultry meat; candling, grading, and packing eggs; preparation of poultry for market. A one-week inspection trip to the Boston market for which there is a charge of \$25.00. *Prerequisite:* 1; junior standing. Three hours. Mr. Henderson. Alternate years, 1964-65.

151 POULTRY BREEDING (2-0) Analysis of the procedure and techniques of practical application of genetic principles used in poultry breeding. Trap

nesting, selection pressures, heritability, mating systems. *Prerequisite:* Poultry 1. Two hours. The staff. Alternate years, 1963-64.

201 **POULTRY NUTRITION (3-2)** Digestion, absorption and metabolism of nutrients for maintenance, growth and reproduction. Developing and testing experimental concepts, including deficiency studies. *Prerequisite:* A&DS 105; Chem. 131. Four hours. Dr. Donovan.

281, 282 **POULTRY SCIENCE SEMINAR** A topical seminar designed for all students with an interest in current trends in the poultry industry. Required of poultry seniors. *Prerequisite:* Poultry 1. One hour. The staff.

197, 198 **SENIOR RESEARCH** Work on a research problem under the direction of a qualified staff member. Findings submitted in written form as prescribed by the department. *Prerequisite:* senior standing. Three hours. The staff.

391, 392, 393, 394 **MASTER'S THESIS RESEARCH** Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Psychology

COLLEGE OF ARTS AND SCIENCES

Professors Chaplin (Chairman) and Ansbacher; Associate Professors Murdock¹ and Slamecka; Assistant Professors Ghei and Perrine; Instructor Martin

1 **GENERAL PSYCHOLOGY** Introduction to the entire field, emphasizing the normal adult human being. *Prerequisite:* sophomore standing. Three hours. The staff.

21 **SOCIAL PSYCHOLOGY** Principles, problems and research techniques of social psychology; beliefs and attitudes; groups, morale, leadership. *Prerequisite:* 1. Three hours. Dr. Perrine.

101 **SOCIAL PSYCHOLOGY** Principles, problems and research techniques of social psychology; beliefs and attitudes; groups, morale, leadership. *Prerequisite:* 1; junior standing. Three hours. Dr. Perrine.

105 **CHILD PSYCHOLOGY** Development of the individual from birth to adolescence. *Prerequisite:* 1; junior standing. Three hours. Dr. Ghei.

109-110 **STATISTICAL AND EXPERIMENTAL METHODS (2-4)** Descriptive and inferential statistics; general knowledge and appreciation of the scientific method in psychology. The student will design, conduct, and interpret the results of experiments in several different areas. *Prerequisite:* 1; junior standing; Math. 9 or the equivalent. Four hours. Dr. Slamecka.

206 **PERSONALITY** The individual and life problems from the field-theoretical and phenomenological approach with emphasis on Alfred Adler's viewpoint. *Prerequisite:* 1; junior standing. Three hours. Dr. Ansbacher.

208 **ABNORMAL PSYCHOLOGY** The more unusual mental processes; methods of observing and interpreting them; their bearing on our understanding of the normal mind. *Prerequisite:* 1; junior standing. Three hours. Dr. Ghei.

¹ On leave 1962-63.

222 **PHYSIOLOGICAL PSYCHOLOGY** Relationships between psychological processes and the functions of the nervous system and endocrine glands. *Prerequisite:* 1; junior standing. Three hours. Dr. Chaplin.

223 **SYSTEMATIC PSYCHOLOGY** A comparative study of the leading contemporary schools of psychological thought. *Prerequisite:* 1; junior standing. Three hours. Dr. Chaplin.

225-226 **PSYCHOLOGICAL TESTS (2-2)** Survey of important clinical tests of ability and personality; training in the administration of individual intelligence tests. *Prerequisite:* 110. Three hours. Dr. Ansbacher.

230 **LEARNING** Major theoretical and experimental approaches to the psychology of learning. Topics will include: generalization, discrimination, latent learning and concept formation. *Prerequisite:* 110. Three hours. Dr. Slamecka.

231 **PERCEPTION** Experimental and theoretical study of the perceptual processes. Traditional problems of space, form and movement perception and consideration of the role of social and motivational factors. *Prerequisite:* 110. Three hours. Dr. Perrine.

232 **EXPERIMENTAL SOCIAL PSYCHOLOGY (2-3)** A laboratory course in the experimental methods and techniques typically used in social psychological research. Experiments will be designed, conducted, and evaluated in such areas as attitude formation and change, conformity, motivation, prejudice, rumor, social perception, and suggestion. Techniques used in attitude measurement and public opinion surveys will also be examined and applied. *Prerequisite:* 21, 109, or permission of the instructor. Three hours. Dr. Perrine.

234 **MOTIVATION AND EMOTION** The nature and development of motives, emotions and their relation to other psychological processes. *Prerequisite:* 223. Three hours. Dr. Chaplin.

281-282 **SEMINAR** Review and discussion of current psychological research. Required of graduate students and seniors concentrating in psychology. *Prerequisite:* 110, 223. One hour. The staff.

381-382 **ADVANCED READINGS** Readings, with conferences, to provide those working for the M.A. degree with the background for, and specialized knowledge relating to, their research. Credit as arranged. The staff.

391, 392, 393, 394 **MASTER'S THESIS RESEARCH** Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Romance Languages

COLLEGE OF ARTS AND SCIENCES

Professors Daggett¹ (Chairman) and Johnston; Associate Professors Julow and Parker; Assistant Professors Hardin, Towne and Ugalde; Instructors Baker, Danielson, Heller, Hopkins, Lamb, Souville and Urso

French

1-2 **ELEMENTARY FRENCH** Grammar, pronunciation, composition, translation, dictations, and use of the spoken language, for those who present less

¹ Sabbatical leave, second semester, 1962-63.

than two years of preparatory French. *Credit is given only if Intermediate French is also completed.* Four hours. Dr. Julow and others.

11-12 INTERMEDIATE FRENCH Grammar, composition, translation, and conversation. Conducted chiefly in French. *Prerequisite:* 1-2 or two years of preparatory French. Three hours. Dr. Parker and others.

101-102 FRENCH LITERATURE: 19TH CENTURY Outstanding authors of the romantic, realistic, and naturalistic schools. This course is a prerequisite for all other courses in French literature. *Prerequisite:* 11-12. Three hours. Drs. Johnston, Julow and Parker.

121-122 COMPOSITION AND CONVERSATION Composition, conversation, and phonetics. Required of those who wish to be recommended to teach French. *Prerequisite:* good standing in 11-12. Three hours. Mr. Heller and others.

203, 204 FRENCH LITERATURE: 20TH CENTURY Principal movements from 1900 to the present, with emphasis on outstanding works in the novel, drama, and poetry. *Prerequisite:* 101-102, 203 for 204. Three hours. Dr. Johnston. Alternate years, 1963-64.

211 FRENCH LITERATURE: 18TH CENTURY Main currents of the literature of the century with emphasis on Montesquieu, Diderot, Voltaire, and Rousseau. Lesage, Marivaux, and Beaumarchais will be studied in the drama. *Prerequisite:* 101-102. Three hours. Dr. Parker. Alternate years, 1963-64.

213 FRENCH LITERATURE: 17TH CENTURY Selected works of the century with emphasis on Corneille, Racine, and Molière. *Prerequisite:* 101-102. Three hours. Dr. Julow. Alternate years, 1964-65.

216 FRENCH LITERATURE: 16TH CENTURY Selected works of the period with emphasis on Rabelais and Montaigne. *Prerequisite:* 101-102. Three hours. Dr. Daggett. Alternate years, 1964-65.

217 SPECIAL STUDIES ON FRENCH LITERATURE Selected authors representative of French thought and literary merit. Three hours. Dr. Johnston. Alternate years, 1964-65.

223-224 ADVANCED COMPOSITION AND CONVERSATION Translation into French of difficult English prose, free composition and discussion of questions of style. Advanced conversation. Required of those who wish to be recommended to teach French. *Prerequisite:* 121-122. Three hours. Dr. Daggett.

281-282 SENIOR SEMINAR Special readings and research. Required of all senior concentrators. One hour.

381, 382 GRADUATE SEMINAR Offered for resident candidates for the Master of Arts degree; opportunities for independent work are provided. Three hours.

391, 392, 393, 394 MASTER'S THESIS RESEARCH Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Italian

1-2 ELEMENTARY ITALIAN Grammar, composition, translation, and practice in the spoken language. *Prerequisite:* permission of the department. Three hours. Dr. Julow.

11-12 INTERMEDIATE ITALIAN Grammar, composition, translation, and conversation. *Prerequisite:* 1-2 or its equivalent. Three hours. Dr. Johnston.

Spanish

1-2 ELEMENTARY SPANISH Grammar, composition, and translation, practice in pronunciation and use of the spoken language. For those who present less than two years of preparatory Spanish. *Credit is given only if Intermediate Spanish is also completed.* Four hours. Mr. Hardin and others.

11-12 INTERMEDIATE SPANISH Readings from selected authors. Composition, grammar, and practice in conversation. Conducted chiefly in Spanish. *Prerequisite:* 1-2 or two years of preparatory Spanish. Three hours. Mr. Towne and others.

101-102 INTRODUCTION TO SPANISH LITERATURE Selections from the outstanding works of Spanish literature from the medieval period to the present. Outside reading, and reports. *Prerequisite:* 11-12. Three hours. Mr. Hardin.

121-122 CONVERSATION AND COMPOSITION Composition, conversation, and phonetics. Required of those who wish to be recommended to teach Spanish. *Prerequisite:* good standing in 11-12. Three hours. Mr. Hopkins.

205 INTRODUCTION TO SPANISH-AMERICAN LITERATURE Selections from outstanding authors from the colonial period to *modernismo*; Garcilaso de la Vega, Sor Juana, Juan Montalvo, Ricardo Palma, Sarmiento, and José Hernandez. Outside readings, and reports. *Prerequisite:* 101-102. Three hours. Mr. Hardin. Alternate years, 1964-65.

206 CONTEMPORARY SPANISH-AMERICAN LITERATURE Selections from outstanding authors of the 20th century; Ruben Darío, Gabriela Mistral, Pablo Neruda, Ricardo Güiraldes, and Eduardo Barrios. Outside readings and reports. *Prerequisite:* 101-102. Three hours. Mr. Hardin. Alternate years, 1964-65.

207 SPANISH LITERATURE: 19TH CENTURY Principal literary currents of the 19th century, from Romanticism to the "Generation of 1898." Representative readings from the poetry, drama, and novel of the period. *Prerequisite:* 101-102. Three hours. Mr. Ugalde.

208 SPANISH LITERATURE: 20TH CENTURY Origins and main aspects of the intellectual conflicts in modern Spain, as reflected in the literary works from the "Generation of 1898" to the present. *Prerequisite:* 207. Three hours. Mr. Ugalde.

213, 214 SPANISH LITERATURE: GOLDEN AGE Selected readings from the novel, poetry, drama of the 16th and 17th centuries with special attention to Cervantes and the dramatists. *Prerequisite:* 101-102, 213 for 214. Three hours. Mr. Ugalde. Alternate years, 1963-64.

223-224 ADVANCED COMPOSITION AND CONVERSATION Translation into Spanish of difficult English prose, free composition and discussion of questions of style. Advanced conversation. Required of those who wish to be recommended to teach Spanish. *Prerequisite:* 121-122. Three hours. Mr. Ugalde.

281-282 SENIOR SEMINAR Special readings and research. Required of all senior concentrators. One hour.

Russian

COLLEGE OF ARTS AND SCIENCES

Assistant Professor Paganuzzi

1-2 **ELEMENTARY RUSSIAN** Spoken and written Russian. Training in modern Russian, designed to help the student gain assurance in self-expression in the language. Practice in pronunciation and aural comprehension in class and through tape-recordings. *Credit is given only if Intermediate Russian is also completed.* Four hours.

11-12 **INTERMEDIATE RUSSIAN** Rapid and systematic review of basic Russian. Increased stress on pronunciation, conversation, and reading. Readings in works by Puskin, Lermontov, Tolstoi, Chekov, and others. *Prerequisite:* 1-2. Three hours.

101-102 **INTRODUCTION TO RUSSIAN LITERATURE** Reading and discussion of selected classic and contemporary works of Russian literature. Practice in hearing, writing, and speaking Russian. *Prerequisite:* 11-12. Three hours.

Sociology

COLLEGE OF ARTS AND SCIENCES

Professor Oren (Chairman); Assistant Professors Lewis, V. C. Little, Maher and Scheans

21 **THE CULTURES OF MAN** The culture concept; its use in perceiving and understanding behavioral regularity and the diversity of social systems. The life-ways of non-Western societies of varying social complexity. *Prerequisite:* sophomore standing. Three hours. I, II. Staff.

41 **SOCIAL PROBLEMS** Conflicts and problems in modern industrial society. *Prerequisite:* 21. Three hours. Dr. Scheans.

51 **THE FAMILY** A cross-cultural approach to the study of the family as a social institution: the American family institution; nature of the changes it is undergoing, problems generated by these changes. *Prerequisite:* 21. Three hours. Dr. Lewis.

54 **MINORITY GROUPS** Patterns of dominance and submission among groups of differing "racial" and ethnic designation in modern societies and in "underdeveloped" areas. *Prerequisite:* 21. Three hours. Dr. Oren.

61 **PEOPLES OF THE AMERICAS AND AFRICA** A general ethnographic survey of representative Amerindian and African cultures. Emphasis is placed on the social, political, economic and religious institutions of selected societies of all major culture areas. *Prerequisite:* 21. Three hours. Dr. Scheans.

63 **PEOPLES OF ASIA AND OCEANIA** A general ethnographic survey of contemporary culture types in Southeast Asia, Polynesia, Micronesia, Melanesia and Australia. Consideration is given to the traditional cultures of these areas and their place in the modern world. *Prerequisite:* 21. Three hours. Dr. Scheans.

72 **INTRODUCTION TO SOCIAL WORK** History, philosophy, fields, and objectives of social work; process of social case work through discussion of cases. *Prerequisite:* 21; Psychology 1. Three hours. Dr. Little.

83 **APPLIED ANTHROPOLOGY** A descriptive and analytical presentation of the place of anthropology in the modern world. Study of the human problems resulting from attempts to direct cultural change in subindustrial societies. *Prerequisite:* 21. Three hours. Dr. Scheans.

101 **SOCIOLOGICAL ANALYSIS** Major conceptual tools of sociology; approaches to their use in the analysis of contemporary social processes. *Prerequisite:* 21 or junior standing. Three hours. I, II. Staff.

205 **SMALL-GROUP DYNAMICS** Analysis of processes and problems in interaction at the level of the social microcosm; implications for the understanding of large-scale social organization. *Prerequisite:* 9 hours of sociology, including 101. Three hours. Dr. Oren.

210 **POPULATION ANALYSIS** The demographic and ecological analysis of societies; particular reference to contemporary world problems. *Prerequisite:* 9 hours of sociology, including 101. Three hours. Mr. Maher.

212 **THE COMMUNITY** Analysis of the structure and function of communities as social systems with emphasis on American communities. Ecology, social class and power structure, and social change within the community context; procedures for sociological study of communities. *Prerequisite:* 9 hours of sociology, including 101. Three hours. Dr. Lewis.

214 **PUBLIC OPINION** Analysis of attitude formation and the bases in social structure of differing tendencies toward collective behavior; implications for the analysis of political institutions. *Prerequisite:* 9 hours of sociology, including 101. Three hours. Mr. Maher.

221 **CULTURE AND PERSONALITY** Relationship of socialization to the socio-cultural milieu; the cross-cultural comparison of personality development; the problem of delineating modal personality types; variations in child-rearing situations according to "social class" in contemporary Western Civilization. *Prerequisite:* 9 hours of sociology, including 101, and Psychology 1. Three hours. Dr. Oren.

225 **CULTURAL CHANGE** Internal and external conditions for modifications in group behavior; role of the individual innovator in these processes; concept of innovation as the basis for the study of cultural dynamics. *Prerequisite:* 9 hours of sociology, including 101. Three hours. Dr. Scheans.

228 **SOCIAL ANTHROPOLOGY** Evaluation of the comparative method in anthropology; its use in the formulation of generalizations concerning the nature of society. *Prerequisite:* 9 hours of sociology, including 101. Three hours. Dr. Scheans.

251 **SOCIAL RESEARCH METHODS** The logic and techniques of sociological inquiry. *Prerequisite:* 12 hours of sociology, and consent of instructor. Three hours. Staff.

282 **READINGS IN CURRENT SOCIOLOGICAL LITERATURE** Seminar to acquaint advanced students with contemporary issues in sociology and with the professional periodicals of sociology and related fields. *Prerequisite:* 12 hours of sociology, senior standing, and consent of instructor. Three hours. Staff.

Speech

COLLEGE OF ARTS AND SCIENCES

Professors Huber (Chairman) and Luse; Associate Professors Everhart and Lewis; Assistant Professors Feidner and Wamboldt; Instructors Ackley, Frederickson, London and Travis

1 BASIC SPEECH Elements of speech and phonetics for the improvement of voice and articulation in communication. Class exercises and performance. Three hours. I, II. The staff.

3 PARLIAMENTARY PROCEDURE Study and practice in the fundamentals of conducting a meeting. The class meets twice a week with one hour of outside preparation. *Prerequisite:* sophomore standing. One hour. Dr. Huber.

11 PUBLIC SPEAKING Preliminary analysis, gathering material, organization and delivery of speeches; use of visual aids and speech to inform. Two thirds of the time devoted to student performance. Three hours. I, II. The staff.

12 ARGUMENTATION Inductive, deductive, causal, and reasoning from analogy as applied to the speaking situation; designed to develop through performance skill in logical expression of thought. *Prerequisite:* 11. Three hours. I, II. Dr. Huber.

14 GROUP DISCUSSION Methods of procedure in committees, round table discussions, lecture forums, symposiums, panels, and other types of discussion; designed to develop through performance skill in the thought processes involved in discussion leadership. *Prerequisite:* 11. Three hours. Messrs. London and Travis.

31 ORAL INTERPRETATION OF LITERATURE Principles and techniques of oral interpretation of literature; analysis and appreciation of poetry, prose and drama through the development of ability in communicating the logical, emotional and aesthetic values of literature to an audience. *Prerequisite:* 1. Three hours. I, II. Drs. Huber, Luse, Wamboldt, and Messrs. Feidner and London.

41 ACTING Fundamentals of acting, including improvisation, character analysis, and styles of acting. Performance in short classroom acting projects required. *Prerequisite:* sophomore standing. Three hours. I, II. Mr. Feidner.

42 ACTING Acting for those who have demonstrated some ability in Speech 41. Periods and styles of acting, intensive character analysis, frequent acting projects, including at least one public performance. *Prerequisite:* Speech 41 and permission of the instructor. Three hours. Mr. Feidner. Alternate years, 1964-65.

61 INTRODUCTION TO BROADCASTING Radio and television broadcasting; development, structure, and use. Laboratory in speaking for broadcast and in operation of equipment. *Prerequisite:* sophomore standing. Three hours. Dr. Lewis.

71 VOICE SCIENCE The physical, anatomical, physiological, and phonetic factors of speech. *Prerequisite:* 1; sophomore standing. Three hours. I. Dr. Luse. Alternate years, 1962-63.

74 INTRODUCTION TO SPEECH CORRECTION The causes, symptoms and treatment of speech disorders. One third devoted to articulatory problems of

children. Observation of children's therapy in the Speech Clinic. *Prerequisite:* 1; sophomore standing. Three hours. Drs. Luse and Everhart.

111 **PERSUASION** Human motivation, attitudes and how to change them; emotion, stereotypes, attention, and audience psychology; training in their use through student performance. *Prerequisite:* six hours, including 11. Three hours. Dr. Huber. Alternate years, 1964-65.

116 **SPEECH COMPOSITION** Study of speech style and rhetorical criticism by analysis of great speeches and by writing longer speeches. *Prerequisite:* six hours, including 11. Three hours. Dr. Huber. Alternate years, 1964-65.

140 **PLAY PRODUCTION** Lecture and laboratory in the physical elements of play production; scene design, lighting, construction of sets and properties, and stage management. *Prerequisite:* six hours of speech or permission of the instructor. Three hours. Mr. Ackley. Alternate years, 1963-64.

142 **PLAY DIRECTING** Lecture-laboratory in the problems and techniques of directing plays: staging, script analysis, production techniques, and rehearsal techniques. *Prerequisite:* six hours including 41 or permission of the instructor. Three hours. Mr. Feidner. Alternate years, 1963-64.

145, 146 **DEVELOPMENT OF WESTERN THEATRE** History of the theatre and drama in western civilization from earliest rituals to the contemporary theatre. Plays from all major periods are read and discussed. *Prerequisite:* junior standing; English 25, 26 or 27, 28. Three hours. Mr. Feidner. Alternate years, 1964-65.

161 **RADIO AND TELEVISION BROADCASTING** The social, psychological, historical, educational, and technical aspects of radio and television with laboratory work in announcing, interviewing, and production of various types of programs. *Prerequisite:* six hours, including 1. Three hours. Dr. Lewis.

162 **WRITING FOR RADIO AND TELEVISION** Principles and techniques of writing for radio and television; adaptations, documentaries, and dramatic scripts. *Prerequisite:* 161 or permission of the instructor. Three hours. Dr. Lewis.

171, 172 **SPEECH CORRECTION** The etiology, symptoms and treatment of voice disorders; the problems of stuttering and organic disorders of speech. The etiology, symptoms and rehabilitation of various auditory disorders. *Prerequisite:* 74. Three hours. Drs. Luse and Everhart.

273 **PRINCIPLES OF AUDIOLOGY** Anatomy and physiology of the ear; administration and interpretation of diagnostic hearing tests; principles of rehabilitation for the hard of hearing; hearing conservation in the public school. *Prerequisite:* 12 hours of speech and psychology, including Speech 74. Dr. Falck.

275, 276 **CLINICAL STUDY IN SPEECH DIAGNOSIS AND THERAPY** Observation and practice in diagnosis and therapy of speech disorders. One or two hours. (May be repeated up to five credit hours.) *Prerequisite:* 74. Dr. Everhart.

World Problems

COLLEGE OF ARTS AND SCIENCES

101, 102 **WORLD PROBLEMS** A different major issue of particular importance to men and women in the modern world will be presented, each semester,

by various instructors from the humanities, the sciences, and the applied arts. Language and communication, evolutionary thinking, and problems of education are examples of topics recently studied. Lectures, discussion, readings and reports. Not counted toward concentration requirements. *Prerequisite*: senior standing or permission of the director. Three hours. Dr. Beckett and others.

Zoology

COLLEGE OF ARTS AND SCIENCES

*Professors Moody*¹ (*Chairman*) and *Lochhead*²; *Associate Professors Bond, Glade, Potash and Torch*; *Assistant Professors Bell, Chipman and Rothstein*

1 INTRODUCTION TO ZOOLOGY (3-3) Fundamental life processes of animals, particularly at the cellular level, to give the general student an appreciation of these processes, and the science student a background for further study in zoology. *Prerequisite*: a course in high school chemistry is strongly recommended. Four hours. Dr. Torch and staff. I and II.

2 PRINCIPLES OF EVOLUTION (3-2) Biological principles connected with the development of life on earth; evidences that evolution occurs. *Prerequisite*: 1. Four hours. Dr. Bell and staff.

5-6 MAMMALIAN ANATOMY AND PHYSIOLOGY (2-2) Structure and function of the mammalian body, with special reference to man. Dissection, primarily of the cat; physiological experiments; microscopic study of tissues. Required of students in the Nursing and Dental Hygiene curricula, elective to others.³ Three hours. Dr. Chipman.

21 ORGANIC EVOLUTION A non-laboratory course on the theory of evolution. For material covered see description of 2. A student may not receive credit for both 2 and 21. *Prerequisite*: sophomore standing. Three hours. Dr. Moody.

41, 42 COMPARATIVE VERTEBRATE ANATOMY (2-4) Survey of Phylum Chordata; outline of basic vertebrate body plan; functional anatomy and phylogeny of the organ systems of vertebrates, beginning with an agnathan and concluding with a mammal. *Prerequisite*: 1; 41 for 42. Four hours. Dr. Bond.

52 PHYSIOLOGY Chemical and mechanical fundamentals of animal physiology, with special reference to man. *Prerequisite*: 1, junior standing; some knowledge of chemistry. Three hours. Dr. Lochhead.

104 ANIMAL ECOLOGY (2-4) Relationships between animals and their environments; dynamics of animal populations; aspects of wildlife conservation. *Prerequisite*: 1, and an additional semester of zoology or botany; inorganic chemistry. Four hours. Dr. Potash. Alternate years, 1963-64.

108 GENERAL ENTOMOLOGY (2-4) Study of insects; morphology, physiology, and evolution. *Prerequisite*: 1, and 2 or 41. Four hours. I. Dr. Potash.

¹ Sabbatical leave first semester 1962-63.

² Sabbatical leave second semester 1963-64.

³ Does not satisfy the requirement of a course in laboratory science in the College of Arts and Sciences, or the requirement of a course in biology for premedical and pre dental students. Students will not receive credit for both this course and Zoology 42.

109 FIELD ZOOLOGY (2-4) Collection and identification of animals; study of local habitats, their nature, and the adaptations of animals to them; factors governing distribution of animals; methods of collecting and preparing study specimens. *Prerequisite*: 1, and an additional semester of zoology or botany. Four hours. Dr. Bell.

111 EMBRYOLOGY (2-4) General principles of development exemplified by typical invertebrate and vertebrate embryos. *Prerequisite*: 41, junior standing. Four hours. Dr. Glade.

112 COMPARATIVE HISTOLOGY (2-4) Microscopic anatomy of invertebrate and vertebrate tissues. Basic tissue similarities and specializations in relation to function. *Prerequisite*: 41, junior standing. Four hours. Dr. Glade. Alternate years, 1962-63.

115 HEREDITY Principles of inheritance and their physical basis. *Prerequisite*: junior standing and two semesters of courses selected from botany, psychology, and zoology. Three hours. Dr. Moody.

150 INVERTEBRATE ZOOLOGY (2-4) Anatomy, physiology, and life histories of representatives of the more important invertebrate phyla. Required of all students concentrating in zoology. *Prerequisite*: 1, and 41 or 31; junior standing. Four hours. I. Dr. Lochhead.

202 ADVANCED COMPARATIVE ANATOMY (2-4) Special topics in vertebrate anatomy, with emphasis on evolutionary changes in form and function of selected structures. Laboratory devoted to individual dissection projects. Seminars for student reports. *Prerequisite*: 42, 111, and consent of the instructor. Four hours. Dr. Bond. Alternate years, 1963-64.

207 VERTEBRATES (2-4) Classification, ecology, behavior, evolution, and distribution of vertebrates other than birds. *Prerequisite*: 42, either 2 or 21, and a course in zoology numbered above 100. Four hours. Dr. Bell.

216 HUMAN GENETICS Principles of human inheritance; population genetics; interaction of heredity and environment; application of principles of heredity to human problems on both individual and social levels. *Prerequisite*: 115 or Botany 255. Three hours. Dr. Moody.

220 PROTOZOOLOGY (2-4) Recognition, morphology, reproduction and physiology of the more important taxonomic groups of the Protozoa. *Prerequisite*: a course in zoology numbered above 100, and inorganic chemistry. Four hours. Dr. Torch.

222 EXPERIMENTAL EMBRYOLOGY (2-6) Theoretical approach to major problems of development based on modern research in embryology, genetics, physiology, bacteriology, and related fields. *Prerequisite*: 111 and consent of the instructor. Four hours. Dr. Glade. Alternate years, 1963-64.

231 CELL PHYSIOLOGY (2-4) Study of cell function, with emphasis upon experimental techniques used to elucidate chemical and physical mechanisms within living cells. *Prerequisite*: a course in zoology numbered above 100; Chem. 131, 132. Four hours. Dr. Rothstein.

236 FRESH-WATER BIOLOGY (2-4) Organisms of lakes, ponds and streams; their adaptations to varying physical, chemical and biotic conditions. *Pre-*

requisite: a course in zoology numbered above 100, and inorganic chemistry. Four hours. Dr. Potash. Alternate years, 1964-65.

241 CELL STRUCTURE Current concepts of cellular anatomy and reproduction as revealed by recent developments in microscopy. Cytological techniques stressed in the laboratory. *Prerequisite*: a course in zoology numbered above 100; Chem. 131, 132. Four hours. Dr. Torch.

255 COMPARATIVE ANIMAL PHYSIOLOGY (2-6) General principles of function in invertebrates and vertebrates. *Prerequisite*: 104 or 150 or 236 and consent of the instructor; Chem. 131, 132. Four hours. II. Dr. Rothstein.

267 GENETICS OF DEVELOPMENT (2-4) Problems of differentiation and morphogenesis approached from the viewpoint of gene action and biosynthesis; influence of hereditary material during ontogeny. *Prerequisite*: 111, 115, and consent of the instructor. Four hours. Dr. Glade. Alternate years, 1963-64.

270 MODERN EVOLUTIONARY THEORY Contributions of modern research in genetics, systematics, distribution, experimental embryology, serology, and related fields to problems of the means and methods of evolutionary change. *Prerequisite*: a course in evolution and one in heredity or genetics. Three hours. Dr. Moody.

271 ADVANCED LIMNOLOGY—Analyses of current limnological concepts and problems. *Prerequisite*: 236. Four hours. Dr. Potash. Alternate years, 1963-64.

281-282 SEMINAR Review and discussion of current zoological research. Required of graduate students and seniors concentrating in zoology; open to others by special permission only. One hour. The staff.

381, 382 ADVANCED READINGS Readings, with conferences, intended to contribute to the programs of graduate students' advanced study in phases of zoology in which formal courses are not available. *Prerequisite*: graduate standing; an undergraduate major in zoology. Credit as arranged.

391 through 399 MASTER'S THESIS RESEARCH Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

491 through 499 DOCTORAL THESIS RESEARCH Original research under the direction of an assigned staff member, culminating in an acceptable doctoral dissertation. Credit as arranged.

The Alumni Council

Under an alumni reorganization plan approved at the June, 1957 meeting of the Council the purposes were defined as follows: to give organization and aid of the highest efficiency to all efforts of the Alumni of the University of Vermont for the benefit of the University, and more particularly in the following respects; to act as a clearing house for alumni sentiment and the interchange of alumni ideas; to approve or disapprove projects put forth in the alumni name, and to be the seat of authority in all such matters; to act as the official spokesman of alumni sentiment to the administration, and as the avenue of approach by which the administration should have access to the Alumni collectively; to initiate and carry on such undertakings, or to provide for their being carried on, as are reasonably within the province of alumni activity, and are of benefit to the University; to plan and activate programs and services for the classes and clubs.

Officers of the Council consist of a president, vice-president, secretary, and treasurer. The president and vice-president are elected annually, and neither office may be held by the same individual for more than two consecutive one-year terms.

The Council is composed of fifty or more members, who shall be the president, and immediate past president for the University's Alumni Association; one representative from each of the club regions of the country, and approximately thirty members-at-large nominated by the nominating committee of the Council. Members of the Council, except for the representatives of the Alumni Association, shall be elected for a term of one year, and, if eligible, may be re-elected for not more than three consecutive terms. Vacancies may be filled in between elections by appointment of the Council President.

The officers and members of the Council:

Honorary: John T. Fey, President of the University

Ex-officio: Lawrence H. Averill, '27, 1532 Pottenham Rd., Birmingham, Mich.

President: Leon D. Latham, Jr., '25, 112 Ethan Allen Pkwy., Burlington, Vt.

Vice-President: Stewart P. Washburn, '51, 33 Chestnut St., Dorchester, Mass.

Alumni Secretary: Mrs. Constance Dena Zolotas, '32, Alumni House, University of Vermont.

Members-at-Large:

Richard W. Amidon, M.D., '43, 65 Henderson Ter., Burlington, Vt.

Mrs. Mary Louise Robinson Adsit, '46, 695 So. Prospect Ext., Burlington, Vt.

Ray R. Allen, '11, South Hero, Vt.

Lawrence H. Averill, '27, 1532 Pottenham Rd., Birmingham, Mich.

Francis E. Beer, '31, 27 Case Pkwy., Burlington, Vt.

Harold Carlton Billings, '18, 35 Woolson Ave., Springfield, Vt.

Ray W. Collins, Jr., M.D., '38, 15 South St., Middlebury, Vt.

Robert Percy Davis, '41, Cabot, Vt.

Frank Edward Dion, '52, 229 Loomis St., Burlington, Vt.

Chester B. Eaton, '34, 10 Harvard St., Rutland, Vt.

John Francis Galascione, '57, 111 Taylor Ave., Somerville, N. J.

William Smith Gilbertson, '50, 69 Tracy Dr., Burlington, Vt.

Arthur A. Gladstone, M.D., '31, 354 So. Union St., Burlington, Vt.

Mrs. Florence Farr Hard, '23, 82 Adams St., Burlington, Vt.

Mrs. Florence Cudworth Holden, '50, 381 So. Union St., Burlington, Vt.

Lyman C. Hunt, '12, 7 Church St., Essex Junction, Vt.

Donald C. Gregg, '35, 199 Howard St., Burlington, Vt.

Fletcher Baird Joslin, '34, Box 402, Montpelier, Vt.

George V. Kidder, '22, 439 So. Willard St., Burlington, Vt.
 L. F. Killick, '22, Spauldings West Shore, Colchester, Vt.
 Mrs. Ruth Harrington Lane, '21, 47 Hillcrest Rd., Burlington, Vt.
 Mrs. Mary Ward Maniatty, '33, 130 Robinson Pkwy., Burlington, Vt.
 Robert W. Moore, '51, 55 Black Lantern Ln., So. Burlington, Vt.
 Lawrence H. Marvin, '28, 11 Hillcrest Rd., Essex Junction, Vt.
 Robert Douglas Paterson, '42, 110 Summit St., Burlington, Vt.
 Frederick Wayne Shepardson, '12, Shelburne Point, Shelburne, Vt.
 George C. Stanley, '18, 72 Fairmount St., Burlington, Vt.
 Robert Dow Taisey, '50, 30 West 60th St., Apt. 2V, New York 19, N. Y.
 Morris R. Wilcox, '16, 105 Oakwood Rd., So. Burlington, Vt.
 Helen Marie Wippich, '53, 12 Canterbury Lane, Roslyn Heights, L. I., N. Y.
 Mrs. Constance Dena S. Zolotas, '32, 106 Ledge Rd., Burlington, Vt.

Regional:

Theodore Evander Battles, '48, 2100 No. Butternut Lane, Midland, Tex.
 John Luther Beckley, '34, 89 Clinton Ave., Montclair, N. J.
 Brendan James Boylan, M.D., '51, 63 East Ninth St., New York 3, N. Y.
 Alfred Edward Brooks, '26, 100 Hoover Rd., Rochester, N. Y.
 Clarence Joseph Douglas, '29, Winter St., Northfield, Vt.
 Lawrence James Doolin, '23, 1364 Indian Creek Dr., Philadelphia, Pa.
 Donald Albert Gannon, '25, 120 Hampshire Rd., Wellesley Hills, Mass.
 Peter H. Haslam, '51, P. O. Box 215, Contoocook, N. H.
 Bingham J. Humphrey, '27, 680 Evergreen Ave., Mt. Carmel, Conn.
 Joseph Cary Impallaria, '54, 95 Ardmore Rd., Needham, Mass.
 Douglas Lyle Liston, '48, 23 Ardmore Rd., Worcester, Mass.
 Mrs. C. Antoinette Hubbard Loudon, '33, 17 Ledgemere St., Burlington, Vt.
 Elias Lyman, Jr., '38, 25 Ninth St., Wilmette, Ill.
 Millard D. McCarthy, '36, Lake Whittemore Dr., Spencer, Mass.
 Elmer L. Nicholson, '39, 109 Southwood Rd., Newington 11, Conn.
 Robert Tuttle Palmer, '23, 6315 Norway Rd., Dallas, Tex.
 Arthur Q. Penta, M.D., '25, 1301 Union St., Schenectady, N. Y.
 Mrs. Nancy Goodwin Reynolds, '42, 15 Abingdon Sq., Apt. 26, New York 14, N. Y.
 Harold Clark Simonds, '22, 1717 LaVista Pl., Pasadena, Calif.
 Edward Charles Sowka, '34, 196 Westchester Ave., Crestwood, Tuckahoe 7, N. Y.
 J. Ralph Spalding, '23, 184 Brimfield St., Wethersfield, Conn.
 John J. Spasyk, '42, Box 98, Cabot, Vt.
 Neil Tolman, '26, 1625 Eye St., N.W., Washington, D. C.
 Feno H. Truax, '37, 520 Main St., Saco, Me.
 John Joseph Zellinger, M.D., '44, 980 Peace St., Pelham, Manor, N. Y.

Class Agents:

President, Frank Dion, '52, 229 Loomis St., Burlington, Vt.
 Vice-President, Malcolm F. Severance, '49, Colchester, Vt.
 Secretary, Francis E. Beer, '31, 27 Case Pkwy., Burlington, Vt.

Association of UVM Club Legislative Committee Chairman:

Reginald Arnold, '30, Bradford, Vt.

Athletic Council:

Dennison D. Rice, '31, Shelburne, Vt.
 W. R. Buck, '19, 414 Colchester Ave., Burlington, Vt.
 William S. Gilbertson, '50, 69 Tracy Dr., Burlington, Vt.
 Ray W. Collins, Jr., M.D., '38, 15 South St., Middlebury, Vt.

Student Enrollment:

John F. Galascione, '57, 11 Taylor Ave., Somerville, N. J.
 Nicholas S. Mastrorilli, '54, 207 19th St., Union City, N. J.

Enrollment Statistics

Summary of Resident Enrollment

Fall Semester, 1962-63

The Undergraduate Colleges:	Men	Women	Total
Arts and Sciences	1115	494	1609
Technology	632	113	745
Education and Nursing	73	473	546
Agriculture and Home Economics	169	170	339
TOTAL	1989	1250	3239

College of Medicine	185	8	193
Graduate College	179	37	216
Unclassified	99	14	113
School of Dental Hygiene	—	41	41
TOTAL	2452	1350	3802

Undergraduate Colleges by Classes:	Men	Women	Total
Senior	354	225	579
Junior	481	267	748
Sophomore	545	364	909
Freshman	609	394	1003
TOTAL	1989	1250	3239

	In-State			Out-of-State			Total
	M	F	T	M	F	T	
Arts and Sciences	406	271	677	709	223	932	1609
Technology	352	45	397	280	68	348	745
Education and Nursing	57	237	294	16	236	252	546
Agric. and Home Economics	115	79	194	54	91	145	339
Graduate	112	22	134	67	15	82	216
Medicine	43	2	45	142	6	148	193
Unclassified	64	35	99	10	4	14	113
Dental Hygiene	0	23	23	0	18	18	41
TOTAL	1149	714	1863	1278	661	1939	3802

In addition to the above regularly enrolled students are the following:

Pre-Clinical Nurses 41

GRAND TOTAL—FALL SEMESTER 1962—3843

Enrollment by Divisions

I. COLLEGE OF ARTS AND SCIENCES

	In State			Out-of-State			Total
	M	F	T	M	F	T	In & Out
Class of 1963	87	39	126	111	41	152	278
Class of 1964	83	45	128	179	52	231	359
Class of 1965	113	75	188	224	81	305	493
Class of 1966	123	112	235	195	49	244	479
TOTAL	406	271	677	709	223	932	1609

II. COLLEGE OF TECHNOLOGY

	<i>In State</i>			<i>Out-of-State</i>			<i>Total</i>
	<i>M</i>	<i>F</i>	<i>T</i>	<i>M</i>	<i>F</i>	<i>T</i>	<i>In & Out</i>
Class of 1963	75	11	86	32	10	42	128
Class of 1964	94	13	107	70	18	88	195
Class of 1965	79	9	88	53	16	69	157
Class of 1966	104	12	116	125	24	149	265
TOTAL	352	45	397	280	68	348	745

By Curricula:

	<i>Men</i>	<i>Women</i>	<i>Total</i>
Engineering—undecided	14	0	14
Civil Engineering	88	1	89
Electrical Engineering	91	0	91
Management Engineering	16	0	16
Mathematics	26	12	38
Mechanical Engineering	87	0	87
Commerce and Economics	278	25	303
Professional Chemistry	29	7	36
Medical Technology	3	68	71
TOTAL	632	113	745

III. COLLEGE OF EDUCATION AND NURSING

	<i>In State</i>			<i>Out-of-State</i>			<i>Total</i>
	<i>M</i>	<i>F</i>	<i>T</i>	<i>M</i>	<i>F</i>	<i>T</i>	<i>In & Out</i>
Class of 1963	13	46	59	3	48	51	110
Class of 1964	14	45	59	4	57	61	120
Class of 1965	19	76	95	3	53	56	151
Class of 1966	11	70	81	6	78	84	165
TOTAL	57	237	294	16	236	252	546

By Curricula:

	<i>Men</i>	<i>Women</i>	<i>Total</i>
Elementary	2	161	163
Secondary	65	125	190
Business	2	12	14
Music	4	15	19
Nursing	0	160	160
TOTAL	73	473	546

IV. COLLEGE OF AGRICULTURE AND HOME ECONOMICS

	<i>In State</i>			<i>Out-of-State</i>			<i>Total</i>
	<i>M</i>	<i>F</i>	<i>T</i>	<i>M</i>	<i>F</i>	<i>T</i>	<i>In & Out</i>
Class of 1963	27	16	43	6	14	20	63
Class of 1964	29	19	48	8	18	26	74
Class of 1965	38	27	65	16	27	43	108
Class of 1966	21	17	38	24	32	56	94
TOTAL	115	79	194	54	91	145	339

By Curricula:

	<i>Men</i>	<i>Women</i>	<i>Total</i>
Agriculture (General)	113	10	123
Agricultural Engineering	11	0	11
Pre-Forestry	24	0	24
Pre-Veterinary	21	5	26
Home Economics	0	155	155
TOTAL	169	170	339

V. GRADUATE COLLEGE

	<i>Men</i>	<i>Women</i>	<i>Total</i>
In-State	112	22	134
Out-of-State	67	15	82
TOTAL	179	37	216

VI. COLLEGE OF MEDICINE

	<i>In State</i>			<i>Out-of-State</i>			<i>Total In & Out</i>
	<i>M</i>	<i>F</i>	<i>T</i>	<i>M</i>	<i>F</i>	<i>T</i>	
Class of 1963	12	1	13	35	2	37	50
Class of 1964	8	0	8	38	1	39	47
Class of 1965	11	0	11	33	2	35	46
Class of 1966	12	1	13	36	1	37	50
TOTAL	43	2	45	142	6	148	193

VII. UNCLASSIFIED DIVISION (Special Students)

	<i>In State</i>			<i>Out-of-State</i>			<i>Total In & Out</i>
	<i>M</i>	<i>F</i>	<i>T</i>	<i>M</i>	<i>F</i>	<i>T</i>	
Arts and Sciences	15	16	31	9	1	10	41
Technology	37	5	42	1	1	2	44
Agriculture and Home Ec.	9	1	10	0	1	1	11
Education and Nursing	3	13	16	0	1	1	17
TOTAL	64	35	99	10	4	14	113

VIII. SCHOOL OF DENTAL HYGIENE

	<i>In-State</i>	<i>Out-of-State</i>	<i>In & Out Total</i>
Second Year	9	9	18
First Year	14	9	23
TOTAL	23	18	41

IX. UNDERGRADUATE MARRIED STUDENTS

	<i>M</i>	<i>F</i>	<i>T</i>	<i>% of Class</i>
Class of 1963	55	23	78	13.8%
Class of 1964	41	10	51	6.8%
Class of 1965	21	12	33	3.6%
Class of 1966	6	1	7	0.7%
TOTAL	123	46	169	5.2%

Degrees Granted

JUNE 1962

School of Dental Hygiene

Janet Kay Arthur, Barnet
Linda Sue Beattie, East Williston, N. Y.
Jeanne Marie Bonneau, Bradford
Diane Beatrice Brandt, Liverpool, N. Y.
Marion Ada Cox, Bradford
Virginia Gilchrist Delorme, Essex Junction
Brenda Vivian Hale, Auburn, N. H.
Brenda Mary Keazer, Colebrook, N. H.

Gloria Jean Lawrence, Essex Junction
Gail Joanne Lever, Winchester, Mass.
Mary Letitia Provost, Burlington
Mary Anne Richmond, Salem, N. J.
Linda Estelle Smith, Orleans
Dorothy Ann Spangler, York, Pa.
Lynda Stevens, South Dartmouth, Mass.
Virginia Frances Weymouth, West Charleston

College of Education and Nursing

Bachelor of Science in Nursing

Carol Ann Billhardt, Saddle River, N. J.
Joanne Marie Brzezicke, Pittsford
Patricia Claire Cole, Swanton
Eleanor Mary Cook, Closter, N. J.
Marjorie Jane Croft, Bakersfield
Marcia Riley Frechette, Bennington
Barbara Sue Fruchtbaum, Nutley, N. J.
Carol Daphne Goddard, Barbados, British West Indies
†Betty Jean Harding, Rowayton, Conn.
Martha Ann Harrington, Essex Junction
Carol Lois Hecht, Teaneck, N. J.
Diane Hedley, Mountain Lakes, N. J.
Sara Kelton, Jefferson, Mass.
Martha Leigh McDonald, Sudbury, Mass.

Linda Kieselmann Montgomery, St. Albans
Gale Emerson Morgan, Mountain Lakes, N. J.
Marjorie Jean Nichols, Hingham, Mass.
Priscilla Duane Paul, Ossining, N. Y.
Sandra Jean Paul, Springfield
Joan Marie Peterson, Rutland
Mary Ann Sargent, St. Johnsbury
Maureen Ellen Sexton, Essex Junction
Kathleen Clark Solomon, South Burlington
Linda Jean Stickney, Montpelier
Mary Lou Stretch, Haddonfield, N. J.
Joan Josephine Tomasi, Rutland
Sarah Robinson Wakefield, South Hero
Jeannette Mary Woods, Wilmington, Del.

Bachelor of Science in Business Education

Eleanor May Greenwood, South Newfane
Emily Elizabeth Heil, Keyport, N. J.

Anne Narcisse Lavin, Barre
Maureen Agnes Riley, Arlington

Bachelor of Science in Music Education

Joan Lucille Chicoine, Falmouth, Mass.
Jeanine Cloutier, Barton
Francis John Coderre, West Swanton
*Roy Sibley Kelley, Barre

Linda Lee Langworthy, Middlebury
Jacquelyn Earlene Prouty, St. Albans
Barbara Ann Rifkin, Schenectady, N. Y.

Bachelor of Science in Education

Hilton Mark Abbott, Cabot
Patricia Baldwin Abston, Roslyn Pines, N. Y.
William Brice Adams, Burlington
Susan Walker Barrett, Montpelier
Patricia Perry Bishop, Saddle River, N. J.
†Carol Overton Blanchard, East Norwalk, Conn.
Roanne Lou Bockar, Newburgh, N. Y.
Nancy Evelyn Breiner, Baldwin, N. Y.

Beverly Anne Browne, Little Silver, N. J.
Brenda Mary Burgess, Brattleboro
Sally Joan Camp, East Randolph
Ruth Ellen Carlin, Flushing, N. Y.
Juliann Cohen, Bayonne, N. J.
Agnes Bernardine Cote, Concord
Patricia Ann Dean, Rochester, N. Y.
Clara Ludene DeBoer, *magna cum laude*, Burlington

* As of October 14, 1961.

† As of February 24, 1962.

Judith Drabble, South Burlington
 Carleton Lee Eck, Chelmsford, Mass.
 Nancy Jean Elton, Glen Head, N. Y.
 Agnes Rita Esposito, Bridgeport, Conn.
 Diane Leah Ferland, Swanton
 Joyce Frechette Fifield, South Hero
 Carol Ann Fischer, Manchester, Conn.
 *Wanda Murray Fraser, Montreal, Que.
 Paula Willig Ginsburg, Brooklyn, N. Y.
 †Reginald Roland Godin, Sheldon
 *Barbara Judith Greenberg, Lowell, Mass.
 Marsha Adel Gunther, Manchester, Conn.
 Janet Eleanor Hanson, Wilmington
 Janet Ruth Hart, Roslyn Heights, N. Y.
 Honora Mae Hatfield, Saxtons River
 Polly Ann Hemingway, Fort Wayne, Ind.
 Martha Hilton, Waterville, Me.
 Penelope Jane Humes, Thetford Hill
 James Nathaniel Hunt, Winooski
 Julia Gain Hutchinson, Middlebury
 Elinor Ann Karel, Yonkers, N. Y.
 Stella Kazazian, Flushing, N. Y.
 Gail Carmichael Kent, Rutland
 Beverly, Alliene Knight, Burlington
 Linda Jan Lefel, Rockville Centre, N. Y.

Janet Raina Levine, Linden, N. J.
 Nancy Underwood Locke, Wallingford
 †Judith Anne Mandell, Bronxville, N. Y.
 Patricia Louise Martin, Montpelier
 Judith Marie Mehrhof, Teaneck, N. J.
 Beryl Elizabeth Norris, Barton
 Elaine Orol, Flushing, N. Y.
 Michael Charles Pearo, Burlington
 Jacqueline Marie Pell, Burlington
 Nancy Gail Peterson, Houston, Tex.
 Norman Lewis Portalupi, Barre
 Patricia Bent Ransom, Burlington
 Louise Nugent Reutelhuber, Chatham, N. J.
 May Doris Rogers, Fairfax
 Roderick Elbridge Ross, Huntington
 Elizabeth June Sanguinetti, Barre
 Andrea Schenkel, Riverdale, N. Y.
 Jane Ellen Sherman, Stamford
 Gena Mason Teachout, Lyndon Center
 Phyllis Jean Trowbridge, South Woodstock
 June Gay Vecchiolla, Meriden, Conn.
 Phyllis Wing Wadsworth, Wellesley, Mass.
 Albert William Wedwaldt, Wallingford
 Rosalie Theresa Wetherby, Newport
 Marilyn Beth Woodcock, Wellesley, Mass.

College of Technology

Bachelor of Science in Chemistry

Harold Leroy Paris, Jr., Burlington

Bachelor of Science in Commerce and Economics

Alan Emerson Andrews, Shrewsbury, Mass.
 Robert Augustus Bryan, Winooski
 *Maynard Mansel Bush, Brookline
 Alan Marsh Byington, Burlington
 *John Donald Carpenter, Mountain Lakes, N. J.
 Philip Howard Chaffee, Newport
 Walter Hugh Cochran, Jr., East Haven, Conn.
 David Loring Connors, Hampton, N. H.
 *Jack Albert Danyow, North Ferrisburg
 *Kirtland, Ashton Decherd, Meriden, Conn.
 Maynard Joseph Ducatte, Cadyville, N. Y.
 *Vernon Franklin Fowler, Flushing, N. Y.
 Fred Sellman Goldberg, Great Neck, N. Y.
 *David Henry Hall, Windsor
 James Thomas Hall, Hardwick
 Michael James Hanley, Burlington
 Allen Rudd Hendee, Jr., Rutland
 *Kenneth Ensign Hyatt, Jr., Kingston, N. Y.
 Steven Ernest Keysar, Derby Line
 Randle Beebe Kinne, West Rupert
 David John Kirker Danville
 Peter John Lakis, Hollywood, Fla.
 Kendall Reid Lawson, East Barre
 †Frederick Lee Lewis, Larchmont, N. Y.

Jeffrey Jay Lipton, Washington, D. C.
 Gerald Arthur Lovejoy, Burlington
 Michael James Lovejoy, Burlington
 Archibald John Luse, Mehopac, N. Y.
 Gordon Rees Miller, Cheshire, Conn.
 Edward Francis Murray, III, Burlington
 Alan David Nathan, Providence, R. I.
 Anne Marian Obreiter, Glen Ridge, N. Y.
 Dominic Peter Parlato, Rochester, N. Y.
 George Frederick Pearlstein, Barre
 Dagmar Marion Pfanzelter, New York, N. Y.
 Raymond Joseph Poutre, Lowell
 John Arthur Rapp, St. Johnsbury
 Louis Francis Rivard, Newport
 Richard Francis Rivers, Burlington
 Joseph Adelord Roberge, Essex Junction
 Orlando Romero, Montreal, Quebec
 Thomas White Sherman, Ipswich, Mass.
 Tarrant Livingston Sibley, Jr., Bennington
 *William Angelo Solemene, Massena, N. Y.
 Charles Wesley Stevens, Montgomery Center
 Herbert Edward Toboroff, Jeffersonville, N. Y.
 Nancy Elizabeth Tressel, Baldwin, N. Y.
 Louis John Truso, Jr., St. Albans
 Richard Stephen Van Brunt, Horsehead, N. Y.
 Wing Hern Wong, Burlington

* As of October 14, 1961.

† As of February 24, 1962.

Bachelor of Science in Civil Engineering

Richard Thomas Aldinger, Jericho
Linda Anne Borgos, South Glens Falls, N. Y.
*Robert McKenzie Brown, Bartonsville, N. Y.
David Lee Clough, Northfield
John George Davis, Greensboro Bend
Harry Jackson, Spring Valley, N. Y.
Ronald Alan Knapp, Forest Hills, N. Y.
Walter Maxwell Lauder, Richford
Morris Edward Leno, Montpelier
Robert Joseph Linney, Port Henry, N. Y.
James Earle McCarthy, Burlington

Jon David Morrill, Barnet
Thomas Francis O'Connor, Bellows Falls
Gregory George Playotes, Bennington
*Roger Barton Pollander, Waterbury
LeRoy Cluff Pratt, Jr., Rochester, N. Y.
Gary Kent Robinson, Orleans
James Harry Viele, Burlington
Raymond Gordon Welch, St. Johnsbury
Raymond Henry Wiener, Flushing, N. Y.
Linus Herman Wiles, Jr., Burlington

Bachelor of Science in Electrical Engineering

†David Carlton Achilles, Winooski
Harry Oldham Brooks, Collingswood, N. J.
M. Robert Ciardelli, Burlington
Richard Santiago Gomez, Brattleboro
*Patrick James Graham, Beacon, N. Y.
Fred Henry Haltermann, Tenafly, N. J.
Myron Kimball Hubbert, Fairfax
Cydney Ashley Johnson, Island Pond
Kenneth Harry Kennedy, Chelsea

Roy Benjamin Magee, Rutland
Roy Wayne Martin, Burlington
Andrew Charles Ojanen, Chester
Robert Samuel Poulios, White River Junction
Stanley Layton Teeter, Jr., Norwich
Walter Vincent Trainor, Jr., Staten Island, N. Y.
†Joseph Gomes Silveira, New Bedford, Mass.
Donald Newell Wieman, Brooklyn, N. Y.

Bachelor of Science in Mechanical Engineering

Roy August Ackermann, Scarsdale, N. Y.
Gilbert Rock Audette, Burlington
Laurence Stephen Bartlett, Jr., Williamstown
Harvey Joseph Bister, Jericho
†William Maurice Hoyt, Greensboro Bend
David Church Irish, Underhill
Michael Anthony Johns, Brattleboro

David Holt Kellogg, Essex Junction
James Robert Lawrence, Morrisville
†Walter Lebaron Luce, Williston
Stanley Jay Olson, Vergennes
William Francis Ryan, Milton
Armand Eugene Soucy, Williamstown
†Thomas Louis Via, Burlington

Bachelor of Science in Management Engineering

John M. Brown, East Middlebury
Michael George Cowan, Burlington
Alfred Berdine Johnson, Verona, N. J.

Donald William Morse, Newbury, Mass.
Robert Pash, Jr., Manchester
†Robert James Perry, Essex Junction

Bachelor of Science in Mathematics

John Robert Byron Brown, Wolcott
Wendell Edgar Carr, *cum laude*, Burlington
†Frederick Wayne Carbonneau, Vergennes
Edward Anthony Couture, Burlington

Theodore Anthony Giebutowski, Rutland
Morris Anthony Hicks, Westford
Thomas Steward Phillips, Burlington

Bachelor of Science in Medical Technology

†Elizabeth Evans Isham, Burlington
Linda Lorraine Jacobsen, Haywood, N. J.
Mary Alice May King, Barton
Sharon Berry Klinck, Essex Junction

Jean Elaine Pillsbury, Burlington
Gail Leslie Rowland, Hamilton, Ohio
Judith Claire Sylvia, Middleboro, Mass.

College of Agriculture and Home Economics

Bachelor of Science in Agriculture

Michael Laurence Adess, Dorchester, Mass.
Raymond Denis Beaulieu, Highgate Center
Roger Louis Bombardier, Richmond

Lester Leo Breault, Guildhall
David Lawrence Carr, Jericho
†Erwin Craig Clark, Randolph

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† As of February 24, 1962.

Austin C. Cleaves, Longmeadow, Mass.
 Edward Francis Davis, Island Pond
 Albert John DeLorenzo, Jr., South Burlington
 †Eugene Philibert Galfetti, Barre
 Walter Carl Gutzmann, Jr., Craftsbury
 Lewis Beedle Harvey, Rochester
 George Steadman Hatch, West Roxbury, Mass.
 Henry Scott Johnson, Brandon
 Lewis Sand Kargman, Brooklyn, N. Y.
 James Frederick Messier, Franklin

John Henry Mills, Millburn, N. J.
 *Thomas Delscamp Morse, Springfield
 Sherrill Baxter Nott, White River Junction
 †Thomas Gordon Siccama, Rahway, N. J.
 Larry Thomas Simino, Irasburg
 Hugh Burgess Spafford, North Clarendon
 Donald Harrison Steyert, Orwell
 Daniel Henry Swett, Orleans
 George Stanley Talbot, Woodstock
 *William Edward Xiques, Staten Island, N. Y.

Bachelor of Science in Agricultural Engineering

John Frederick Bister, Jericho
 Louis Philip Brouillette, Richford
 James Edwin Buswell, Ludlow

Robert John Frechette, South Hero
 Frederick Weed Harrington, Essex Junction
 Ralph Wells Matthews, Essex Junction

Bachelor of Science in Home Economics

Joyce Wiley Alexander, Wilmington, Del.
 †Lucie Pike Anderson, Pittsford
 Sandra Lee Burnap, Lancaster, N. H.
 Brianne Eastman Chase, Burlington
 Susan Jane Clair, Milford, Conn.
 Janet Louise Culver, East Quogue, N. Y.
 Jan Stryker Elliott, East Corinth
 Lillian Patricia Ferrant, Boston, Mass.
 Barbara Jean Gioria, Websterville
 Patricia Ellen Gitt, Great Neck, N. Y.
 Alice Ann Alloway Holck, Cherokee, Iowa
 Patricia Jeanne Hoskiewicz, Springfield

Joanne Frances Jordan, Hamden, Conn.
 Julia Nell Lawler, Burlington
 Jeanie Margaret MacDonough, Shelburne
 Joan Margaret Manley, Brattleboro
 Judith May Pillsbury, Burlington
 Patricia Evelyn Pires, DeWitt, N. Y.
 Susan Rebecca Sipprell, Buffalo, N. Y.
 Joy Mason Smith, Rutland
 Elizabeth Jane Soule, Burlington
 Elizabeth Holden Stratton, North Clarendon
 Katherine Lucille Whitney, Chelsea
 Elaine Kay Wright, Bound Brook, N. J.

College of Arts and Sciences

Bachelor of Arts

George Theodore Adler, Elmont, N. Y.
 Robert Howard Adler, Brooklyn, N. Y.
 †Helen Lewis Alcorn, Maplewood, N. J.
 Marlene Ann Aldo, Bridgeport, Conn.
 Ross, Eugene Aldrich, Underhill
 Stuart Aldrich Alexander, Burlington
 James Angus Allan, Jr., Chester
 *Richard Grant Allen, Malden, Mass.
 †Thomas Jeffrey Amidon, Montpelier
 Charles Stephen Astrove, Eastchester, N. Y.
 James Winfred Atchison, Burlington
 Arland Ansley Atkins, Hardwick
 Suzanne Frances Beaudin, Barre
 *Bruce Dillon Beck, Middlebury
 Peter John Beck, Burlington
 Elizabeth Ann Becker, Ridgewood, N. J.
 Sanford Yale Becker, Bronx, N. Y.
 *Cynthia Lorraine Beilig, West Orange, N. J.
 George Beisheim, III, Ossining, N. Y.
 Arnold Jay Bendich, New York, N. Y.
 Juliet Morrison Bergan, Lee, Mass.
 Marcia Jean Bernhoft, Eggertsville, N. Y.
 Stephen Allen Birnbaum, Mahopac, N. Y.
 Reginald Lee Blair, Wilder

Herbert Saul Bloomenthal, Burlington
 Ralf Detlef Bode, Brattleboro
 *Richard Arnold Bolin, Manchester, Conn.
 Norma Louise Bottaro, Barre
 Barry Joel Boxer, Rockville Centre, N. Y.
 Gary Charles Brandle, Springfield, N. J.
 Judith Ann Bristol, Bristol
 Christopher Bromberg, Yardley, Pa.
 Carolyn Sully Brook, New Haven, Conn.
 Gerald Alfred Brow, Alburg
 Judith Antonovich Buffum, Mountain Lakes, N. J.
 *Jane Anne Burkhardt, Secaucus, N. J.
 Betsy Ann Butterfield, Burlington
 Harvey Kennedy Clow, Hardwick
 Benny Fletcher Cockerham, Brandon
 Marjorie Ruth Coleman, Teaneck, N. J.
 Susan Elizabeth Coleman, Charlotte
 Michael Aldis Collins, Swanton
 Ernest Anton Cordes, Meriden, Conn.
 Michael Andrew Cosgrove, South Hero
 Peter Coyle, Norwich
 Edward Stephen Crane, Larchmont, N. Y.
 *Donald Anthony Creasia, Milford, Mass.

* As of October 14, 1961.

† As of February 24, 1962.

- Helen Veronica Dalton, St. Albans
 Susanne Ruth Dane, Wilmington, Del.
 †Ralph William Daniels, East Montpelier
 Catharine Janet Darby, Flemington, N. J.
 Marilyn Cynthia Davio, West Glover
 Barbara Gail Davis, Wayne, Pa.
 Richard Vincent DeNicola, Hamden, Conn.
 Peter Leonard DeRose, Northampton, Mass.
 Robert John Desautels, Burlington
 Woolson Whitney Doane, Springfield
 Philip Edward Donohue, Essex Junction
 Theresa Louise Duclos, Bristol
 John Everett Dutton, Bethel
 Alfred Hugh Duval, Windsor
 Stephen Hart Dyke, Montpelier
 Charles Richardson Edgar, Sherburne Center
 Theodore Stephen Edgecomb, Barre
 Mary Jane Annie Edwards, Ridgewood, N. J.
 Joel Lawrence Efrein, New York, N. Y.
 Steven Abraham Elias, New York, N. Y.
 *Theodore Peter Elliott-Smith, Burlington
 Susan Harte Elwood, Bayonne, N. J.
 Jerry Maurice Emery, Waterbury
 †John Royden Emery, Jr., Scarsdale, N. Y.
 Marilyn Joy Epstein, Flushing, N. Y.
 Richard Jay Falk, Great Neck, N. Y.
 *Arthur Jay Faro, New Rochelle, N. Y.
 Ronald Lyle Fay, Proctor
 Sten Eric Fersing, Springfield
 Ronald Joel Fine, Fitchburg, Mass.
 Stephen Robert Fireman, Brockton, Mass.
 Cathleen Anne Fitzgerald, Old Greenwich, Conn.
 Susan Ann Flanagan, Saratoga Springs, N. Y.
 Ralph Norris Flanders, Montpelier
 John Peter Folcik, Plainville, Conn.
 David Edward Fontana, Barre
 Valerie Ann Foster, Summit, N. J.
 Hermene Terry Freedman, Springfield, N. J.
 Robert Henry Frenier, Burlington
 *Barry Raymond Fritz, Beechhurst, N. Y.
 Mary Margaret Fuller, Burlington
 Marion Rose Gang, Bayside, N. Y.
 David Alexander Gardner, Springdale, Conn.
 Ann Dolores Garrison, Grosse Pointe, Mich.
 Hilda Gail Gerstenfeld, Lincroft, N. J.
 Jean Ethel Gianarelli, Barre
 Richard Allen Gilman, Malden, Mass.
 Michael Lee Goldberg, Hartford, Conn.
 Robert Gordon, Brookline, Mass.
 Lawrence Gotkin, Flushing, N. Y.
 Karen Russell Gottlieb, Stowe
 Walter Grand, New Rochelle, N. Y.
 Lawrence Stephen Greene, New York, N. Y.
 †Sally Margaret Greene, Montpelier
 Roger Armand Guillelte, Winooski
 Rena Teresa Gusmai, Barre
 James Joseph Guyette, Port Henry, N. Y.
 Steve Norman Haber, Whitestone, N. Y.
 Noel Adrienne Hallett, Burlington
 Jeannine Harrington, *cum laude*, Brattleboro
 Jerol Ray Harrington, *cum laude*, Woodstock
 Michael Tobin Harris, Burlington
 John Joseph Hartnett, Poughkeepsie, N. Y.
 Robert Kenneth Heistein, Newark, N. J.
 Elaine Phyllis Heller, Webster, Mass.
 †George David Hertzberg, Ramsey, N. J.
 Paul Richard Higgins, North Troy
 Deborah Anne Hill, Burlington
 Bruce Clark Hodgman, Burlington
 Victor Lyle Hoffman, Albany, N. Y.
 Judy Alice Hoffer, Rye, N. Y.
 John Charles Holme, Jr., Pleasantville, N. Y.
 Joan Roberta Humphreys, West Rutland
 Susan Louise Hunt, Billerica, Mass.
 Dorothy Elaine Indick, *cum laude*, Elizabeth, N. J.
 Carol Joanna Irons, Burlington
 Patricia Louise Irving, Montpelier
 Judith Ann Jack, Newton, N. J.
 Richard Warren Jackel, Mt. Vernon, N. Y.
 Jerold Dennis Jacobson, Forest Hills, N. Y.
 Gabriel Bennett Jaffe, Flushing, N. Y.
 *Diana Gail Jordan, DeWitt, N. Y.
 Philip Johnathan Judd, Burlington
 Jonathan Kaplan, Roslyn, N. Y.
 Kenneth Herbert Kaplan, Medford, Mass.
 Ronald Melvin Katon, Brooklyn, N. Y.
 Harriet Linda Katz, Linden, N. J.
 Robert Sherman Katz, Easton, Conn.
 Walter Adriance Kipp, III, Rowayton, Conn.
 Shaun Louise Kirby, Rochester
 Ronald Gifford Klaren, Cambridge
 William Sayre Klugman, Newark, N. J.
 †Michael Art Klyszko, Essex Junction
 †John Paul Kokoletos, Glens Falls, N. Y.
 Edward Heywood Kritzer, Roslyn Heights, N. Y.
 Jay Ronald Kronfeld, Fairfield, Conn.
 Anne Beatrice Kupferman, Monroe, N. Y.
 Bernard Lamm, Brooklyn, N. Y.
 Sandra Rose Larkin, Freeport, N. Y.
 Josephine Ayoola Olufunmilayo Lawore, Ibadan, Nigeria
 John Tolins Lazarus, Scarsdale, N. Y.
 Ann Leddy, Burlington
 Harold Marion Lepler, Bronx, N. Y.
 James Maximilian Levin, Flushing, N. Y.
 Morris Joseph Levin, Burlington
 Michael Samuel Levy, Yonkers, N. Y.
 William Harris Likosky, Burlington
 Carole Ruth Lindroth, Valley Stream, N. Y.
 Peggy Jean Link, Schenectady, N. Y.
 Todd Charles Lisman, Burlington
 Lois Marie Lorand, *cum laude*, Nutley, N. J.
 William Chester Louis, Whitestone, N. Y.
 Joanna Lull, Shelburne
 John Joseph Lynch, Bellows Falls
 Donald Joseph MacDonald, Walpole, N. H.
 Brian Machanic, *magna cum laude*, Burlington

* As of October 14, 1961.

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Raymond Francis Macionus, Bridgeport, Conn.
 Alan Scott MacLean, Drexel Hill, Pa.
 Howard E. Maltz, New York, N. Y.
 Susan Mott Manbeck, Schenectady, N. Y.
 Barry Derson Marcus, New Rochelle, N. Y.
 Joseph Stanley Marino, Bellows Falls
 Charles William Marsh, Jr., Springfield, Mass.
 George Stanley Maxwell, Bay Shore, N. Y.
 Richard Thomas May, Burlington
 †Sheila Frances McGinley, North Springfield
 John Joseph McGowan, Trenton, N. J.
 George Hayward McMaster, Rutland
 Lance Paul Meade, Burlington
 Howard William Meridy, *cum laude*, Hartford, Conn.
 Mark Stanley Michelman, Wollaston, Mass.
 Gretchen Steele Miller, Rutland
 *John Paul Molloy, Arlington
 †John Terrell Moore, New York, N. Y.
 Joan Annette Myers, Waterbury
 Robert Thomas Mylod, Essex Fells, N. J.
 Elizabeth Ann Navin, Burlington
 *Joel Gage Nichols, West Newbury, Mass.
 Frederick Monroe Noble, Jeffersonville
 Douglas Peter Norman, Hartland
 †Richard Walsh Norton, Rutland
 Jules Rothschild Older, Baltimore, Md.
 John Henry Orr, Mooers, N. Y.
 Helen Upham Osgood, Ridgewood, N. J.
 Virginia Palans, Burlington
 Anne Saari Parker, Maynard, Mass.
 Geoffrey Parsons, III, Burlington
 Rudolph Anthony Passero, Jr., South Norwalk, Conn.
 George Paton, Jr., Oaklyn, N. Y.
 Robert Logan Patterson, Needham, Mass.
 Richard Carver Pearlstein, Barre
 †Richard Elliott Penn, Bronxville, N. Y.
 Ronald William Pero, East Arlington
 Barbara Catherine Perri, Brookville, N. Y.
 Peter Emile Piche, Milton
 Judith Ann Pillsbury, Montpelier
 Mark Melvin Platt, Oakland Gardens, N. Y.
 Sheila Polonsky, Flushing, N. Y.
 Joel David Posner, Brooklyn, N. Y.
 Hans Jurgen Prakelt, Newfane
 Jeanne Louise Pretsch, East Williston, N. Y.
 Fredrik Holger Raab, Burlington
 Rachel Ellen Rice, South Deerfield, Mass.
 Daniel Webbe Risik, Burlington
 Constance Shattuck Robb, Hardwick
 Harry Lloyd Robinson, III, Warrensburg, N. Y.
 Hazel Elizabeth Robinson, South Hero
 Michael Helman Robinson, Brooklyn, N. Y.
 Elliott Mark Rosenbaum, Great Neck, N. Y.
 Sheldon Ira Rothberg, Burlington
 Florence Anne Roussin, Milton
 John Patrick Ryan, Bennington
 Margaret Sadler, Norwich

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Peter M. Saidel, Plainfield, N. J.
 Kaye Elaine Saraceno, Weymouth, Mass.
 Judith Porter Sargent, Scotia, N. Y.
 Walter Joseph Schilo, Cheshire, Conn.
 Paul Robert Schimmelpfennig, Burlington
 Sandra Myra Schindlinger, Far Rockaway, N. Y.
 Philip Ronald Schoolnik, Hartford, Conn.
 Roger William Seibel, Lancaster, N. Y.
 Sanford Selcon, New Haven, Conn.
 Joel Paul Selden, Brooklyn, N. Y.
 Jean Molyneux Shattuck, Poultney
 †Aiton Shwadrin, Elmont, N. Y.
 Jacqueline Humphrey Simonds, Saginaw, Mich.
 Barbara Sims, Plainfield
 *Stephanie Beth Sirota, Rock Tavern, N. Y.
 Charles J. Smith, Flushing, N. Y.
 Ann Harlow Sommers, Princeton, N. J.
 Theodore Edward Splaver, Bridgeport, Conn.
 William Frank Stanley, Ossining, N. Y.
 George William Starbuck, Burlington
 Franklin Lee Start, Burlington
 Jeffrey Brandeis Steckler, Brooklyn, N. Y.
 †David Hermitage Steele, South Burlington
 George Vernon Steeves, Tunbridge
 Jack Irwin Stern, Bridgeport, Conn.
 Jonathan Joseph Stern, Bronx, N. Y.
 Nancy Margaret Streit, Warren
 Thomas James Sullivan, *cum laude*, Leominster, Mass.
 Paul Rowell Sundstrom, Framingham, Mass.
 Edwin Ronald Swartz, Quincy, Mass.
 Leonard James Swinyer, Poultney
 Phillip Charles Tarro, Springfield
 *William Hocking Taylor, Port Washington, N. Y.
 Jonathan Andrew Tenzer, Bronx, N. Y.
 Donald Lewis Thompson, Brooklyn, N. Y.
 John Joseph Tomasi, Rutland
 †Robert Cheston Tupper, South Orange, N. J.
 *Elwin Holbrook Twombly, Jr., St. Johnsbury
 Susan Louise Valley, Winooski
 Mary Anne Vandeventer, Burlington
 Ann Denton Van Gilder, Roselle, N. J.
 Marilyn Janet Van Graber, Burlington
 Stanley Everett Van Horn, Middlebury
 †Louis Francis Varricchione, Burlington
 Birute Anne Vileisis, Woodbury, Conn.
 Stephen Roger Waldner, Hempstead, N. Y.
 John Hunter Walton, Jr., Montclair, N. J.
 Margaret Ann Waterman, Ontario, N. Y.
 Donald Burton Welch, St. Johnsbury
 Edward Robert Whalen, Winooski
 Frank Gaylord White, Barnet
 William Harry Williams, III, Poultney
 Darragh Dickson Wright, Ridgeway, Ontario
 Allen Wayne Yost, West Hartford, Conn.
 Charles John Zakrzewski, Burlington
 Alice Zalon, Paterson, N. J.

SPECIAL HONORS

Agricultural Economics

Edward F. Davis

Classics

Sally Joan Camp

English

Jerol R. Harrington

Dorothy Indick

Louise N. Reutelhuber

Ann Sommers

Geology

Judith E. Sargent

German

Paul Schimmelpfennig

History

Clara L. DeBoer

Psychology

Howard E. Maltz

Mark M. Platt

Zoology

Richard J. Falk

Robert Gordon

Brian Machanic

Howard E. Meridy

Charles J. Smith

Jack I. Stern

Thomas J. Sullivan

Graduate College

Master of Education

*Robert Joseph Anderson, B.S. in Ed. (UVM), 1951; Fair Haven

*Ruel Guy Barrett, B.S. in Ed. (UVM), 1955; Newport

*Neil Edwin Cross, B.A. (Middlebury), 1953; South Royalton

Marion Estelle Goodheart, B.S. (Johnson), 1953; Burlington

*Virginia Stewart Larrabee, B.A. (Wellesley), 1945; Shoreham

*Richard Thomas Streeter, B.S. (Springfield), 1950; Bellows Falls

*Mary Ann Tabor, B.S. (UVM), 1957; Hinesburg

*Joscelin Camille Tremblay, A.B. (St. Anselm's), 1952; Essex Junction

Master of Arts in Teaching

*JoAnn Stuart Bobian, B.A. (St. Lawrence), 1959; Essex Junction

Susan Wakefield Cochran, B.A. (UVM), 1957; Burlington

*Ann Rosen Flory, B.S. in Ed. (Castleton), 1955; Fair Haven

*Jean Elizabeth Parks, B.A. (Grove City), 1948; Coudersport, Pa.

Master of Science

Agricultural Biochemistry

*John Mowatt Dear, Jr., B.S. (Seton Hall), 1959; Bloomfield, N. J.

Thesis: Chromatographic and Electrophoretic Studies of the Fluorescent Pigments of Azotobacter.

Alma Price Dykstra, A.B. (Woman's College, N. C.); Bayside, Me.

Thesis: The Effect of Kinetin on the Individual Free Amino Acids and Related Compounds in Leaf Punches in the Light and Dark.

Agricultural Economics

†William Francis O'Connor, B.S. (Cornell), 1960; Melbourne, Australia

Thesis: Consumer Acceptance of Lithographed Egg Cartons in the Vermont Market, 1960-61.

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† As of February 24, 1962.

Agronomy

- Peter Lee Minotti, B.S. (UVM), 1957; Burlington
Thesis: Effects of Nitrate Ions in Clay Suspensions on Uptake and Utilization of Cations by Plants.

Anatomy

- Peter Clowse Dowling, B.S. (New Hampshire), 1958; Guilford, N. H.
Thesis: Adrenal Alteration and Lemniscal Function.

Animal and Dairy Science

- Bryce Clarke Elliott, B.S. (UVM), 1960; Winooski
Thesis: A Nutritive Evaluation of Forages Preserved as Barn-Dried Hay and Wilted Silage.
 Gary LeRoy Holck, B.S. (Iowa State), 1960; Paullina, Iowa
Thesis: The Influence of Varied Levels and Ratios of Calcium and Phosphorus in the Rations of Holstein Steer Calves.
 Richard Sugden Sagendorph, Jr., B.S. (UVM), 1960; Winooski
Thesis: An Investigation of Some Problems Associated with the Sanitary Care of Modern Milk Handling Systems on Dairy Farms.
 †Donald Richard Tourville, B.S. (UVM), 1959; Burlington
Thesis: The Effect of Dairy Bactericides and Nitrofurazone on the Rapid Disc Assay Test for Penicillin.

Botany

- *Larry Jackson Laber, B.A. (UVM), 1959; Burlington
*Thesis: The Influence of Light Upon the Production of Mature Apothecia of *Sclerotinia trifoliorum* Erik.*

Chemistry

- Richard Chris Adams, A.B. (Brown), 1960; Glens Falls, N. Y.
Thesis: Investigations of Precursor's in a Synthesis of β -Vetivone.
 John Patrick Bulger, B.A. (UVM), 1960; White Plains, N. Y.
Thesis: The Thermal Decomposition of 2, 4, 6-Tri-tertiary-Alkyl-4-Alkoxy-Cyclohexa-2, 5-Dienones.

Commerce

- David Gilson Boulanger, B.S. (UVM), 1952; South Burlington
Thesis: Network Analysis for Programs Management (Project Allocation of Time and Manpower).
 Robert Collamer Kelly, B.A. (Middlebury), 1953; St. Albans
Thesis: A Guide for Estate Planning.
 Jacob Zwynenburg, B.S. (UVM), 1957; Jericho
Thesis: Value Analysis; An Important Tool in Negotiating Prices and Purchasing Component Parts.

Electrical Engineering

- Gilbert Andre Gagne, B.S. (UVM), 1959; York, Pa.
Thesis: A Portable Electronic Moisture Detector for Reinforced Plastics.
 Ai-tsung Lu, B.S. (Chengkung), 1957; Canton, China
Thesis: Circuit Synthesis Using a Digital Computer (Foster I, II and Cauer I, II).
 *James Chen-Chi Shiue, B.S. (National Taiwan), 1955; Taipei, Taiwan, China
Thesis: Properties of the Microelectrode.

Geology

- James Randall Dimon, B.A. (UVM), 1960; St. Albans
Thesis: Petrography of the Laccolith at Barber Hill, Vermont.

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† As of February 24, 1962.

Horticulture

- Mikhail Elia Nasrallah, B.S. (American University of Beirut), 1960; Bekas, Lebanon
Thesis: Hybridization and Inheritance Studies in Solanum melongena L. and Selected Solanum Species.

Mechanical Engineering

- William Henry Berg, Jr., B.S. (UVM), 1950; Essex Junction
Thesis: A Factorial Experiment to Determine the Significant Characteristics of a Hydraulic Motor.
- John Lincoln Breed, Jr., B.S. (UVM), 1959; Burlington
Thesis: The Dynamic Mechanical Properties of Polymethylmethacrylate Cantilevers at Resonance.
- Usuf Tannus Matta, B.M.E. (American University of Beirut), 1956; Beirut, Lebanon
Thesis: The Effect of Temperature and Time on the Shrinkage Stresses Within Thermosettings.
- Oguzcan Ozaltin, B.S. (Roberts College), 1960; Istanbul, Turkey
Thesis: The Surface Effect of Various Environments and of Thermosetting Resins on Glass.
- James Lawrence Wagner, B.M.I. (Louisville), 1951; Essex Junction
Thesis: Thirty mm. High Rate Ammunition Feed System.
- Douglas Charles West, B.S. (UVM), 1959; Essex Junction
Thesis: A Photoelastic Investigation of the Resin Inclusions in Fiber Reinforced Plastics

Medical Microbiology

- Susan Flax Hein, B.S. (UVM), 1960; West Orange, N. J.
Thesis: The Anaerobic Uracil Requirement of Staphylococcus Aureus.

Pharmacology

- Robert William Heaton, B.A. (LaSalle), 1954; Elkins Park, Pa.
Thesis: Effects of Histamine Upon the Cardiovascular System of Swine and the Intravenous LD₅₀ in Swine.

Physics

- *Austin Willard Barrows, Jr., B.A. (UVM), 1960; Winooski
Thesis: An Instrument to Measure the Degree of Supersaturation in Vapors.
- †Arthur Lawrence Norberg, Jr., B.S. (Providence), 1959; Providence, R. I.
Thesis: Model for the Changes in Work Function Due to Chemisorption of Gases on a Surface.

Zoology

- Daniel Joseph Bean, B.S. (UVM), 1960; Burlington
Thesis: The LaPlatte River: An Ecological Study of a Polluted Stream.

Master of Arts

Economics

- Marie Patience Sealy, B.A. (Kansas), 1914; Hyde Park
Thesis: Survey of Vermont Manufacturing Industry.

English

- Thomas Huber, Neuenburg/Württ, Germany
Thesis: Joseph Conrad: The Secret Agent; Genesis of a Novel.
- Helen Elizabeth Long, A.B. (Cornell), 1941; Keeseville, N. Y.
Thesis: The Creative Evolution of George Bernard Shaw's Womanly Woman.
- Sally Stalker Spear, B.A. (UVM), 1957; Winooski
Thesis: Milton and the Seventeenth-Century Garden.

* As of October 14, 1961.

† As of February 24, 1962.

History

- *Harold Leland Chaffey, B.A. (Bowdoin), 1926; Brattleboro, *posthumously*
Thesis: The Search for the 14th Colony.

Mathematics

- Naomi Schwartz Fineberg, B.A. (Goucher), 1960; Norwalk, Conn.
Thesis: The Summability of Divergent Infinite Series.
 John Battles Lane, B.A. (UVM), 1959; Burlington
Thesis: An IBM 1620 Program for the Simplex Algorithm and a Partial Sensitivity Analysis.

Music

- Gerald Raymond Conklin, B.S. (Fredonia), 1958; Fredonia, N. Y.
Thesis: The "C" Approach to Trombone (and Baritone) Playing.
 Janet Lyman Hill, B. Music (Oberlin), 1958; B.S. (Juilliard), 1961; West Nyack, N. Y.
Thesis: The Development of the Violin Sonata Through the Time of Vivaldi; Graduate Violin Recital; A Performing Edition of Vivaldi: Sonata II in A Major, Op. 2, No. 2.
 Cyrus Kermanj, B.S. (Teheran), 1957; B.S. (UVM), 1961; Teheran, Iran
Thesis: "A Portrayal," Composition for Orchestra.

Psychology

- *John Alden Corson, B.A. (Maine), 1959; Yarmouth, Me.
Thesis: Methods of Predicting Rote Verbal Retention from Individual Learning Performance.

Doctor of Philosophy

Biochemistry

- John Jerome Brink, B.S. (Orange Free State), 1955; Johannesburg, South Africa
Thesis: The Synthesis, Properties and Metabolism of Some 6-Aminoacylamidopurines.

College of Medicine

Doctor of Medicine

- Saul Adams, B.S., M.S., Rockland, Mass.
 Ralph David Aserkoff, B.A., *cum laude*, Dorchester, Mass.
 Edward Michael Austin, B.A., Brattleboro
 Roger David Baker, B.A., Burlington
 Salomon Bensimhon, B.A., New York, N. Y.
 Clarence Edward Bunker, B.S., *cum laude*, Brewer, Me.
 Spencer Worthington Burney, B.S., Charlestown, N. H.
 David Stuart Chase, B.A., Lancaster, N. H.
 Stuart Donald Cook, A.B., M.S., *cum laude*, Brookline, Mass.
 Daniel Harrison Day, A.B., Yarmouth, Me.
 John Richard Dooley, A.B., Portland, Me.
 Donald Thomas Evans, B.A., Rutland
 Samuel Edwin Fineberg, B.S., Bridgeport, Conn.
 John Rudolph Fischer, B.A., Burlington
 Nathel John Pontana, B.A., West Lebanon, N. H.
 Donald McKenzie Ford, B.S., Northfield
 Michael Ignatius Grady, A.B., Chestnut Hill, Mass.
 Harvey Maxwell Grant, B.S., B.A., Springfield, Mass.
 Allan Howard Greenfield, B.A., Brookline, Mass.

* As of October 14, 1961.

Joseph John Guardino, B.S., M.Ed., Essex Junction
 Christos Arthur Hasiotis, A.B., Boston, Mass.
 Richard Donald Haskell, A.B., *cum laude*, Orono, Me.
 Frederick Robert Hyland, B.S., Rutland
 Warren Evan Johnson, A.B., Leicester, Mass.
 Joshua Moses Kaplan, A.B., West Roxbury, Mass.
 Roger Lee Lerner, B.A., New Rochelle, N. Y.
 Dean Sherwood Louis, B.S., Fremont, N. H.
 John Murdock MacAulay, B.A., *cum laude*, Graniteville
 Neil Francis Mara, B.S., M.S., Chicopee Falls, Mass.
 Paul Arthur Marshall, B.S., Waterville, Me.
 Donald Putnam Miller, A.B., Montpelier
 Robert George Mondou, A.B., Manchester, N. H.
 Daniel Isaac Palant, B.A., Springfield, Mass.
 Sherwin Howard Ritter, B.A., Springfield, Mass.
 Norman Burton Schwartz, A.B., Milton, Mass.
 Ruth Andrea Seeler, B.A., Ardsley, N. Y.
 Donald Walter Seymour, B.A., West Rutland
 Lewis Mark Slater, B.A., Flushing, N. Y.

Degrees Honoris Causa

Wilder Graves Penfield Montreal, Canada	Doctor of Laws
Harvey Dean Butterfield Burlington, Vermont	Doctor of Divinity
Everett Stanley Wallis Princeton, New Jersey	Doctor of Science
William Millett Huntington Rochester, Vermont	Doctor of Science
Odino Ario Martinetti Johnson, Vermont	Doctor of Education
Frederick Wayne Shepardson Burlington, Vermont	Doctor of Laws
Charles Plympton Smith Burlington, Vermont	Doctor of Laws

DEPARTMENTS OF ARMY AND AIR SCIENCE

Commission of Second Lieutenant, United States Army

*Maynard Ross Ducatte, Ordnance Corps

*John Joseph McGowan, Medical Service Corps

*Paul Richard Higgins, Quartermaster Corps

Commission of Second Lieutenant, United States Army Reserve

David Loring Connors, Ordnance Corps

Carleton Lee Eck, Infantry

Theodore Anthony Giebutowski, Ordnance Corps

Allen Rudd Hendee, Transportation Corps

Philip Johnathan Judd, Medical Service Corps

Kendall Reid Lawson, Ordnance Corps

* Distinguished Military Graduates.

John Tolins Lazarus, Transportation Corps

Archie John Luse, Infantry

John Henry Mills, Armor

Sherrill Baxter Nott, Infantry

*Harold Leroy Paris, Jr., Artillery

Gary Kent Robinson, Corps of Engineers

James Henry Viele, Corps of Engineers

Loan Funds, Scholarships, and Awards

Loan Funds

THURSTON M. ADAMS MEMORIAL FUND Preference given to students in Agricultural Economics.

AMERICAN AGRICULTURALIST RESEARCH FOUNDATION—For juniors and seniors in Home Economics.

CATHERINE ARMSTRONG LOAN FUND For women only.

REV. STEPHEN G. BARNES To provide loans or gifts for needy students to attend religious conferences.

JOHN H. AND MARY A. BLODGETT Established in 1938 by bequest of Mary A. Blodgett of Bellows Falls, preference to be given to graduates of the Kurn Hattin and Warner Memorial Homes and to residents of Rockingham.

MATTHEW HENRY BUCKHAM Any needy girl.

MOSES DYER CARBEE, M.D., Class of 1873 Established by Mrs. May D. Carbee in memory of her husband for students of the College of Medicine.

ROBERT M. CARTER Agriculture and Home Economic students.

ELIZABETH CHAPMAN Established by bequest in 1950.

CHESTNUT FUND For students in Mechanical Engineering upon recommendation of the department chairman.

CLASS OF 1929 LOAN FUND.

THE CONSOLIDATED FUND Composed of the following: the Class of 1916 Fund, the Class of 1923 Fund, the Class of 1924 Fund, the Class of 1925 Fund, the Emergency Loan Fund, the Julia I. Bates Fund, the Student Loan Fund, the B. F. Taylor Fund, the New York Alumni Fund of November, 1927, the Edmund Seymour Fund, the Kidder Loan Fund, the Lydia M. Blood Loan Fund, the Charles H. Bayley Fund, the Charles S. and Etta M. Kehoe Fund, the Sealand W. Landon Fund, the Annette Fiske Mereness Fund, the Pearl E. and Iddie F. Stone Loan Fund, the Student Emergency Loan Fund, and the Emily and Thomas Telfer Fund.

DENTAL MEMORIAL LOAN FUND Established by Vermont Dental Society for financial assistance to second year dental hygiene students.

LEONARD PERLEY DICKINSON For students in engineering, preference to be given to those in electrical engineering.

DONALD DRESSER MEMORIAL FUND No restrictions.

FACULTY EMERGENCY LOAN FUND For faculty members only.

ASA FISKE Established for women students by Annette Fiske Mereness in memory of her father.

ELLIS EDWIN FOSTER LOAN FUND Preference to graduates of Peoples Academy of Morrisville, Vt.

MARY GRAVES Established for women students by Annette Fiske Mereness in memory of her mother.

GREATER NEW YORK CITY ALUMNI LOAN FUND Preference given to students from the greater New York area.

JOSEPH LAWRENCE HILLS Established by friends of Dean Hills, who completed fifty years of service to the University in 1937.

STEPHEN DWIGHT AND LIDA MASON HODGE For women students in the College of Arts and Sciences.

G. STEDMAN HUARD MEDICAL STUDENT LOAN FUND Established by G. Stedman Huard, M.D., Class of 1946. For aid to Senior Medical Students who are Vermont residents, preference to be given to Winooski residents.

CORNELIUS A. JEDEVINE Established by Allen E. Jeudevine as a memorial to his son to aid Vermont men in obtaining a liberal education.

LEWIS RALPH JONES AND ANNA CLARK JONES LOAN FUND Loan Fund to derive from the income of the investment of the above-named estate. To aid worthy and needy students in such manner as the trustees deem proper. Preference—students from Brookfield, Vt.

KELLOGG FOUNDATION LOAN FUND Medical students.

LADIES OF THE FACULTY For women students. Not more than fifty dollars is loaned to any one student.

DR. JOSEPH E. LUMBARD Established in 1946 by the gift of Mr. J. Edward Lumbard, Jr., for students in the College of Medicine.

MEDICAL STUDENT LOAN FUND—Established in 1933 by Medical College alumni for students in the College of Medicine.

NATIONAL DEFENSE STUDENT LOAN FUND.

NEW ENGLAND SOCIETY IN THE CITY OF NEW YORK LOAN FUND Temporary loans.

CHARLES D. AND CARRIE D. ORDWAY Bequeathed by Charles D. Ordway in 1933, for Vermont students.

MARY MAUD PATRICK Established by Epsilon Sigma as a memorial to Mary Maud Patrick for students in elementary education.

PHI BETA KAPPA Available to members of the senior class; preference being shown to members of the society.

ELIZABETH D. AND CLIFFORD R. PROCTOR Established in 1953 for students in the College of Medicine.

RIXFORD MANUFACTURING COMPANY For students from Highgate.

HENRY BIGELOW SHAW, Class of 1896 Established in 1938 by Mrs. Willard Pope in memory of her brother, for those who plan to study at Harvard University Law School.

MARY A. SHAW AND FANNY E. SHAW Established by Mrs. Willard Pope, daughter of Mary A. Shaw, for women students.

KENNETH J. SHELDON LOAN FUND Gift from various donors established as a loan fund for Vermont Agricultural Students.

F. H. AND GRACE M. SHEPARDSON For deserving students, subject to such regulations as the Board of Trustees shall prescribe.

JAMES A. SINGISER MEDICAL STUDENT LOAN FUND Established by James A. Singiser, M.D., to aid needy medical students.

HENRY MARTIN STANTON AND HARRIET BABCOCK STANTON MEMORIAL LOAN FUND Established by the Estate of Eleanor Louise Stanton.

HORACE E. STEVENS, Class of 1870 Established in 1926 by his relatives for students in engineering.

TERRILL-HOLBROOK For women students, preference being shown to those in Home Economics.

MRS. HAROLD T. WHITE MEDICAL STUDENT LOAN FUND Preference given to medical students.

THE WOMEN'S STUDENT HEALTH COUNCIL FUND For women designated by the Dean of Women and the Chairman of the Department of Physical Education for Women, under special regulations as to interest and repayment.

ELLEN E. H. WOODRUFF For personal emergencies for any girl with limit of \$50.00 and approved by the Dean of Women.

Scholarships (Endowed)

LIZZIE P. ALLEN Founded in 1900 by Lizzie P. Allen, a descendant of Ira Allen, founder of the University.

ANONYMOUS Craftsbury preference.

FRANKLIN BALDWIN Established in 1915 by bequest of Mr. Baldwin for students from Putney.

Commission of Second Lieutenant, United States Army Reserve,
Upon Completion of Summer School

Arthur Allen Altholz, Army Security
James Sherwood Bowers, Infantry
*Nicki Hanson Carmolli, Quartermaster Corps
Louis Dellefave, Jr., Infantry

Robert Lane Dente, Artillery
*Maurille Joseph Fournier, Jr., Chemical Corps
George Martin Macary, Army Security
Peter M. Saidel, Armor

Commission of Second Lieutenant in the United States
Air Force Reserve

Richard Thomas Aldinger
Frederick Weed Harrington

James Earle McCarthy
Stanley Everett Van Horn, Jr.

Academic Awards

Presented during the year 1961-1962

ALPHA LAMBDA DELTA AWARD—Jeannine Harrington, '62.

ALPHA ZETA PROFICIENCY AWARD—Albert D. Stevens, '64.

AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS AWARD—Stanley L. Teeter, '62.

WARREN R. AND MILDRED L. AUSTIN AWARD—Rena T. Gusmai, '62.

BORDEN AGRICULTURAL AWARD—Donald H. Steyert, '62.

BURPEE AWARD IN HORTICULTURE—H. Scott Johnson, '62.

EDWARD PAGE BUTLER DEBATING AWARDS—*First*: Marilyn Van Graber, '62; *Second*: Elaine S. Zak, '64; *Third*: Betsy R. Lisman, '63.

CARBEE MEDICAL AWARD—Stuart Donald Cook, A.B., M.S.

FRED DONALD CARPENTER GERMAN AWARD—Brenda M. French, '64.

CHEMICAL RUBBER COMPANY ACHIEVEMENT AWARD—Janet A. Pritchard, '65 (Chemistry); Peter W. Slayton, '65 (Chemistry); James D. Gallo, '65 (Mathematics); Brian L. Pease, '64 (Physics).

CONVERSE AWARDS IN COMMERCE AND ECONOMICS—*First*: Michael J. Lovejoy, '62; *Second*: George F. Pearlstein, '62.

CORSE TRAVELING FELLOWSHIP AWARD—Jerol R. Harrington, '62.

FAYE CRABBE AWARD—Diane Hedley, '62.

GOLDBERG AWARD—Wendell E. Carr, '62.

HOWARD AWARDS—*First*: Alice J. Becker, '65; *Second*: Steven A. Cohn, '64; *Third*: Mary E. Bashew, '64.

ELWIN LEROY INGALLS AWARD—Janet A. Hill, '63.

INSTITUTE OF RADIO ENGINEERS AWARD—Stanley L. Teeter, '62.

INTERFRATERNITY SCHOLASTIC CUP—Phi Sigma Delta.

PRIZE AWARDED BY THE ITALIAN GOVERNMENT TO THE BEST STUDENT IN ITALIAN—John P. Centonze, '64.

A. ATWATER KENT AWARD—Roy W. Martin, '62.

KIDDER MEDAL—Jerry M. Emery, '62.

LAMB FOUNDATION ESSAY AWARDS—*First*: Samuel Edwin Fineberg, B.S.; *Second*: Stuart Donald Cook, A.B., M.S.

ROBERT ASHTON LAWRENCE DEBATING AWARDS—*First*: Marilyn Van Graber, '62; *Second*: Gilbert Tornabene, '63; *Third*: Michael Cronin, '64 (tie), Elaine S. Zak, '64 (tie), William L. Germain, '63 (tie), William Likosky, '62 (tie).

* Distinguished Military Graduates.

- ROBERT ASHTON LAWRENCE AND GEORGE EDWIN LAWRENCE DEBATING AWARDS—*First*: Marilyn J. Van Graber, '62; *Second*: Gilbert M. Tornabene, '63.
- EDMUND F. LITTLE CUP—Laurence S. Bartlett, Jr., '62.
- MORTAR BOARD SCHOLASTIC CUP—Hamilton, third floor.
- OMICRON NU CUP—Anne P. Hermayer, '64.
- PANHELLENIC IMPROVEMENT AWARD—Delta Delta Delta.
- EDWARD H. PHELPS AWARD—David L. Clough, '62; Gregory G. Playotes, '62.
- PHI BETA KAPPA PRIZE—Christina M. Graeter, '64.
- UNIVERSITY RESEARCH CLUB AWARD—Clara L. DeBoer, '62; P. David Price, '63.
- SEYMOUR HORTICULTURAL AWARD—Henry Scott Johnson, '62.
- MARY JEAN SIMPSON CUP—Patricia P. Bishop, '62.
- KIRBY FLOWER SMITH LATIN PRIZE—Barbara Kullback, '65.
- THE MARY B. SULLIVAN MEMORIAL SCHOLARSHIP—Ann Preston Hayes, '63.
- TAU BETA PI AWARD—James C. Raymond, '64.
- THOMAS TROPHY—Ralph W. Matthews, '62.
- UNITED BUSINESS EDUCATION ASSOCIATION AWARD—Anne N. Lavin, '62.
- VERMONT CERTIFIED PUBLIC ACCOUNTANTS AWARD—David L. Connors, '62.
- GEORGE H. WALKER DAIRY AWARD—Donald H. Steyert, '62.
- WALL STREET JOURNAL AWARD—Charles W. Stevens, '62.
- WIRTHMORE 4-H AWARD—Calvin K. Walker, '65.
- WOODBURY AWARD IN MEDICINE—Donald Thomas Evans, B.A.; John Murdock Mas-Aulay, B.A.

REV. LUCIUS E. BARNARD, Class of 1853 Established by bequest in 1903.

SEYMOUR ISRAEL BAROWSKY Preference given to a student from Holyoke, Massachusetts.

REUBEN CLARK BENTON, Class of 1854 Established by bequest for students from Waterford and Lunenburg, Vermont, or from Minneapolis, Minnesota.

ADA S. BLAIR Established by bequest in 1926.

ELIZABETH F. BRIGHAM Established by bequest in 1910; preference to be given to students from Brigham Academy.

MARCIA P. BROWNE Established by bequest for women students.

EMORY N. BURRITT Established by bequest for women students.

SARAH L. BURRITT Established by bequest for women students.

PARKER J. BUXTON Available to a needy and deserving member of the Senior Class.

EZRA HOYT BYINGTON Founded in 1905 in memory of Mr. Byington by Mrs. Louisa J. Byington for students from Hinesburg, or students bearing the name of Byington, Boynton, or Hoyt, or Wortman, or in some way related to these families.

MOSES D. CARBEE, Class of 1873 Established by a bequest from Mrs. May D. Carbee in memory of her husband; available for medical students.

DR. WALTER CARPENTER Established by bequest; preference to be given to sons of clergymen and physicians.

DEAN JOSEPH E. CARRIGAN Established in 1957 by the people of Vermont to honor Dean Carrigan. The income from the fund is used to provide scholarships for Vermont boys and girls attending the College of Agriculture and Home Economics.

ELIZABETH CHAPMAN Established by bequest in 1950.

CLASS OF 1861 Endowed and made available in 1891.

CLASS OF 1881 Endowed in 1937 by William H. Rice.

CLASS OF 1940 No restriction.

JOHN H. CONVERSE, Class of 1861 Established in 1882.

LIZZIE S. CONVERSE Founded by bequest of Sarah Elizabeth Converse for students of classics.

CHARLES M. COX Income from this trust fund provides a scholarship of \$300 for a student in agriculture, preferably to one majoring in dairy or poultry husbandry, on the basis of need, character, and scholarship.

CRAFTSBURY Founded in 1900 for relatives of Mr. and Mrs. Nathan S. Hill, or residents of Craftsbury or Isle La Motte.

PHILIP HENRY CREER Founded by Ev-Gov. Redfield Proctor for students from Proctor.

LOUIS COLLINS DODD Established by bequest in 1962 for worthy and deserving male students who need financial assistance.

JOHN W. AND JOHN SEELEY ESTABROOK Established by bequest in 1956; for students in the College of Medicine from Rutland County, preference being given to students from Brandon.

JOHN M. EVANS Established in 1958 in memory of himself and his wife, Mary Hinckley Evans, for worthy students in civil engineering.

ROLLO J. FRANCISCO Established by bequest in 1951.

GAMMA PHI BETA FOUNDATION SCHOLARSHIP FUND For a female undergraduate student of at least sophomore standing.

GENERAL SCHOLARSHIP.

DR. EDWARD EVERETT HAWES Established by bequest in 1946; available for medical students.

ALBERT T. HENDERSON Established in 1945 by a bequest from William J. Henderson in memory of his son.

FRANCIS WHELPLEY HICKOK, Class of 1871 Founded in 1902 by Mrs. Julia F. Hickok, widow of James W. Hickok, Class of 1837, in memory of their son.

DAVIS HOLLIS.

LOUISA H. HOWARD Founded in 1882; available for men.

CHARLES A. HOYT, Class of 1838 Established by bequest in 1904.

CLARK AND EDWARD S. ISHAM SCHOLARSHIP FUND Established by Lois C. Isham to aid needy boys.

ISLE LAMOTTE Founded in 1884 by Nathan S. Hill; for students from Isla LaMotte or from Craftsbury.

SARAH B. JACOBS Founded in 1882; available for graduates of Brigham Academy only.

EDITH BLANCHE KIDDER Established by Joseph W. Kidder for students in the College of Medicine; preference to be given to legal residents of Barre.

ROBERT J. KIMBALL Founded in 1900 for students from Randolph. The Trustees of Randolph High School may make nominations for this scholarship.

ALDO LEANI MEDICAL Established in 1961 for students in the College of Medicine.

CELINDA A. B. LILLEY Founded in 1880 for women students.

LYNDON INSTITUTE Endowed by George E. P. Smith, Class of 1897; awarded annually to a graduate of Lyndon Institute nominated by the faculty of that school.

CHARLES MUNSON MARSH Established by bequest in 1893 for students from Woodstock by Charles P. Marsh in memory of his son.

CHARLES P. MARSH Established by bequest in 1893; for men and women from Windsor County.

EDWIN WRIGHT MARSH, 1872 Founded in 1883 by Charles P. Marsh, Class of 1839 in memory of his son; for students from the town of Weathersfield or from Windsor County.

MARGARET PATTERSON McDANIELS Established in 1941 by a bequest of George M. McDaniels in memory of his mother; preference to be given to applicants from the towns of Craftsbury and Greensboro.

DANIEL PITKIN MINER Established by bequest in 1943; for native-born students, not over twenty-five years of age.

MORETOWN AND MIDDLESEX Founded by the Rev. E. C. Bass, Class of 1859.

JUSTIN S. MORRILL Founded in 1900 by Senator Justin S. Morrill; for students from Strafford.

JOHN ORDRONAUUX Founded in 1909; for students in the Academic and Medical Colleges.

C. E. AND C. C. PARKER Founded in 1880 by Rev. Charles C. Parker, D.D., Class of 1841, in memory of himself and his son, Charles Edmund Parker, Class of 1867.

ARTHUR W. AND LOUISE S. PERKINS Established in their memory in 1947 by their son and daughters. The income provides aid for students of high character and reasonably good scholarship who are graduates of a secondary school in Rutland. School authorities in Rutland are to be consulted regarding the qualifications of candidates who are not already enrolled in the University.

MINNIE A. PICKERING Established in 1938 by gift in memory of her daughter.

CHARLES W. RICH, Class of 1836 Founded in 1883 for students in the College of Arts and Sciences.

SHATTUCK SCHOLARSHIP Established in 1962 by George Lysander Shattuck in memory of his wife Carolyn, for boys and girls who are natives of Bakersfield, Vermont, and graduates of Brigham Academy.

WILLIAM G. SHAW, Class of 1849 Originally founded in 1892 by bequest of one thousand dollars and increased by his daughter, Mrs. Willard Pope; available for men students.

CHARLES D. SIAS Established by bequest in 1943; available for men.

ANNA C. SMITH SCHOLARSHIP FUND To aid deserving and needy students from the Ludlow, Vermont area.

SAMUEL SIDNEY SMITH Founded in 1896 by bequest of Mrs. Elisa Smith in memory of her husband.

SOLDIERS' Founded in 1913 by a group of Civil War Veterans for students who are descendants of soldiers in the Civil War.

SOPHIA STOW Endowed in 1937 by bequest of George L. Stow, '73, in memory of his mother; for students of classical languages.

DR. H. C. TINKHAM Established by bequest in 1956; for students in the College of Medicine.

DR. DANIEL WASHBURN Founded in 1853 for young men; preference to be given to those studying for the ministry.

JOHN AND MARY WATERMAN Endowed in 1923 by Charles W. Waterman, Class of 1885, in memory of his father and mother; for residents of Waitsfield or Denver, Colorado.

WESTFORD Founded in 1882 by Luke P. Poland; available first to students from the town of Westford.

HATTIE LAURA WETHERBY WESTON Established by bequest in 1936.

JOHN A. S. WHITE Established by bequest; for students from Washington County or from Vermont.

JAMES B. WILBUR The University of Vermont Trust Fund, amounting to about two million dollars, was established by James B. Wilbur as an endowment for scholarships for Vermont students who are in need of assistance to undertake college work and who have earned entrance or college records that indicate extraordinary scholastic ability.

LELAND MASON WILLEY Preference to students majoring in Chemistry.

NORMAN WILLIAMS.

CLAYTON J. WRIGHT Established by bequest; available first for students from the town of Williston.

DAVID PARKER WRIGHT AND ALICE M. WRIGHT Established in 1958 for students from Westminster, Vermont.

Scholarships (Unendowed)

RALPH J. BUGBEE SCHOLARSHIPS in Agricultural Engineering given by the Central Vermont Public Service Corporation. Four scholarships at \$200 each, annually.

EASTERN MILK PRODUCERS ASSOCIATION SCHOLARSHIP FUND For students in the College of Agriculture and Home Economics with need, scholastic ability and leadership qualities. Preference given to freshmen and sons and daughters of members of the association.

ESSO 4-H Awarded each year by the Esso Standard Oil Company of New Jersey to an incoming freshman in the College of Agriculture on the basis of need, character, and scholastic ability, plus at least three years of 4-H work. If satisfactory grades are maintained, two hundred dollars per year will be paid the recipient for the succeeding three years.

GENERAL MOTORS SCHOLARSHIP PROGRAM Open to any U. S. citizen entering college as a freshman. No restrictions on course of study. Awards range from \$200 to \$2,000 a year, depending upon demonstrated need.

DR. CHARLES H. HOOD Given by the Charles H. Hood Dairy Foundation. Six of \$250 each awarded to upperclass students studying milk production.

EDWARD G. NEMER Established in 1961 from a gift in memory of the late Edward G. Nemer, for athletic scholarships.

RALSTON PURINA \$500 awarded at the beginning of the senior year to a student majoring in an area related to animal nutrition on the basis of need, scholarship, leadership, and character.

SAGA FOOD SERVICE, INC. \$550 yearly to help defray the expense incurred in the purchase of University board contracts by two University students participating in intercollegiate athletics.

NORMAN SARETT MEMORIAL FOUNDATION, INC. In memory of Norman Sarett. To be awarded to a sophomore student in liberal arts curriculum.

SEARS-ROEBUCK FOUNDATION Three of \$200 each for men in agriculture and two of \$100 each for women in home economics are awarded annually to incoming freshmen; one for \$250 for a sophomore in agriculture. Awarded on the basis of need, scholarship, and farm origin.

MINNIE ADAMS SEGAR Established in 1962 by the friends of Minnie Adams Segar for worthy students, male or female.

VERMONT ELECTRICAL ASSOCIATION SCHOLARSHIP FUND Awarded to a junior or senior majoring in Electrical Engineering who is a resident of Vermont.

VERMONT HOME DEMONSTRATION COUNCIL SCHOLARSHIP \$200 awarded to a Vermont girl who is enrolled in and has completed at least one year of home economics at the University of Vermont.

WESTERN ELECTRIC SCHOLARSHIP PROGRAM Awarded to an undergraduate in the Engineering Department. \$800 or the cost of tuition, books, and fees, whichever is lower. The fixed amount in no event will be less than \$400. In addition, a grant-in-aid amounting to three-quarters of the amount of the scholarship.

Awards

THE ALPHA LAMBDA DELTA AWARD, a book, is presented by the National Council to the senior member who has the highest average for four years. Certificates are awarded to the senior members who have maintained an average of 87.5 or more for four years.

THE ALPHA ZETA PROFICIENCY AWARD is given to that agricultural student who in his freshman year is deemed the most proficient in scholarship, extracurricular activities, and self-support.

AMERICAN INSTITUTE OF CHEMISTS AWARD, for excellence in the study of Chemistry.

AMERICAN INSTITUTE OF ELECTRICAL ENGINEERING AWARD, a certificate, is awarded annually to the student member who has been the most outstanding in the activities within the branch for the academic year.

THE AMERICAN LEGION AWARD, plaque to the cadet commander of the Army ROTC Company receiving the highest efficiency rating for the year's work.

THE ARMY RESERVE OFFICERS ASSOCIATION AWARD, medal to the Army ROTC cadet in MS IV who has shown the greatest versatility and participation in the ROTC program.

THE ARMY SUPERIOR CADET AWARDS, ribbons to the outstanding Army ROTC cadet in military proficiency in each class.

THE ATHLETIC COUNCIL MANAGERIAL AWARD of twenty-five dollars is awarded annually to that senior sports manager who has shown the greatest proficiency.

THE WARREN R. AND MILDRED L. AUSTIN AWARD, to the student ascertained and found to have shown the most interest and endeavor in knowledge of international organization for the principles and purposes of the United Nations.

THE AWARD OF THE ASSOCIATION OF THE U. S. ARMY, medal to the army ROTC cadet in MS III who is judged to have contributed most through his leadership to advancing the standing of the ROTC unit and the Military Department of the University of Vermont.

THE BENEDICT ESSAY AWARD was established by Robert Dewey Benedict of the Class of 1848, to be awarded annually to the member of the senior class who presents the best essay on the subject of international arbitration.

THE BENNETT ESSAY AWARD, endowed by Philo Sherman Bennett, provides an annual award for the best essay discussing the principles of free government.

THE B'NAI B'RITH AWARD of \$25 is given annually by the Joseph Frank Lodge of Burlington to that student who has done most to encourage interfaith cooperation and activities.

BORDEN AGRICULTURAL AWARD is awarded annually to that eligible student in the College of Agriculture who on entering his senior year has the highest average grade of all eligible students in all preceding college work. Students who have included in their courses of study two or more dairy subjects are eligible for the award.

THE BURPEE AWARD IN HORTICULTURE, an annual award of \$100 donated by the W. Atlee Burpee Company, is made on the basis of scholarship, practical experience, and interest in flower and vegetable growing.

THE BUTLER DEBATING AWARDS were endowed by Edward Page Butler, 1870, for the promotion of extemporaneous debate. From the income of this fund of \$1200 three awards are made annually to the three women students who have shown the greatest ability in debate.

THE CARBEE MEDICAL AWARD was established by Mrs. May D. Carbee in memory of her husband, Moses Dyer Carbee, M.D., 1873. The income from the fund is given annually to the student in the College of Medicine who shows the greatest proficiency in the subject of obstetrics.

THE CARPENTER GERMAN AWARD is presented in honor of Professor Fred D. Carpenter to that student in the intermediate German course who has demonstrated the greatest degree of progress and improvement.

THE CARPENTER TENNIS AWARD, presented in appreciation of Professor Fred D. Carpenter's service as coach of the tennis team and as a member of the Athletic Council, is awarded annually to that member of the varsity tennis squad who has demonstrated the greatest degree of progress in tennis proficiency during the season.

CHEMICAL RUBBER COMPANY UVM ACHIEVEMENT AWARDS Given annually to each of the highest ranking students in the beginning courses in chemistry, mathematics and physics.

THE CONVERSE AWARDS IN COMMERCE AND ECONOMICS were established by John Heman Converse, 1861, by gift of a fund of \$1000, the income from which may be used in whole or in part for prizes.

CORSE FELLOWSHIP OF \$1200 Established by bequest of Frederick M. Corse, Class of 1888, awarded annually to a Bachelor of Arts Graduate of The University of Vermont. The applicant must have been a language major in English or foreign language, and must be preparing for a career in college teaching.

THE FAYE CRABBE AWARD, established in honor of Faye Crabbe by the alumnae and faculty of the University of Vermont School of Nursing, is presented annually to the senior majoring in nursing who has excelled in the areas of scholarship, nursing ability, and service to the University.

THE CRAIG TROPHY, donated by Major M. E. Craig in honor of the 1936-37 Rifle Team, has each year engraved upon it the name of the man making the highest cumulative score throughout the year in the principal matches in which the rifle team competes.

THE EMERSON AWARD IN HISTORY, offered annually in memory of Samuel Franklin Emerson, Professor of History for forty-two years, is awarded to an undergraduate for the best original essay on any topic chosen from any field of history.

THE GOLDBERG AWARD, a gold watch, is awarded annually by Phi Chapter of Phi Sigma Delta Fraternity to that senior man who has achieved an over-all average of at least 77, participated successfully in intramural athletics, contributed to the University as a sincere and respected individual, exemplifying the character and personality of Bailey Herman Goldberg, 1950. Preference is given to a student who plans to continue with graduate study.

HAMILTON WATCH COMPANY AWARD, a watch, to the senior engineer who has most successfully combined proficiency in his major field of study with notable achievements in the social studies and humanities.

THE HOWARD AWARDS were provided by a bequest of \$1250 from Mrs. Hannah T. Howard, the income of which is awarded to students in the College of Arts and Sciences for excellence in the work of the freshman year.

THE ELWIN LEROY INGALLS AWARD is provided from a fund established in 1934 to honor Elwin Leroy Ingalls, 1896, who had then completed twenty years of continuous service as State 4-H Club Leader. It is awarded annually to a University student of outstanding merit as shown in character, 4-H Club record, and scholastic attainment in college.

INTERFRATERNITY SCHOLASTIC CUP, awarded to the fraternity having the highest average during the preceding semester.

THE A. ATWATER KENT AWARD IN ELECTRICAL ENGINEERING is provided by the income of a fund of \$5,000 and is awarded annually to the most improved senior in electrical engineering. The names of the recipients are placed on a tablet which is located in the Waterman Building.

THE KIDDER MEDAL is provided by the income of a fund of \$400, established in memory of D. F. T. Kidder, 1880, a trustee of the University. The specially engraved gold medal is awarded to the male student in the senior class ranking first in character, leadership, and scholarship.

LAMB FOUNDATION ESSAY AWARDS to the students showing greatest comprehension and appreciation of the Doctor-Patient relationship.

LAWRENCE DEBATING AWARDS were established by Edwin Winship Lawrence, 1901. The first group of three awards is established in memory of his brother, Robert Ashton Lawrence, 1899, and is offered annually to students who exhibit the greatest proficiency in debate. A \$10,000 fund provides for these awards.

The second group of awards, established in memory of his brother, Robert Ashton Lawrence, 1899, and his father, George Edwin Lawrence (Middlebury College, '67), is awarded to the four students participating in a joint debate between representatives of the University and Middlebury College who, in the opinion of the judges chosen, show the greatest proficiency in this debate.

THE EDMUND F. LITTLE CUP is provided by the income from a fund established by Arlington P. Little, 1901. It is awarded annually for meritorious work in mechanic arts.

THE LOYAL LEGION MEDAL is presented annually by the Vermont Commandery of the Military Order of the Loyal Legion to the most proficient junior cadet of the Reserve Officers' Training Corps.

THE MERCK INDEX AWARDS given annually by the Merck Co. for proficiency in Chemistry to the outstanding junior and to the outstanding senior.

THE MORTAR BOARD SCHOLARSHIP CUP is awarded annually to the women's dormitory attaining the highest scholarship average for the first semester.

THE OMICRON NU CUP is awarded to the student in home economics who attains the highest scholastic average during her freshman year.

THE OUTING CLUB SKI TROPHY is awarded annually to the member of the varsity ski team who has shown outstanding leadership, character, and athletic attainment in skiing during the past year.

PAN-HELLENIC AWARD is presented annually to the sorority whose scholastic average shows greatest improvement in the fall semester.

THE PHELPS AWARD IN CIVIL ENGINEERING, derived from a fund of \$900, was endowed in memory of Edward Haight Phelps, 1872, by his father, Edward J. Phelps. The award is made annually to an outstanding senior in civil engineering.

THE INSTITUTE OF RADIO ENGINEERING AWARD, a certificate and a voucher for one year's dues as a member after graduation, is awarded annually to the student member who has shown the greatest professional development, accomplishment, and interest in the activities of the student branch.

THE COLONEL WADSWORTH RAMSEY-SMITH TROPHY AND AWARD, in the amount of ten dollars, are awarded annually to the outstanding senior cadet of the Reserve Officers' Training Corps. The name of the senior is inscribed on the trophy, a saber, which is maintained by the Military Department. This award is presented by Mrs. Ramsey-Smith, in honor of her husband.

THE SEMANS TROPHY, presented by the local chapter of Tau Epsilon Phi Fraternity in memory of Henry Semans, 1924, is awarded annually to a senior for outstanding qualities of leadership, loyalty and service to the University, active participation in athletics, and winning the respect and regard of his fellow students.

THE SEYMOUR HORTICULTURAL FUND of \$2500 was given by William W. Seymour in memory of his father, Henry E. Seymour, 1835. The income from the fund is used in part for an award for that senior who has done the best work in original horticultural research.

THE MARY JEAN SIMPSON CUP is awarded annually to that senior woman who best exemplifies the qualities of character, service, and constructive influence which Miss Simpson strove to set before the women students during her term of office as Dean of Women.

THE KIRBY FLOWER SMITH LATIN AWARD is derived from a \$3000 fund established by his wife as a memorial to Kirby Flower Smith, 1884. An award is made annually to the student having the highest standing in second year college Latin.

LA SOCIETE DES 40 HOMMES ET 8 CHEVAUX AWARD, medal to the Army ROTC cadet in MS IV for academic achievement throughout the advanced course.

THE SONS OF THE AMERICAN REVOLUTION MEDALS are presented annually by the Vermont Society, Sons of the American Revolution, one to the member of each class in the Reserve Officers' Training Corps who is outstanding in character, conduct, leadership, and in theoretical and practical knowledge of the year's course.

THE STROH TROPHY is awarded annually in honor of Charles Stroh, 1934, to the member of the baseball team who achieves the highest total of runs-batted-in during scheduled games each year.

THE SUNDERLAND MEMORIAL TROPHY is awarded annually to that senior man who has best exemplified those qualities of character, leadership, and persistence in overcoming obstacles, which were outstanding traits in the life of Russell O. Sunderland, 1938. Each recipient's name is engraved on the permanent trophy, and the Boulder Society makes a suitable personal award.

TAU BETA PI AWARD for the sophomore in engineering who has achieved the highest scholastic average for the first three semesters.

THE THOMAS TROPHY is awarded annually to that senior student in agriculture who most closely exemplifies the character of John M. Thomas.

VERMONT CERTIFIED PUBLIC ACCOUNTANTS AWARD, annually to the outstanding student in accounting.

THE VETERANS OF FOREIGN WARS MEDAL AND PLAQUE, presented by the Howard Plant Post 782, are awarded annually to the freshman cadet of the Army ROTC unit who demonstrates the highest proficiency in leadership, drill, and military science. His name is inscribed upon the plaque, which is maintained by the military department.

THE GEORGE H. WALKER DAIRY AWARD is derived from a fund of \$2000, donated by George H. Walker, one of the founders of the Walker-Gordon Milk Company. It is awarded annually to an outstanding senior in dairy studies.

THE WALL STREET JOURNAL AWARD, a silver medal and a one-year subscription to the *Wall Street Journal*, is awarded annually to the member of the senior class who shows the greatest proficiency in the field of finance.

THE WASSON ATHLETIC AWARD is derived from an endowment of \$250, given by Mrs. Pearl Randall Wasson in memory of her husband, Dr. Watson L. Wasson, 1901. The income provides a prize for the member of the senior class who has maintained the highest standard of academic scholarship and athletic attainment.

WIRTHMORE 4-H AWARD of one hundred dollars is awarded annually to a freshman 4-H member who has done outstanding work in 4-H dairy or dairy feeding projects.

THE WOODBURY MEDICAL AWARDS are derived from a fund of \$1000 created by Mrs. Pauline S. Woodbury in memory of her husband, Dr. Urban A. Woodbury, 1859. The first award is awarded annually to the student who has shown the greatest proficiency in the clinical subjects in his senior year. The second award is awarded to that member of the sophomore class who has received the highest standing of the class in all subjects of the freshman and sophomore years.

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Academic Calendar

Spring Semester 1963

February	1, Friday	Second semester enrollment
February	2, Saturday	Second semester enrollment
February	4, Monday	Classes resume
February	22, Friday	Kake Walk Holiday
February	23, Saturday	Kake Walk Holiday
April	8, Monday	Spring recess begins
April	17, Wednesday	Classes resume
May	1, Wednesday	Honors' Day
May	23, Thursday	No classes
May	24, Friday	Final examinations begin
May	30, Thursday	Memorial Day
June	4, Tuesday	Examination period ends
June	9, Sunday	Commencement

Fall Semester 1963

September	10, Tuesday	Preliminary Days Program begins
September	10, Tuesday	Opening Convocation
September	13, Friday	Enrollment for all new students
September	14, Saturday	Enrollment for all other students
September	16, Monday	Classes begin
November	27, Wednesday	Thanksgiving recess begins; no classes
December	2, Monday	Classes resume
December	23, Monday	Winter recess begins; no classes
January	6, Monday	Classes resume
January	13, Monday	Midyear examinations begin
January	22, Wednesday	Examination period ends

Spring Semester 1964

January	31, Friday	Second semester enrollment
February	1, Saturday	Second semester enrollment
February	3, Monday	Classes resume
February	21, Friday	Kake Walk Holiday
February	22, Saturday	Kake Walk Holiday
March	25, Wednesday	Spring recess begins
April	1, Wednesday	Classes resume
May	1, Friday	Honors' Day
May	21, Thursday	No classes
May	22, Friday	Final examinations begin
June	2, Tuesday	Examination period ends
June	7, Sunday	Commencement

CALENDAR

1963

JANUARY

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