

THE UNIVERSITY OF VERMONT

Bulletin April 1964

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Bulletin of THE UNIVERSITY OF V E R M O N T



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The University of Vermont

¶ The University is located at Burlington, Vermont, overlooking an attractive tree-shaded city situated on the shores of Lake Champlain.

9 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.

9 The University is accredited by the following associations:

The New England Association of Colleges and Secondary Schools

The National Council for Accreditation of Teacher Education

National Association of Schools of Music

The American Medical Association

The American Dental Association

National League for Nursing

The Engineers Council for Professional Development

The American Chemical Society

The Philosophy and Objectives of The University of Vermont JOHN T. FEY, J.S.D., LL.D., President

Today, more than ever before, higher education is in need of a basic philosophy—one which will clarify its purposes and goals, and which, at the same time, will protect it from any loss of its essential characteristics. It is important to note well that a university, the home of higher education, is not a barometer of public opinion, and that it cannot conceivably bend to meet every demand of society if it is to carry out effectively its major responsibilities to scholarship and learning.

A university must be committed to scholarship, it must be dedicated to education in the very highest branches of learning, and it must aspire to the supreme level of excellence.

If, in the constantly changing environment of modern civilization, a university finds itself in the role of a service agency, ready to meet every demand that society may make upon it, then there is real danger that the vital purposes and goals of higher education may be lost. If the danger is recognized and guarded against, however, the integrity of our educational program will not be jeopardized.

What, then, is the basic purpose of the University of Vermont—what is its philosophy of education?

Basically, the University is an institution dedicated to pure learning in the humanities, the natural sciences, and the social sciences. Our responsibility is that of creating a community of scholars, both old and young; of providing an atmosphere for the discovery, exchange, and transmission of ideas; and of furnishing continuing generations with the intellectual means for leading full and purposeful lives.

Institutional Goals

Quite naturally there is a diversity of goals among American institutions of higher education, and inevitably there are differences in the goals of public and private institutions. As a publicly supported institution, the University has accepted the responsibility of providing an educational opportunity for all qualified men and women residing in the State of Vermont. The University continues to meet this responsibility at the same time that it is able to enhance the educational opportunity afforded Vermonters by the admission of students coming from many large and small communities outside Vermont's borders. This tradition, not enjoyed by many state universities, not only provides a heterogeneity of background and experience for all students, but also makes possible a breadth and depth of academic offerings which the University of Vermont otherwise might not be able to provide for Vermonters alone.

Thus our institutional goals are ...

... to provide a liberal education through individual capacity for the making of intelligent decisions. Such an education becomes meaningful with a knowledge of our historical heritage; it becomes operational through the use of all disciplines, including mathematics and science; and it becomes influential through the art of effective communication

... to extend an opportunity for the development of a cultural life by virtue of the arts and the formulation of philosophical and moral values ... to provide skill training in preparation for specific professions and careers.

... to create an atmosphere conducive to research and scholarship through the development of programs which will implement both undergraduate and graduate education

... to develop graduate programs leading to the master's and doctor's degree in areas supported by faculty, laboratory, and library facilities as a means of specialization and of complementing desired research and study in selected fields

... to carry on a program of adult education through the Evening Division, off-campus activities, cooperative extension, and modern communication media

... to provide services to state and local government where University personnel, data, or organization are particularly adaptable to a public need which otherwise may not be filled.

Institutional Means

Clearly, our institutional goals cannot be achieved without a faculty of distinction aided by an administration which recognizes that its obligation is both to provide the facilities and to help create the conditions in which the faculty and students can pursue their educational responsibilities.

One of the most important of the University's means to the desired end is the development of an undergraduate curriculum which provides a liberal education in every professional program. This is not to say that every student should matriculate in the College of Arts and Sciences. It does mean that the professional and vocational must not crowd out a liberal education simply because the subject matter of each professional field is increasing. It is impossible today to teach everything there is to know in the professions, whether in medicine, law, engineering, business, or agriculture. For this reason it is important that we continually review the curriculum to reevaluate, modify, and consolidate the fundamentals of professional education so that the teaching of effective communication—mathematics, history, science, and the arts—retains its central importance.

Facilitating this is the emphasis placed upon individual excellence, wherein the gifted student may advance more rapidly through small seminars, conferences, individual research assignments, the use of original sources, and student advisory services.

Further means include a constant reviewing of admissions requirements to insure an educational opportunity to those applicants who will receive the greatest benefit from a college education; a fostering of research projects which are related to the teaching program and to our established institutional goals, providing opportunity for research in the social sciences and the humanities as well as in the natural sciences; the development of a full graduate program as rapidly as resources permit; and finally, a sustained plan of university self study to provide a continuing evaluation of achievement and a basis for the consideration of new techniques and methods.

Basic to these means, of course, and a resource without which the institution ceases to be a university, is the library. To make our philosophy of education meaningful, to make our goals realizable, and to make our other means workable, a truly fine library is indispensable.

The University's philosophy of education, then, is to create a community of scholars and provide facilities and an environment for full educational development. Our goals are to insure the undergraduate a well-rounded academic background, regardless of the field of concentration; to offer sound graduate programs at the master's and doctor's levels; to pursue a program of continuing adult education; and to provide the State and community with professional and cultural services.

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*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) *MALCOLM DANIEL DAGGETT, Ph.D. (1945) Shipman Professor of Ophthalmology Professor of Romance Languages JOHN FIDLAR DALY, M.D. (1949) Professor of Dermatology *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) PHILIP HOVEY DAVIS, M.D. (1958) Assistant Professor of Pediatric Nursing Instructor in Clinical Orthopedic Surgery * JEAN MARGARET DAVISON, Ph.D. (1955) Associate Professor of Classical Languages and History WILLIAM NELSON DEANE, Ph.D. (1960) Instructor in Social Psychiatry HERNANDO DE LA CUESTA, Ph.D. (1963) Assistant Professor of Electrical Engineering *LUBOMIR A. D. DELLIN, J.S.D. (1957) Associate Professor of Economics ALINE LOUISE DEMERS, M.S. (1960) Assistant Professor of Nursing GINO ALDO DENTE, M.D. (1950) ROBERT BRUCE DICKSON, M.S. (1963) Assistant Professor of Clinical Anesthesia Instructor in Mathematics CARROLL DODGE, Ph.D., (1963) *CHARLES GEORGE DOLL, Ph.D. (1927) 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 ROGER DORWART, M.C.E. (1963) Instructor in Civil Engineering *ROBERT KINGSLAND DOTEN, Ph.D. (1951) Associate Professor of Geology *THOMAS WHITFIELD DOWE, Ph.D. (1962) 2) Professor of Animal and Dairy Science Visiting Professor of Animal and Dairy Science ARTHUR DRACY, Ph.D. (1963) 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) Associate Professor of Clinical Obstetrics and Gynecology KATHERINE S. DUROE, M.S. (Jan. 15, 1964) *WINFIELD BOOTH DURRELL, D.V.M. (1949) Associate Professor of Animal Pathology Assistant Professor of Animal and Dairy Science ALEXANDER H. DUTHIE, Ph.D. (1963) *JULIUS SOLOMON DWORK, Ph.D. (1954) Associate Professor of Mathematics *GEORGE DYKHUIZEN, Ph.D. (1926) Marsb 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) EILEEN THERESA ECKHARDT, Ph.D. (1962) Instructor in Political Science Instructor in Pharmacology WINSTON MILO EDDY, M.D. (1960) Assistant Professor of Clinical Medicine DONALD MERRITT ELDRED, M.A. (1949) Instructor in Clinical Psychology JOHN ELLENWOOD, M.A. (1963) Instructor in Speech 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 IOHN W. EURICH, M.A. (1963) Instructor in German JOHN CLIFFORD EVANS, B.S. (1937) Associate Professor of Physical Education for Men Assistant Professor of Clinical Urology WILLIAM THOMAS FAGAN, JR., M.D. (1953) 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 Clinical Instructor in Dental Hygiene JOHN E. FARNHAM, D.D.S. (1963) SANDRA MORTON FARRELL, M.S. (1962) Instructor in Physical Education for Women HELEN ELIZABETH FARRINGTON, M.P.H. (1962) Instructor in Nursing

¹ Sabbatical leave 1963-64.

DOUGLAS PATTEN FAY, M.S. (1953) Associate Professor of Civil Engineering EDWARD JOSEPH FIEDNER, 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 Assistant Professor of Botany KENNETH D. FISHER, Ph.D. (Jan., 1963) 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 Assistant Professor of Chemistry Assistant Professor of Agronomy TED BENJAMIN FLANAGAN, Ph.D. (1961) THEODORE ROSS FLANAGAN, Ph.D. (1953) Associate Professor of Political Science WILLIAM SHOEMAKER FLASH, Ph.D. (1962) ARTHUR HOWARD FLOWER, JR., M.D. (1950) Associate Professor of Clinical Dermatology EDWARD LEO FOLEY, Ph.D. (1962) JOSEPH CLAYTON FOLEY, M.D. (1954) Assistant Professor of Physics Associate Professor of Clinical Radiology *MURRAY WILBUR FOOTE, Ph.D. (1947-51; 1953) Associate Professor of Biochemistry (Agriculture) Instructor in Clinical Psychiatry JOHN LOUIS PHILIPPE FOREST, M.D. (1942) DOYLE RICHARD FOSSO, A.M. (1960) Instructor in English BARBARA FREER, M.A. (1963) Instructor in Romance Languages EDWARD E. FRIEDMAN, M.D. (1963) Clinical Instructor in Epidemiology and Community Medicine *FRED WILLIAM GALLAGHER, Ph.D. (1944) ALBERT HENDERSON GARDNER, B.S. (1962) Professor of Medical Microbiology Instructor in Education BRUCE ARTHUR GAYLORD, Ed.D. (Feb., 1960) Associate Professor of Agricultural Education Instructor in Clinical Pediatrics STOKES GENTRY, M.D. (1962) *ALEXANDER GERSHOY, Ph.D. (1923) Professor of Botany Assistant Professor of Psychology SOM NATH GHEI, Ph.D. (1962) THOMAS CHOMETON GIBSON, M.B., B.Chir. (1962) Assistant Professor of Epidemiology and Community Medicine *BRADY BLACKFORD GILLELAND, Ph.D., (1957) Professor of Classical Languages Associate Professor of Biochemistry *ERLAND CHENEY GJESSING, Ph.D. (1954) *RICHARD WILLIAM GLADE, Ph.D. (1958) Associate Professor of Zoology Associate Professor of Clinical Surgery ARTHUR GLADSTONE, M.D. (1936) RICHARD HERRON GOLDSBOROUGH, M.D. (1961) Instructor in Clinical Otolaryngology MARTHA GOLDSTEIN, A.B. (1963) Instructor in Sociology *LYMAN JAY GOULD, Ph.D. (1953) Associate Professor of Political Science Instructor in Physical Education for Men ROBERT DAVID GRANT, M.P.E. (1962) 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 *DONALD CROWTHER GREGG, Ph.D. (1946) *EDWIN CHARLES GREIF, M.S. (1950)² Pomeroy Professor of Chemistry Professor of Economics HAROLD ALFRED GREIG, B.S. (1962) Instructor in Physical Education for Men HOWARD THEODORE GUARE, M.D. (1952) Assistant Professor of Clinical Radiology Instructor in Sociology DENEZ GULYAS, M.A. (1963) CARLETON RAYMOND HAINES, M.D. (1950-52; 1954) Assistant Professor of Clinical Surgery (Oncology) *ROBERT WILLIAM HALL, Ph.D. (1957)¹ Associate Professor of Philosophy and Religion HARRIET ASHKENAZY HAND (MRS. S. B.), M.S. 1963 Assistant Professor of Home Economics SAMUEL B. HAND, Ph.D. (Feb., 1961) Assistant Professor of History JOHN SHERWOOD HANSON, M.D. (1958) Assistant Professor of Medicine WILLIAM R. HANSON, M.A. (1963) Instructor in Romance Languages WILLIAM FRANCIS HARDIN, M.A. (1962) Assistant Professor of Romance Languages Instructor in Home Economics CLAIRE HART (MRS. DANIEL), B.S. (1963) *ROLF NORDAHL BRUN HAUGEN, Ph.D. (1947)² Professor of Political Science ¹ On leave 1963-64. ² Sabbatical leave second semester 1964-65.

MOSES ALFRED HAYNES, M.D. (1959)¹ 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 Associate Professor of Poultry Science Associate Professor of Political Science DONALD CEDRIC HENDERSON, M.S. (1944) *RAUL HILBERG, Ph.D. (Feb., 1956) *CHARLES WILLIAM HOHLMAN, M.S. (1949) Associate Professor of Electrical Engineering GUELMA BROWN HOPKINS (MRS. R. R.), M.A. (1962) ROBERTO REYES HOPKINS, B.A. (1961) *RICHARD JOHN HOPP, M.S. (1947)² Instructor in English Instructor in Romance Languages 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 ROBERT BRUCE HUBER, Ph.D. (1946) Professor of Speech HANS ROSENSTOCK HUESSY, M.D. (1960) Instructor in Clinical Psychiatry *MURIEL JOY HUGHES, Ph.D. (1942-44; 1945) ALLEN STANDISH HUNT, M.S. (Feb., 1961) Professor of English Assistant Professor of Geology Assistant Professor of Clinical Radiology Associate Professor of Economics ROBERT JACOB HUNZIKER, M.D. (Jan., 1963) *A. M. Md. MOAZZAMUL HUQ, Ph.D. (1956)1 MONICA B. HURLBUT, M.A. (1963) Clinical Instructor in Psychiatry 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 Associate Professor of Mathematics * JOSEPH ANTHONY IZZO, JR., Ph.D. (1956) *JULIAN JOSEPH JAFFE, Ph.D. (1961) CLINTON DALES JANNEY, Ph.D. (1959) RICHARD HARRY JANSON, Ph.D. (1958) ELBRIDGE EUGENE JOHNSTON, M.D. (1951) Associate Professor of Pharmacology Associate Professor of Radiologic Physics Associate Professor of Art Assistant Professor of Clinical Medicine Professor of Romance Languages *STUART LYNDE JOHNSTON, Ph.D. (1940-44; 1946) WILLIAM HERBERT JOHNSTON, M.D. (1952) *DONALD BOYES JOHNSTONE, Ph.D. (1948)² Instructor in Clinical Radiology Professor of Microbiology *LEONIDAS MONROE JONES, Ph.D. (1951)² Associate Professor of English ROBERT A. JONES, M.A. (1963) ROY GEORGE JULOW, Ph.D. (1957) Instructor in English Associate Professor of Romance Languages Assistant Professor of German HARRY HELMUTH KAHN, M.A. (1950-53; 1954) Assistant Professor of Music JAMES KEENE, M.Mus.Ed. (1963) PHILIP C. KELLEHER, M.D. (1963) Instructor in Medicine JAY EDGAR KELLER, M.D. (1950) ROBERT COLLAMER KELLY, M.S. (1963) Assistant Professor of Clinical Surgery Instructor in Commerce and Economics * JOHN HARVEY KENT, Ph.D. (1950)⁸ Roberts Professor of Classical Languages and Literature *ANN MARIE KEPPEL, Ph.D. (1958) Associate Professor of Education GEORGE VINCENT KIDDER, Ph.D. (1922) Professor of Classical Languages and Literature WILSON KIMNACH, M.A. (1963) Instructor in English THOMAS CLAIR KING, Ed.D. (1951) Professor of Education *DAVID LESLIE KINSEY, Ph.D. (1950) Associate Professor of Music LYNDA SARAH KITTLE, B.S. (1963) Instructor in Home Economics FRIEDRICH WILHELM KLEMPERER, M.D. (1955) Assistant Professor of Clinical Medicine STEPHEN CECIL KNIGHT, JR., M.S. (1952) Associate Professor of Civil Engineering Associate Professor of Home Economics ESTHER LUCILE KNOWLES, M.S. (1945)³ JULIUS A. KOHN, S.M. (Feb., 1964) Instructor in Mechanical Engineering Instructor in Zoology LORRAINE BAGDON KORSON, M.S. (Feb., 1964) *ROY KORSON, M.D. (1951-52; 1954) Associate Professor of Pathology ANDREW PAUL KRAPCHO, Ph.D. (1960) Assistant Professor of Chemistry ¹Resigned as of January 31, 1964. ² Sabbatical leave first semester 1964-65. ⁸ Sabbatical leave second semester 1963-64.

HANS KRAUS, M.D. (1961) Consultant in Experimental Medicine JOHN ERNEST KRIZAN, Ph.D. (1962) MARTIN ERIC KUEHNE, Ph.D. (1961) Assistant Professor of Physics Assistant Professor of Chemistry RAYMOND FRANK KUHLMANN, M.D. (1951) Assistant Professor of Clinical Orthopedic Surgery ARTHUR SAUL KUNIN, M.D. (1957)¹ Assistant Professor of Medicine and Clinical Biochemistry BERT KARL KUSSEROW, M.D. (1959) Associate Professor of Pathology Associate Professor of Biochemistry *MERTON PHILIP LAMDEN, Ph.D. (1947) S. HENRY LAMPERT, D.D.S. (1963) JOHN CLIFFORD LANTMAN, M.D. (1957) Instructor in Dental Hygiene Instructor in Epidemiology and Community Medicine (General Practice) RALPH ROBERT LAPOINTE, M.Ed. (1951) Assistant Professor of Physical Education for Men JOHN M. LAST (Jan., 1964) Assistant Professor and Temporary Teaching Fellow, Epidemiology and Community Medicine MARGARET CLARKE LEFEVRE (MRS.), Ph.D. (1963) Assistant Professor of Speech LESLIE RAYMOND LEGGETT, D.P.E. (1962) Assistant Professor of Physical Education for Men Professor of Experimental Medicine EUGENE LEPESCHKIN, M.D. (1947) Instructor in Home Economics JULIA LEPESCHKIN (MRS. E.), M.A. (1962) Associate Professor of Economics *DAVID ALLEN LESOURD, Ph.D. (1952) Instructor in Clinical Medicine HYMAN BERNARD LEVINE, M.D. (1961) ARTHUR M. LEVY, M.D. (1963) Instructor in Medicine GORDON FIELDING LEWIS, Ph.D. (1961) Assistant Professor of Sociology Professor of Speech WILLIAM J. LEWIS, Ph.D. (1954) *FRANK WAYNE LIDRAL, Ph.D. (1960) Professor of Music *HARRY LIGHTHALL, JR., Ph.D. (1955) Associate Professor of Mathematics RICHARD LEWIS LIPSON, M.D. (Dec., 1963) Assistant Professor of Medicine Professor of Political Science *GEORGE THOMAS LITTLE, Ph.D. (1950) *JACK ERNEST LITTLE, Ph.D. (1945) Professor of Biochemistry (Agriculture) VIRGINIA LYLE COLE LITTLE (MRS. G. T.), Ph.D. (Feb., 1962) Assistant Professor of Home Economics *JOHN HUTCHISON LOCHHEAD, Ph.D. (1942)² Professor of Zoology MARGIT LOCHHEAD (MRS. J. H.), Ph.D. (1954) Instructor in Nursing *PHILIPP HANS LOHMAN, Ph.D. (1945)³ Converse Professor of Commerce and Economics ROSALIE MAY LOMBARD, M.A. (1959) Assistant Professor of Medical-Surgical Nursing NORMAN THEODORE LONDON, D.Ed. (1960) Assistant Professor of Speech *LITTLETON LONG, Ph.D. (1949) Associate Professor of English CARL LUCARINI, M.A. (1928) Assistant Professor of Chemistry Associate Professor of Pediatrics Associate Professor of Pathology JEROLD FRANCIS LUCEY, M.D. (1956) WILLIAM HOSSFELD LUGINBUHL, M.D. (1960) ELEANOR MERRIFIELD LUSE, Ph.D. (1947) Professor of Speech JOHN H. MABRY, Ph.D. (1963) Associate Professor of Epidemiology and Community Medicine 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 Professor of Obstetrics and Gynecology JOHN VAN SICKLEN MAECK, M.D. (1948) FREDERICK JOSEPH MAHER, JR., B.A. (1958) Assis. FRANCIS XAVIER MAHONEY, B.S., Captain U. S. Army (1962) Assistant Professor of Sociology Assistant Professor of Military Science Instructor in Music NOLA ILENE MARBERGER, M.Mus. (1962) J. EDWARD MARCEAU, D.D.S. (1950-52; 1954) Instructor in Dental Hygiene CLAUDIA J. MARCOU, M.S. (Feb., 1964) Instructor in Nursing ¹ On leave.

- ² Sabbatical leave second semester 1963-64.
- ⁸ On leave 1963-64.

GILBERT ADAMS MARSHALL, M.S. (1947) Associate Professor of Mechanical Engineering *FREDERIC CARVER MARSTON, JR., Ph.D. (1948) Professor of Englisb Associate Professor of Clinical Neurology HERBERT LLOYD MARTIN, M.D. (1954) RICHARD MONTGOMERY MARTIN, Ph.D. (1960) *JAMES WALLACE MARVIN, Ph.D. (1939)¹ Instructor in Psychology Professor of Botany Assistant Professor of Political Science WILLIAM IRVING MATTHEWS, M.A. (1962) ROBERT ARTHUR MAXWELL, Ph.D. (1962) Associate Professor of Pharmacology SALLY BERRY MAYBURY (MRS. T. J.), Ed.D. (1944) Associate Professor of Economics MARGARET ANNE 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 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 Professor of Pediatrics ROBERT JAMES McKAY, JR., M.D. (1950) 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 R. W. PAUL MELLISH, M.B. (1963) Assistant Professor of Surgery *DONALD BURTON MELVILLE, Ph.D. (1960) Professor of Biochemistry JOYCE EVELYN MERRIAM, M.A. (1961) Instructor in Mathematics WILLIAM C. METCALFE, M.A. (1963) Instructor in History Assistant Professor of Epidemiology and Community ROGER JEFF MEYER, M.D. (1962) Medicine, and Instructor in Clinical Pediatrics WILLIAM LAROS MEYER, Ph.D. (1962) Instructor in Biochemistry *ALVIN REES MIDGLEY, Ph.D. (1951) WILLIAM E. MIKELL, LL.B. (1963) Professor of Agronomy Instructor in Political Science *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 Associate Professor of Nursing JEAN BEATTIE MILLIGAN, M.A. (1953) 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) Instructor in Commerce and Economics FRANK KENNON MOODY, B.D. (1962) Instructor in Religion *PAUL AMOS MOODY, Ph.D. (1927) 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 Associate Professor of Home Economics *ELLEN HASTINGS MORSE, Ph.D. (1960) *DONALD EUGENE MOSER, Ph.D. (1960) Associate Professor of Mathematics E. JOYCE POOLE MOUR (MRS. S. I.), B.S.N. (1963) Instructor in Nursing 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) *MILTON JOSEPH NADWORNY, Ph.D. (1952) Professor of Psychology Professor of Economics RICHARD L. NAEYE, M.D. (1960) Associate Professor of Pathology AUDREY JEANNE NAYLOR, M.D. (1962) Instructor in Epidemiology and Community Medicine, and Clinical Pediatrics CHESTER ALBERT NEWHALL, M.D. (1929) Thayer Professor of Anatomy DAVID SOULE NEWHALL, M.A. (1959) Assistant Professor of History GEORGE HUBERT NICHOLSON, A.M. (1923) Associate Professor of Mathematics Instructor in Experimental Neurosurgery MITSUO NUMOTO, M.D. (1962) *ANDREW EDGERTON NUQUIST, Ph.D. (1938)² McCullough Professor of Political Science Professor of Physics *WESLEY LEMARS NYBORG, Ph.D. (1960) *ELBERT AUSTIN NYQUIST, M.S., C.P.A. (1953) Associate Professor of Economics ¹ Sabbatical leave 1964-65. ² Sabbatical leave 1963-64.

OFFICERS OF INSTRUCTION

Assistant Professor of Clinical Medicine ROBERT EMMETT O'BRIEN, M.D. (1955) Assistant Professor of English JAMES DONALD O'HARA, Ph.D. (1959) Professor of Sociology *PAUL OREN, JR., Ph.D. (1958) 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 Assistant Professor of Russian PAUL PAGANUZZI, M.A. (1961) 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)¹ Professor of Music VICTOR H. PAQUET, B.S. (1949) Associate Professor of Graphics Associate Professor of Romance Languages MALCOLM SKEELS PARKER, D.M.L. (1953) Assistant Professor of Clinical Pediatrics Instructor in Classical Languages EDWIN MATTSON PAXSON, M.D. (1957) RICHARD PELOQUIN, A.B. (Feb., 1964) HANS HENRY PENNER, M.A. (1962) MERVYN WILLIAM PERRINE, Ph.D. (1961) Instructor in Philosophy and Religion Assistant Professor of Psychology OSCAR SYLVANDER PETERSON, JR., M.D. (1944) Associate Professor of Clinical Radiology and Associate in Biophysics Assistant Professor of Education MARY MARGARET PETRUSICH, M.Ed. (1962) Assistant Professor of Nursing LORRAINE WATERS PHILLIPS, M.N. (1962) Professor of Education RAYMOND VIRGIL PHILLIPS, Ph.D. (1961) Instructor in English SIDNEY BORIS POGER, M.A. (1962) 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 Assistant Professor of Forestry BOYD W. POST, D.F. (1963) Associate Professor of Zoology *MILTON POTASH, Ph.D. (1951) AGNES T. POWELL, M.S. (1963) Assistant Professor of Home Economics PLATT RUGAR POWELL, M.D. (1949) Associate Professor of Clinical Urology Instructor in Clinical Obstetrics and Gynecology HENRY LEWIS PRATT, M.D. (1952) WILLIAM ARTHUR PRATT, M.D. (1950) Instructor in Clinical Medicine Instructor in Mathematics RALPH PRESTON, M.S. (1963) RUTH ANN PRESTON, M.S. (1962) Instructor in Epidemiology and Community Medicine Instructor in Dental Hygiene RALPH S. PROVOST, D.D.S. (1963) *HERBERT EVERETT PUTNAM, Ph.D. (1931) Associate Professor of History PHYLLIS MELVILLE QUINBY, B.S. (1949) Assistant Professor of Dental Hygiene WILHELM RAAB, M.D. (1939) Professor of Experimental Medicine *DAVID WILLIAM RACUSEN, Ph.D. (1958) Associate Professor of Agricultural Biochemistry Instructor in Political Science DOUGLAS W. RAE, B.A. (Feb., 1964) ROBERT MALCOLM RAGAN, M.S. (1959)² Assistant Professor of Civil Engineering Associate Professor of Botany LOUISE ADELE RAYNOR, Ph.D. (1946) ELMER McCREADY REED, M.D. (1948) *HEATH KENYON RIGGS, Ph.D. (1953) Assistant Professor of Otolaryngology Professor of Mathematics BENJAMIN ALBERT RING, M.D. (1959) Assistant Professor of Neuroradiology and Radiologic Anatomy Associate Professor of Education S. ALEXANDER RIPPA, Ed.D. (1960) Professor of Military Science COLONEL LEONARD J. ROBINSON, M.A. (1963) Instructor in Nursing ALICE KELLY RODGERS, M.S. (1962) Associate Professor of Physics ALBAN BENNETT ROONEY, M.S. (1922) Associate Professor of Civil Engineering JAMES ALBERT ROOT, M.C.E. (1948) Assistant Professor of Zoology HOWARD ROTHSTEIN, Ph.D. (1962) Associate Professor of Zoology LYMAN SMITH ROWELL, M.S. (1925) WILLIAM ADOLPH RUFFER, M.A. (1962) Assistant Professor of Physical Education for Men Associate Professor of Electrical Engineering STANLEY RUSH, Ph.D. (1962) ¹ Sabbatical leave first semester 1963-64.

² On leave September, 1962-September, 1964.

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1 Ex-Officio.

² J. W. Marvin, second semester.

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J. E. Baker, *Chairman* D. C. Gregg J. E. Little R. V. Phillips M. F. Severance C. D. Cook¹ T. C. King¹ 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 follow-

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ing studies: botany, chemistry, economics, English, French, geology, German, Greek, history, Latin, mathematics, music, philosophy, physics, political science, psychology, sociology, Spanish, speech, and zoology.

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. These programs lead to the degree of Bachelor of Science in Commerce and Economics.

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 fouryear curricula leading to the degree 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 preveterinary science which prepares students for admission to other institutions for professional training.

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The curriculum in agriculture provides options in general agriculture, agricultural economics, agricultural education, agronomy, animal and dairy science, dairy industry, botany, foreign agricultural service, forestry, horticultural science, and poultry science.

The curriculum in home economics provides options in general home economics; family living; food and nutrition; clothing, textiles and related arts; 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 and included the curricula in civil, electrical, mechanical, and management engineering; professional chemistry; and medical technology.

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 INTRODUCTION

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 admissions 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.

Business Education, junior year, Maine, Massachusetts.

- Classics, freshman year, Massachusetts, New Hampshire, Rhode Island; graduate, Maine, Massachusetts and Rhode Island.
- Dairy Manufacturing, junior year, Maine, New Hampshire, Rhode Island.
- Foreign Agricultural Service, freshman year, Massachusetts, Rhode Island.
- Medical Electronics, graduate, Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island.

Medical Technology, junior year, Massachusetts.

Microbiology, graduate, Maine, Rhode Island.

Nursing, freshman year, New Hampshire.

Secretarial Science, junior year, Maine, Massachusetts.

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 citizen's 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.

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The Billings Center, now serving 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."

A new \$1,895,000 engineering building, made possible by a state appropriation, now houses 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 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 Theater.

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 facilities 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.

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. A new Life Science Building is now being planned which will house the departments of botany and zoology.

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.

Coolidge Hall and the three men's residence halls, Buckham, Chittenden and Wills Halls, were the first University residence 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. A new three unit residence and dining facility for men was completed in the fall of 1961 under the federal housing loan program. A new unit for women, named to honor former Dean of Women Marian Patterson was also completed in 1961 and two more units and a dining hall are under construction to be opened in September, 1964. 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 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, gives 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 housed in the medical building. It is the largest book collection in Vermont and 1,400 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 gal-

leries 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 collection of several thousand photographs of painting and sculpture, and study area for courses in art.

The ground floor of the Museum houses an arena theater with about three hundred 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, the American Ballet Theatre, Rudolph Serkin, Artur Rubinstein, 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, Montovani, 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*, *Camelot*, *Man for All Seasons*, *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 conferences, 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 date specified. 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 twentyfour 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 Redstone Campus: Coolidge, Hamilton, Mason, Patterson, Redstone, Robinson, Simpson, Slade Halls and the new halls under construction will have their meals in Simpson Dining Hall or the new dining hall on a twenty-meal per week annual contract. The residents of Allen and Grassmount will have their meals on a similar contract at the Waterman Dining Hall.

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 twenty 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, voca-

tional 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.

FINANCIAL AID The University Financial Aid office counsels students on financial problems, administers the University's Scholarship and Loan Funds and assists students in obtaining part-time employment.

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 following offices of campus organizations and activities are located here: The Director of

Student Activities, Student Association, Women's Student Government

Association, Panhellenic, Interfraternity Council, Men's Residence Halls, Student Court, Kake Walk, Cynic, Ariel and Student Photography Staff.

Billings also provides study and recreational lounges, and snack bar facilities in the Catamount Den. 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 under-

graduate 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; Pershing Rifles, a military fraternity.

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 mountain climbing expeditions, ski trips, and other outdoor activities for both men and women students.

FRATERNITIES AND SORORITIES Chapters of Greek letter fraternities and sororities have long been recognized as part of the social and extracurricular 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 oustanding 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 walking for the much prized "Kakes."

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 facultystudent 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, afterdinner, 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-refundable application fee of \$10 is required of all outof-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	Four years
Mathematics (as specified below)	Two years
Foreign Language, ancient or modern	Two years of one
Science	Two years
History ¹	One 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

¹ Effective September, 1965 this requirement will be changed to two years of Social Studies which should include: one year of European history or European geography; or one year of world history or world geography.

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 intending to use courses taken for graduate credit as a basis for admission to the Graduate College at some future time should contact the Dean of the Graduate College prior to enrollment.

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 1964 on May 2, July 8 and December 5, and in 1965 on January 9, March 6, May 1 and July 14. Complete information may be obtained from the College Entrance Examination Board, P. O. Box 592, Princeton, New Jersey.

ADMISSION OF STUDENTS

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

Entering students are required to take the College Entrance Examination Board achievement tests in mathematics and modern foreign language in all cases where these subjects are to be continued in the student's curriculum. The scores on all tests are used in advising students regarding the course of study and the selection of courses. New students are asked to come to the campus in June for a one day orientation and enrollment. Schedules and dates of these meetings are mailed with each packet of application material. The student will plan his course program with the advice of his adviser and academic dean and complete his registration for the September opening of college.



The student expenses outlined in the following paragraphs are the anticipated charges for the academic year

1964-65. 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 nonresidents 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 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 Division	s.	\$ 500.00 per year
	College of Medicine		550.00 per year
	Graduate and Special Students	•	22.00 per credit hour
2.	Non-Residents of Vermont		
	All Undergraduate Colleges and Divisions		
	Freshmen and transfers		
	Sophomores, Juniors and Seniors		\$1500.00 per year
	College of Medicine	•	1500.00 per year
	Graduate and Special Students	•	62.50 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.

STUDENT EXPENSES

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.

FEES FOR COURSES IN APPLIED MUSIC Private lessons are approximately onehalf 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 students who live in a University residence hall are required to have meal contracts for twenty meals per week at a cost of \$440.00 per year. Women living on the Redstone campus are served by two dining rooms, the men at Marsh, Austin and Tupper by one dining room and the women in Allen and Grassmount, and the men in Buckham, Chittenden, Converse and Wills are served by the dining hall in Waterman. 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 inter-collegiate 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

STUDENT EXPENSES

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, 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.

PENALTY PAYMENT Failure to complete financial arrangements and registration by specified dates will result in a penalty of \$10.

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		•			\$ 500.00
Non-Resident Tuition		•	•	•	1500.00
Meals (contract 20 per week)	•	•		•	440.00
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
Resident Total					\$1500.00
Non-Resident Total		•	•	•	\$2500.00

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.

¹Engineering 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.

STUDENT EXPENSES

TIME PAYMENT The University of Vermont offers a time payment plan to students or parents wherein, after arranging with the Treas-

urer'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 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 $12\frac{1}{2}$ c per check is made for this service. The Cashier's Office cashes small personal checks for students in good standing on presentation of a current student identification card.

Financial Aid

Many worthy and deserving students are unable to meet college expenses 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 which can be awarded is determined by the Director of Financial Aid.

New students should request application forms for aid from the Director of Admissions, the Director of Financial Aid, or from their 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.

Applications for students entering the University should be filed before March 1st. Only in cases of emergency will applications after that date be considered.

A complete list of scholarships and loan funds will be found on page 220. A brochure presenting in more detail the types of aid available may be obtained from the Financial Aid 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 objective is to provide a basic military education and to develop individual character and attributes essential to an officer for reaching the highest command levels in the U. S. 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 two or three years of an accredited military schools division ROTC program or three years of an accredited junior division or NDCC ROTC program may be excused from the freshman basic course upon presentation of a military training certificate. Those who have successfully completed four years of an accredited military schools division ROTC program may be excused from the freshman and sophomore 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. With the concurrence of the Military Science Department, advanced placement may be granted for substantially equivalent training as substantiated by a military training certificate issued by an accredited military school or secondary school.

Uniforms, arms, and equipment are furnished the student by the military department. The classes meet a maximum of three periods a week and carry

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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.

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 prior to the beginning of classes. All charges for the ensuing semester must be paid, or otherwise provided

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for, before enrollment is completed. After enrollment, no changes of study 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 the dean's permission during the first three weeks of a semester without incurring any academic penalty.

Auditing Courses

With the approval of the Dean and the instructor concerned, a regularly enrolled student carrying a normal program may audit a course. Others who do not wish to receive credit, or who have not met admissions requirements, may also register as auditors. Auditors have no claim on the time or service of the instructor, the course is not entered on the permanent record, and no grade credit is given for the work. For students paying full tuition, no additional charge is made; for all others, tuition is charged at the applicable rate. Under no circumstances will a change be made after the enrollment period to allow credit for courses audited.

The approval of the Director of the Evening Division and Summer Session is necessary for auditing courses in those divisions.

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 basic 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. 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 the summer session at the University are counted toward residence.

Exceptions to this rule may be made in special cases by the University Council.

To qualify for a second bachelor's degree the candidate must have fulfilled all the requirements for the degree and must have taken a full year of work in addition to that taken to qualify for the first degree.

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 Registrar 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 to 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 ordered. 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 areas of work are performed 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 142-145 semester hours of prescribed and elective courses. Normally fifteen to eighteen credit hours of courses exclusive of courses in basic military science and physical education constitute a semester program.

In each field certain courses are 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.

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 of 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 Agricultural education Agronomy Animal and dairy science Botany Dairy industry Foreign agricultural service Horticultural science Poultry science 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.

Courses Required of All Students

 A. Four semesters in English. Two semesters in Mathematics, or five credit hours. One semester in Speech.

- B. Four semesters in physical and biological sciences: Chemistry, Physics, Geology, Botany, Zoology.
- C. Social Sciences and Humanities

a) Five semesters taken in at least three of the following: Economics and Agricultural Economics; Political Science; History; Geography; Sociology and Anthropology; Psychology. b) Two semesters chosen from the following:

Philosophy; Religion; Music; Art;

Literature in addition to any taken under A above;

Foreign Language above the elementary level.

- D. Four 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 58-64. 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 adviser or the department chairman.

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	Two semesters
Mathematics	Two semesters or five credit hours
Chemistry	Two semesters
Botany or Zoology	One semester

Electives, preferably in agriculture.

Department Options and Requirements

AGRICULTURAL ECONOMICS Training in agricultural economics prepares students wholly or in part for appraising land; mar-

keting 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 thirty hours of credit in agricultural economics or general economics; twenty-one 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 to 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 in their role of developing leadership and citizenship abilities in these organizations. Students completing this option may pursue many of the professional agricultural careers in 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 agricultural schools, colleges or departments of education.

Required courses: Each student majoring in agricultural education must satisfactorily complete twenty hours of credit in agricultural education. Additional courses to be selected by the student in consultation with and with approval of his departmental adviser.

AGRONOMY The field of agronomy encompasses the applied science of growing crops along with the fundamental aspects of soil science and plant nutrition. The agronomy curriculum is designed for the student who wishes to achieve a general knowledge of crops and soils as well as the student who wishes to become a specialist in one of the agronomic sciences. In either case, he will receive a broad preparation in the physical and biological sciences basic to scientific agriculture. The course of study also allows a wide selection of electives in related fields.

Upon completion of four years' study, agronomy majors are well qualified for graduate work in agronomy or in related fields of biology. With a Bachelor's degree, the agronomy graduate has available a wide array of careers in government work or industry in areas such as fertilizers, weed control, seed marketing, crop production, conservation, and soil survey. Graduates may enter educational fields or engage in commercial farming.

Required courses: These are to be selected in consultation with the adviser and may be chosen to fit either a soils or crops emphasis. Seventeen hours of agronomy are required for an agronomy major. In addition to these, course work for students electing the soils emphasis generally will include organic and quantitative chemistry, geology, plant physiology, physics, microbiology, and biochemistry. For the crops emphasis, advanced botany courses may be substituted for one or more of these courses. Particular importance will be placed on the basic sciences and mathematics for students contemplating graduate study.

ANIMAL AND DAIRY SCIENCE Option 1, Animal and Dairy Production, 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, 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 Colleges 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 interest in any one of the fields which constitute botany. In these courses he is introduced to ideas, 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, government services, applied research, or biology teaching in the secondary schools. Others enter professional schools or 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.

Required courses:

Agricultural Economics	2
Agricultural Economics	201-202
Agricultural Economics	207
Agricultural Economics	208
Agricultural Economics	281, 282
Agricultural Education	102
Economics 11-12	
Economics 187, 188	
Economics 205	
Political Science 11, 12	
Political Science 51, 52	

World Food and Agriculture Farm Management Agricultural Marketing and Prices Agricultural Policy Seminar Extension Methods Principles of Economics Elementary Statistics International Trade and Finance Introduction to Political Science International Relations

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

HORTICULTURAL SCIENCE Horticulture is a major division of agriculture. It concerns the art and science of growing, handling, processing, and storing of fruits, vegetables, flowers, and ornamentals, as well as the field of landscape design. Horticulture is one of the rapidly developing sciences in the world today.

The horticultural science option is designed to give students a broad general knowledge as well as to prepare them for graduate study in horticulture and related fields in biology. Students majoring in this option will receive instruction in the basic physical and biological sciences as well as being able to select electives in related fields. Excellent opportunities for qualified horticulturalists exist in government, teaching, research, extension, production, marketing, and industry.

Required courses: Each student majoring in horticultural science must satisfactorily complete horticultural science 52, 281, 282 and at least twelve additional hours of horticultural science at or above the 100 level. Required courses in other areas include general soils, plant physiology, organic chemistry, physics and genetics. Additional courses to suit the student's individual needs will be selected in consultation with his adviser. For students preparing for graduate work, studies in the basic sciences will be emphasized.

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 offfarm occupations in agriculture; for those seeking a general rather than a

specialized knowledge in the field of agriculture; for those desiring to prepare for county extension work. 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.

Required courses: Each student majoring in general agriculture must satisfactorily complete twenty-four hours in the College of Agriculture and Home Economics. All additional courses must be selected in consultation with and have the approval of the departmental adviser.

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 fo experience after the age of fourteen 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 hours, plus training in military science (men only) and physical education, are required.

The Freshman Year	lst SEMI	2nd ESTER	The Sophomore Year	l <i>s</i> t SEMI	2nd ESTER
English, 1, 2	3	3	Comparative Vertebrate		
Chemistry, 1, 2	4	4	Anatomy, Zoology 41	4	
Zoology, 1	4		Physics, 5-6	4	4
Botany, 1		4	Organic Chemistry, 131-132	4	4
Mathematics	3	3	American Govt. or History	3	3
Elective	1-4	1-4	Public Speaking, Speech 11		3
			Elective	1-4	2-5

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. The elective courses must be chosen so as to fulfill the requirements on page 88, 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 may enroll in mathematics 5 or 11 during the first semester and mathematics 12 during the second semester; these students may graduate in four years with 142 semester hours of credit. Students who do not qualify for mathematics 5 or 11 will

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enroll in 9 during their first semester and 11 in their second semester, but the graduation requirement is then 145 semester hours. Since graduation in four years requires the completion of sophomore mathematics, 21-22, by the end of the second year, students taking mathematics 9, 11 in their freshman year must take mathematics 12 in summer school between their freshman and sophomore years, or take more than four years to complete the curriculum.

	1st	2nd		lst	2nd
The Freshman Year	SEM	ESTER	The Sophomore Year	SEM	ESTER
Mathematics, 11, 12	5	5	Mathematics, 21, 22	3	3
Chemistry, 1-2	4	4	Physics, 15, 16	4	5
English, 1-2	3	3	Statics, C.E. 24	3	
Engineering Problems, M.E. 3	1	*****	Plane Surveying, C.E. 53	4	
Mechanical Drawing, 1-2	2	2	Dynamics, C.E. 130	*****	3
Physics, 14-		3	General Soils, Agronomy 52		3
•			Speech, 11		3
			Botany, 1 or Zoology, 1	4	*****
	1st	2nd		lst	2nd
The Junior Year	SEM	ESTER	The Senior Year	SEM	ESTER
Junior Seminar, 182		1	Principles of Economics,		
Differential Equations,			C. and E. 11-12	3	3
Mathematics 211	3		Farm Management, Agric.		
Mechanics of Materials I,			Econ. 201-202	3	3
C.E. 131	3		Senior Seminar, 183, 184	1	1
Thermodynamics, M.E. 113	3	*****	Farm Structures, 151		
Electrical Circuits and Machine	s,		or Soil and Water Engineering	z,	
E.E. 101	4	389494	155	3	
Electricity in Agriculture, 156			Agricultural Machinery and		
or Farm Utilities, 152	******	3	Equipment, 154		
Soil and Water Engineering, 15	5		or Farm Power Machinery, 158		3
or Farm Structures, 151	3		Farm Utilities, 152		
Farm Power Machinery, 158			or Electricity in Agriculture,		
or Agricultural Machinery			156	*****	3
and Equipment, 154		3	Machine Design I, M.E. 135	3	
Hydraulics, C.E. 162			Humanistic Social Studies	3	6
or Fluid Mechanics, M.E. 142	2	3	Electives	3	
English Literature, 25, 26, 27					
or 28		3			
Mechanics of Materials Lab.,					
C.E. 114		1			
Mechanisms, M.E. 132	*****	4			
Geology, 21	3				

The Forestry Curriculum

The 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 com-
plete their last two years as transfer students to the University of Maine or to any other forest school of their choice.

The curriculum at the University of Maine, beginning with the junior year, 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 SEM	2nd ESTER	The Sophomore Year	1st SEM	2nd ESTER	
Botany, 1	*****	4	Chemistry, 1-2	4	4	
English, 1, 2	3	3	Forest Fire Control, 21	2	******	
Dendrology, 4	******	4	Forest Mensuration, 29, 3	3	2	
Forestry, 1, 2	2	2	Forest Products, 26	******	3	
Mechanical Drawing, 1	2	******	Physics, 5-6	4	4	
Mathematics, 9, 2	3	3	Plane Surveying, C.E. 53	4	*****	
Political Science, 1 or 11	3	*****	Zoology, 1	******	4	
Public Speaking, Speech 11	3	0 14414				

Curriculum in Home Economics

The curriculum leading to the degree of Bachelor of Science in Home Economics provides a liberal education in the humanities and sciences and in subject matter related to home and family with specialization in a professional area of home economics. Specialization is provided through selection of one of the following options:

> Business and Liberal Clothing, Textiles and Related Art Education Family Living and Human Development Including Pre-Professional Social Work Food and Nutrition

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 physical education.

Required Courses

A. Social Science and Humanities Four semesters in English One semester in speech Two semesters in history or political science, to be selected in relation to area of concentration

One semester in sociology

One semester in psychology

- Two semesters in economics
- B. Physical and Biological Sciences

Two semesters in chemistry, botany, zoology, geology, physics, to be selected in relation to area of specialization

C. Home Economics

Freshman Orientation and Senior Seminar

Three semesters in Home Management including Housing or Household Equipment, Principles of Home Management, Home Management Residence

Two semesters in Family Living and Human Development:

Human Development and Personality I, Dynamics of Family Development

One semester in Clothing and Textiles: Clothing Construction and Selection or Survey of Textiles

One semester in Related Art: Design

Two semesters in Food and Nutrition: Basic Concepts of Food and Nutrition and Meal Management

- D. Option Requirements. Each student must choose one of the options listed above. Selection is usually made not later than the sophomore year. Specific courses to meet the requirements of each option are listed with the appropriate description on pages 65-67.
- E. Additional courses to fulfill the credit requirements are elected in consultation with the student's adviser.

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 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.

Required courses: Students selecting either the Business or Liberal major must satisfactorily complete all core courses without choice. Family economics is also required. The Business major requires additional hours as follows: six hours in communication, nine hours in commerce and economics and six hours in home economics. The Liberal major requirements are twenty-one additional credit hours in liberal arts and sciences as well as three hours in institutional management, three hours in home furnishings and one hour in home nursing.

HOME ECONOMICS EDUCATION OPTION This option provides a background which prepares students to teach home

economics to elementary, junior and senior high school students and adults. Students must have a 75 average in their home economics subjects to be eligible for student teaching during their senior year.

This option may also prepare for Cooperative Extension work as Home Demonstration agent, 4-H agent or Specialist, and may be fulfilled by appropriate selection of courses in consultation with the adviser.

Required courses: Students selecting the Education Option must satisfactorily complete all core courses without choice and must select chemistry as the science. In addition they must complete Pattern Design and Advanced Construction, Advanced Food Preparation and Applied Normal Nutrition, Family Economics, General Institutional Management, Home Nursing and Home Furnishing I. Also sixteen hours of professional home economics education courses and three hours of general education. Additional courses to fulfill requirements will be selected by the student in consultation with her adviser.

FAMILY LIVING—HUMAN DEVELOPMENT OPTION Students in this option may specialize in Pre-school Education, Pre-Professional Social Work or Family Relations and Human Development.

The area of Family Living and Human Development through its preschool laboratory provides opportunities for both study and experience in human development and family relationships. For students in Pre-Professional Social Work opportunities are provided for both field observation and experiences.

The Pre-Professional Social Work concentration is available to students enrolled in any college of the University. It may be elected as part of a major in home economics, or may be combined with a major in another university department.

The Department of Home Economics is affiliated with the Merrill-Palmer Institute, Detroit, Michigan. A student specializing in the area of 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: Each student in the option must satisfactorily complete twenty hours of credit in Family Living and Human Development. Additional courses are selected by the student in consultation with the adviser in order to place the desired emphasis on the student's special field of interest.

The concentration in Pre-Professional Social Work for students from other colleges is based on a broad liberal arts program including courses in sociology, psychology and human development, political science, history, and economics. In the junior and senior years a sequence of nine semester hours must be successfully completed in Introduction to Social Work and in Senior Problems, 197, 198.

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: Satisfactory completion of twenty-eight semester hours in science, including general chemistry, organic chemistry, and biochemistry, physiology and microbiology (eight of these credits satisfy core requirements); Advanced Food Preparation, Nutrition and Diet, Quantity Food Production, Institutional Administration, Household Equipment, Family Economics and Survey of Textiles. 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. Men interested in preparing for hospital, industrial, or hotel administration and wishing to meet academic requirements for the American Dietetic Association may omit the following courses: Principles of Home Management and Home Management Residence, Family Economics, Human Development and Personality. CLOTHING, TEXTILES AND RELATED ART OPTION This option provides the opportunity for study in the fields of costume and textile designing, fashion illustration, merchandising, in-

terior design and textile testing. Required courses: Students selecting this option must have twenty-seven hours from the Clothing, Textiles and Related Arts area and an additional three hours of science. It is recommended that chemistry be the required science and

hours of science. It is recommended that chemistry be the required science and history the required social science. Additional courses to fulfill requirements will be selected by the student in consultation with her adviser and will be used to further specific interests of the student. 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 in sections A, B and C below, and present a total of 120 semester hours of credit, plus credit in required courses in basic military science and physical education.

A. Required of all students

ENGLISH Freshman English the first year, and the second year either English-American Literature of World Literature.

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.

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. PHYSICAL EDUCATION Two years of physical education for men and women.

MILITARY SCIENCE Two years of military science for men.

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. The following restriction must be met.

- 1. The field must be a well integrated whole, adapted to the student's special interests.
- 2. 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.
- 3. 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.
- 4. 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.

B. Requirements for Concentration in Divisional Fields

LANGUAGE AND LITERATURE, OR MUSIC History (American, Ancient, Medieval, or European Civilization) nor-

mally the first year; a second foreign language reaching the intermediate level¹; a second year course in the social science division. It is strongly recommended by the language 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.

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, geography, philosophy, political science, psychology, religion, sociology and anthropology.

SCIENCE AND MATHEMATICS Introductory Chemistry (except for students concentrating in mathematics), mathematics and physics as stated in departmental requirements, and a total of at least four semester courses (twelve semester hours) in departments other than the sciences and mathematics.

¹ Students concentrating in English substitute an advanced literature course in foreign language for the second foreign language.

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C. Specific Departmental Requirements for Concentration

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 00 for economics courses for which credit is granted toward the Bachelor of Arts degree.

ENGLISH Satisfactory completion of English-American Literature and seven semester courses of advanced grade. The advanced related courses may be in 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 six semester courses of advanced grade in German including 101-102, and at least one advanced related course, six semester hours or more, normally in another foreign language or English.

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 200.

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 ad-

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

RELIGION Satisfactory completion of Religion 1, 2, 101, 112, 122, 201, and two additional semester courses at the 200 level; an advanced related course or courses, chosen in consultation with the departmental adviser to fit the need of the individual student.

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 AND ANTHROPOLOGY Satisfactory completion of 21, 101 and 251, and at least five additional semester courses in sociology, including two numbered above 100. A minimum of four semester courses in a related field must include two numbered above 100. SPEECH Satisfactory completion of nine semester courses in speech: 1, 11;

a 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. An advanced related course or courses (six semester hours or more) chosen in consultation with the departmental adviser. Those whose advanced related course is in the Social Sciences meet the distribution requirements (B, page 69) of that area; those whose advanced related course is in Language, Literature or Music meet the requirements (B, page 69) of that area, but may, in place of a second foreign language, substitute (a) an advanced literature course in foreign language or (b) twelve hours of course work in Fine Arts.

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 and five additional semester courses of which at least four are numbered above 100. In addition, the seminar (281, 282) is required of all seniors working for special honors; others may substitute an additional semester course in zoology. The advanced related course (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.

Special Provisions Concerning Credit

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

Agricultural Biochemistry 172: General Biochemistry. Agricultural Biochemistry 253: Microbial Biochemistry Botany: all courses Chemistry: all courses Education 145-146: Learning and Human Development Education 202: Philosophy of Education Family Living, H. E. 163: Dynamics of Family Development Forestry 208: Biological Statistics Mathematics: all courses Music Education 151: Student Teaching in Music Physical Education 50: Dance Technique and Analysis Related Art, H. E. 21: Design Related Art, H. E. 120: History of Costume Secondary Education 102: Principles of Education Secondary Education 252: Teaching Latin

Secondary Education 255: The School as a Social Institution

Courses in Economics Acceptable Toward the B.A. Degree

Economics 1-2, 11-12, 15, 16, 121, 141, 181, 183, 187, 188, 201, 202, 203, 204, 205, 242, 243, 256, 286, 290, 291, 292, 293-294, 295, 296, 297, 298.

¹Other courses may be approved in individual cases by the Committee on Studies.

Other Courses Acceptable Toward the B.A. Degree

A given student may elect not more than twelve semester hours (four three-hour courses) from other University courses outside the College of Arts and Sciences.

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 studies,¹ 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 Semi	2nd ESTER	The Sophomore Year	lst SEMI	2nd ESTER	
World Economic Geography	3	3	World Lit. or EngAm. 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 ⁸	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).

⁸ 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 sem	2nd Ester	The Senior Year	1st SEM	2nd ESTER
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	444744	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

	1st	2nd		1st	2nd	
The Junior Year	SEMESTER		The Senior Year	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	lst SEM	2nd ESTER	The Senior Year	1st SEM	2nd ester
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	411244	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.

¹ If completed, enroll in approved elective.

² Including no more than 6 credits in elementary foreign language.

Industrial Management . .

	lst	2nd		Ist	2nd
The Junior Year	SEM	ESTER	The Senior Year	SEM	ESTER
Labor Economics	3		Principles of Marketing	3	
Collective Bargaining	*****	3	Problems of Marketing		3
Industrial Management	3	*****	Motion and Time Study	3	******
Scientific Management and			Plant Organization		4
Labor	-	3	Business Law I	3	3
General Psychology	3	-	Cost Accounting	64.00.0	3
Phil., Psych. or Soc. 21	******	3	Approved Electives	6	3
American Government ¹	3	3			
Economic Statistics	3	3			
Approved Electives	3	3			

A minimum of 131 approved semester hours⁸ is required for the degree in this curriculum, plus required courses in physical education and military science.

Marketing and Merchandising

1st	2nd		1st	2nd	
SEMESTER		The Senior Year	SEMESTER		
3	b 7+4+ s	Personal Salesmanship	3		
*****	3	Sales Management	3		
3	3	Advertising		3	
3	*****	Business Law I	3	3	
******	3	Cur. Marketing Developments	*****	3	
3	3	Approved Electives	6	6	
3	3				
3	3				
	1st sem 3 3 3 3 3 3 3 3	1st 2nd SEMESTER 3 3 3 3 3 3 3 3 3 3 3	1st 2nd sEMESTER The Senior Year 3 3 Sales Management 3 3 3 Advertising 3 3 Cur. Marketing Developments 3 3 3 3	1st2nd1stSEMESTERThe Senior YearSEM3Personal Salesmanship33Sales Management333Advertising3Business Law I33Cur. Marketing Developments33Approved Electives6333	

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

	lst	2nd		lst	2nd	
The Junior Year	SEM	ESTER	The Senior Year	SEMESTER		
Business Communications	3	3	Office Management	3		
General Psychology	3	*****	Seminar (Secretarial)	3		
Phil., Psych. or Soc. 21		3	Exec. Sec. Procedures	**1714	3	
Business Law I	3	3	Advanced Typing	3	a	
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 hours⁸ is required for the degree in this curriculum, plus required courses in physical education.

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

³ Students will be guided in the selection of electives in the light of professional objectives. ³ Including no more than 6 credits in elementary foreign language. ⁴ To be discontinued in 1965.

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 chairmen. 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 in-

clude 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.

THE COLLEGE OF ARTS AND SCIENCES

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 adviser, plans a four-year program of courses which will fulfill the requirements for a Bachelor's degree. 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.

	lst	2nd		1st	2nd
The First Year	SEMESTER		The Second Year	SEMESTE	
English, 1, 2	3	3	English-Amer., 27, 28 or		
Introductory Chemistry, 1-2			World Lit., 25, 26	3	3
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 o	r 4	Physics, 5-6 or 21-22	4-5	4-5
Foreign Language (Elementary			Electives	3-6	3-6
or Intermediate)	3-4	34			
The Third Year	1st 2nd semester		The Fourth Year		
Organic Chemistry, 131-132	4	4	Courses in field of concentration		
Zoology, 41 ¹	4	•••••	and electives		
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 everincreasing 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 heath. 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 selfconfidence 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 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. 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.

lst SEM	2nd ESTER	The Freshman Year	lst SEMI	2nd ESTER
4		English, 1, 2	3	3
3		Dental Anatomy	4	
2	1	Dental Histology and		
1	1	Embryology	3	
*****	2	Chemistry, 3-4	4	4
5	5	Dental Hygiene		
*****	2	Orientation	1	
******	2	Instrumentation		3
		Medical Emergencies	******	1
1	1	Psychology	******	3
3	*****	Anatomy and Physiology	3	3
3	******	. ,		
	1st SEM 4 3 2 1 5 1 3 3	1st 2nd semester 4 3 2 1 1 1 2 2 1 1 2 2 1 1 2 2 1 1 3	1st 2nd SEMESTER The Freshman Year 4 English, 1, 2 3 Dental Anatomy 2 1 Dental Histology and 1 1 Embryology 2 Chemistry, 3-4 5 5 Dental Hygiene 2 Orientation 2 Instrumentation Medical Emergencies 1 Psychology 3 Anatomy and Physiology 3 Statematical Physiology	1st 2nd 1st semester The Freshman Year sem 4 English, 1, 2 3 3 Dental Anatomy 4 2 1 Dental Histology and 1 1 1 Embryology 3 2 Chemistry, 3-4 4 5 5 Dental Hygiene 2 Orientation 1 2 Instrumentation Medical Emergencies Medical Emergencies 3 Anatomy and Physiology 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. Official admission to teacher education is made during the sophomore year, and all students enrolled in the College of Education and Nursing or in other colleges are to make application for admission to specific curricula before the beginning of the junior year. Official forms for application may be obtained from the office of the Dean of the College of Education and Nursing. Accepted students must meet personal, academic, and professional criteria established for teacher education candidates.

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. The 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 the introduction of the student to education as a field of study during his freshman year. Each student is made aware of the social foundations and relationships of education, introduced to the extensive resources available to him for learning about the field in depth, and impressed with the developmental need for his delving into the literature and research as a basis for making critical judgments concerning education. The characteristics of teaching as a profession are also stressed.

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 forty 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 COLLEGE OF EDUCATION AND NURSING

The Freshman Year	lst Semi	2nd ester	The Sophomore Year	1st SEM	VES.	2nd TER
Foundations of Education	2 0	or 2	Child and Community	1	or	1
Speech	3	3	Psychology	3	or	3
Science	4	4	World Geography	3	or	3
English 1, 2	3	3	Literature	3		3
Approved Electives ¹	3-6	3-6	American History	3		3
			Music	3		3
			Approved Electives ¹	6		6
	1st	2nd		1st		2nd
The Junior Year	SEM:	ESTER	The Senior Year	SEM	VES.	TER
Art for Elementary Schools	3		' Methods and Materials	3		
Learning and Human			Music Methods	3		
Development	3	3	Physical Education for			
Children's Literature	3		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

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. 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 educa-

tion.

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 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, mathe-

¹ A political science course in local and state government must be included during the fouryear curriculum. Some of the electives must be concentrated in an academic major. matics, political science, speech, and the sciences. Advisers 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 advisers 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 two points in the four-year curriculum. During the sophomore year students observe and participate as teacher assistants in local junior and senior high schools. 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.

	1st	2nd		1st	2nd	
The Freshman Year	SEME	STER	The Sophomore Year	SEMESTER		
Foundations of Education	20	r 2	Literature	3	3	
Laboratory Science	4	4	Psychology	3 0	r 3	
English 1, 2	3	3	Participation	20	r 2	
Foreign Language	34	3-4	Foreign Language ³	3	3	
History or Political Science ¹	3	3	Approved Electives	6-9	69	
Elective ²	3	3				
	1st	2nd		1st	2nd	
The Junior Year	SEMI	STER	The Senior Year	SEME	STER	
Learning and Human			Secondary Education Methods	3 0	r 3	
Development	3	3	Philosophy of Education	3 0	r 3	
Approved Electives in			Student Teaching		6	
Teaching Fields ⁴	12-15	12-15	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 basic 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 Education

The curriculum in Business Education is intended to prepare teachers of business subjects for secondary schools in Vermont and other states. Freshman ¹ If History is chosen, European Civilization is recommended.

² If recommended by adviser.

- ⁸ An approved elective if intermediate language has been completed.
- ⁴ All students are to elect a course in speech.

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THE COLLEGE OF EDUCATION AND NURSING

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. Electives throughout the four years should be concentrated in a second teaching field.

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		2nd ESTER	The Sophomore Year		1st 2nd SEMESTER		
Foundations of Education	2 0	or 2	English-American Literature	3	3		
English 1, 2	3	3	General Psychology	3 (or 3		
Social Science ⁴	3	3	Principles of Economics	3	3		
Mathematics	3	3	Laboratory Science	4	4		
Speech	3	-	Principles of Accounting	4	4		
Elective	3	6	Elective	3 (or 3		
	1st	2nd		1st	2nd		
The Junior Year		ESTER	The Senior Year	SEMESTER			
Learning and Human			Shorthand	3			
Development	3	3	Typing	3			
Shorthand ¹	•••••	3	Elective	6			
Typing ¹	*****	3	Sec. Seminar or Elective	3	*****		
Business Correspondence	3	3	Student Teaching	*****	6		
Business Law	3	3	Philosophy of Education	*****	3		
Electives	6 –9	.	Teaching Business Subjects	2			
Participation	******	2	Secretarial Practice		2		
Principles of Business Education	1	2	Transcription		4		

A minimum of 125 approved semester hours is required for the degree, plus credit in required courses in physical education and basic 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	lst sem	2nd ester	The Sophomore Year	1st SE1	MES	2nd FER
Theory I	3	3	Theory II	3		3
Survey of Musical Literature	3	3	Literature ³	3		3
English 1, 2	3	3	Social Science ⁴	3		3
Foreign Language (Intermediate) Applied Music: Major, piano ² ,	3	3	Applied Music: Major, piano, voice and woodwind class	4		4
and string class	3	3	Ensembles: Major, secondary,			
Major Ensemble	1	1	and chamber music ⁵	3		3
Foundations of Education	2 0	or 2	Participation	2	or	2

¹ Students may be exempt by demonstrating satisfactory proficiency.

² Until functional piano facility achieved (see Applied Music, page 179).

³ English 25, 26 (World Literature) recommended.
⁴ History 11, 12 (European Civilization) recommended.

⁵ A second applied field may be substituted for one ensemble.

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The Junior Year	lst SEM	2nd ESTER	The Senior Year	1st semi	2nd ester
Orchestration	3	*****	Practice Teaching in Music	7	
Counterpoint	3		Elementary and Secondary Music		
Conducting		3	Methods	5	
History of Music	3	3	Philosophy of Education		3
Laboratory Science		4	Applied Music: Major, recital,		
Learning and Human			percussion and repair class		4
Development	3	3	Ensembles: Major, secondary,		
Applied Music: Major, brass clas	ss 3	3	or chamber music ¹		2
Ensembles: Major, secondary,			Electives		6
or chamber music ¹	2	2			

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

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.

¹ A second applied field may be substituted for one ensemble.

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, junior and senior years 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. The Burlington Visiting Nurse Association, Inc., and the Family Care Unit of the Department of Epidemiology and Community Medicine of the University of Vermont College of Medicine are utilized for laboratory experiences in public health nursing.

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 sudents.

The nursing program has been revised and required summer school attendance is eliminated. The class of 1965 is the last class which will take Nursing 136, 181, and 186 and fifteen credits in approved electives in the two semesters of the senior year.

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

The Freshman Year	1 st SEMI	2nd ESTER	The Sophomore Year	lst SEMJ	2nd ESTER
English 1-2	3	3	English 25, 26 or 27, 28	3	3
Zoology 5-6	3	3	Botany 55	4	P****
Chemistry 3-4	4	4	Home Economics, F. and N. 87	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			
	1st	2nd		1st	2nd
The Junior Year ¹	SEME	STER	The Senior Year ¹	\$EMJ	ESTER
Nursing 121-122	9	9	Nursing ²	6	6
Home Economics 63	3	10 0000	Nursing ²	6	3
Elective	3	6	Electives	3	6

A minimum of 124 approved semester hours is required for the degree plus credit in required courses in physical education.

In addition to the general education courses found in the curriculum outlined above, specific courses in general education are required and additional courses

¹ The semesters may be reversed dependent on the student's program.

² Not offered in 1964-65.

are elected in accordance with individual need and interest and in consultation with the faculty adviser. These are:

Philosophy 1, or 214	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.

The cost of the program in nursing is approximately the same as Expenses for undergraduate programs at the University (see also pages 47-50)

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.

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, or the Navy Nurse Corps Candidate Program at the beginning of their junior 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 have been received, thirty-six months of service are required.

PROFESSIONAL PERSONNEL IN COOPERATIVE 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 Sally Sample, R.N., Acting Director, Nursing Service, Mary Fletcher Hospital

Director, Family Care Unit, Department of Epidemiology and Community Medicine, College of Medicine, University of Vermont

Georgia Murchison, R.N., Director, Visiting Nurse Association

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The College of Technology

The College of Technology includes the Department of Chemistry, 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, basic 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.

	1st	2nd		1st	2nd
The Freshman Year	SEM	ESTER	The Sophomore Year	SEMI	ESTER
General Chemistry	5	5	Quantitative Analysis	4	4
English 1, 2,	3	3	English 25, 26 or 27, 28	3	3
Algebra, Trigonometry,			Calculus ²	3	3
Analytical Geometry ¹	5	5	German or Elective	4-3	4-3
Elective	3	-	General Physics, -15, 16	4	5
General Physics 14-		3			
	1st	2nd		1st	2nd
The Junior Year	SEMI	Ester	The Senior Year	SEME	STER
Physical Chemistry	5	5	Iden. of Organic Compounds	5	
Organic Chemistry	5	5	Senior Research	2-4	4
Advanced Physics or Mathematics	s 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 basic 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 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.

The required courses in each curriculum are shown arranged for a four-year program. These courses may be arranged in a five-year sequence if desired. Also, the courses can be arranged to accommodate transfer from other curricula.

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 and Electronics Engineers, and the American Society of Mechanical Engineers, as each organization has authorized a student chapter at The Uni-

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

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

versity 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 adviser 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.	English, 1-2 (Must be taken the Freshman year)	6
2.	World or American Literature, 25, 26 or 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

Geography	Intermediate Classical Languages
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)
World Problems	Economics (history and theory courses only
	Speech (history and literature courses only

The Freshman Year For All Curricula

	185	2na
	SEMES	
Mathematics, ³ 11, 12	5	5
Chemistry, 1-2	4	4
Drawing, M.E. 1-2	2	2
English, 1-2	3	3
Engineering Problems, M.E. 3	1	******
General Physics, 14-		3

¹ Management engineering students will take English 25 or 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.

³ See footnote under course offerings of the Department of Mathematics.

Civil Engineering

The Sophomore Year	1st SEMI	2nd ESTER	The Junior Year	lst SEMI	2nd ESTER
Calculus, Math. 21, 22 General Physics, -15, 16 Surveying, C.E. 51-52 Humanistic-Social Studies ¹ Statics, C.E. 24 Dynamics, C.E. 130	Calculus, Math. 21, 22 3 General Physics, -15, 16 4 Surveying, C.E. 51-52 4 Humanistic-Social Studies ¹ 3 Statics, C.E. 24 3 Dynamics, C.E. 130		Differential Equations, Math. 211 Mech. of Materials, C.E. 131 Engineering Geology, Geol. 21 Electrical Circuits and Machines, E.E. 101 Thermodynamics and Heat Transfer, M.E. 113 Humanistic-Social Studies ¹ Mech. of Materials Lab., C.E. 114 Eng. Contracts, C.E. 151 Hydraulics, C.E. 162 Hydraulics Lab., C.E. 168 Statically Determinate Struct., C.E. 140	4 3 3 	
The Senior year	1st semf	2nd STER	The Senior Year	lst SEME	2nd STER
Concrete and Bituminous Lab., C.E. 113 Reinforced Concrete, C.E. 155 Sanitary Eng. I, C.E. 165 Soil Mechanics, C.E. 173 Indet. Structures, C.E. 175 Transportation Eng., C.E. 174	1 3 3 3 3	444444 444444 934444 934444 94444 94444 94444 94444 94444 94444 94444 94444 94444 94444 94444 94444 94444 94444 94444 94444 94444 94444 94444 94444 94444 94444 94444 94444 94444 94444 94444 94444 94444 9444 9444 9444 9444 9444 9444 9444 9444 9444 944 944 944 944 944 944 944 944 944 944 944 944 944 944 944 944 944 944 944 944 944 944 944 944 944 944 944 944 944 944 944 944 944 944 944 944 944 944 944 944 944 944 944 944 944 94 9	Substructure Design, C.E. 158 Sanitary Eng. II, C.E. 166 Adv. Struc. Design, C.E. 176 Mechanics of Materials II, C.E. 231 Elective Public Sneaking, Speech 11	*****	4 3 4 3 3
Humanistic-Social Studies ¹	3	6	Lubic optimily, opticin 11		

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

Mechanical Engineering

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	_	150	- 2	ind
The	Sophomore Year	SEN	AES T	ER
	Calculus, Math. 21, 22	3		3
	General Physics, Phys15, 16	4		5
	Manufacturing Processes, M.E. 51, 52	2		2
	World Literature, Engl. 25 or 26	3	or	3
	Statics, C.E. 24	3		-
	Public Speaking, Speech 11	3		
	Dynamics, C.E. 130			3
	Thermodynamics I, M.E. 92			2
	Mechanical Instrumentation, M.E. 84			1

¹See distribution of Humanistic-Social Studies on page 88.

	1st	2nd		lst	2nd
The Junior Year	SEM	ESTER	The Senior Year	\$EM	ESTER
Heat Transfer, M.E. 266	******	3	Adv. Heat Power Engineering,		
Mech. of Materials, C.E. 131	3		M.E. 262	*****	4
Materials Lab., C.E. 114		1	Industrial Materials, M.E. 271	3	
Mechanisms, M.E. 132		4	Adv. Fluid Mechanics, M.E. 243	4	
Thermodynamics II, M.E. 111	4	*****	Machine Design I, II, M.E.		
Differential Equations, Math. 2	211 3		135, 6	3	4
Mech. Engineering Laboratory	·.		Thesis, M.E. 191 or Technical		
M.E. 117	1		Elective ¹	3	
Electrical Engineering Principle	es,		Thesis, M.E. 192 or Elective ²		3
E.E. 101, 102	4	4	Advanced Mathematics ⁸	*****	3
Fluid Mechanics, M.E. 142	******	3	Engineering Analysis, M.E. 294		1
Principles of Economics 11-12	3	3	Humanistic-Social Studies ⁴	6	3
E.E. 101, 102 Fluid Mechanics, M.E. 142 Principles of Economics 11-12	4	4 3 3	Advanced Mathematics ⁸ Engineering Analysis, M.E. 294 Humanistic-Social Studies ⁴		3 1 3

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

	Elect	trical 1	Engineering 1st	: 2n/	d
The Sophomore Year			\$EI	MESTER	۱.
Calculus, Math. 21, 22			3	3	
General Physics, Phys15,	16		4	5	
Statics, C.E. 24			3		
Dynamics, C.E. 130	\$01+++0	3			
Electrical Circuits I, E.E. 25-26				4	
Humanistic-Social Studies ⁴			3	3	
	lst	2n d		1st	2nd
The Junior Year	SEM	ESTER	The Senior Year	SEMJ	ESTER
Public Speaking, Speech 11		3	Circuits and Fields II, E.E. 225	-64	3
Differential Equations, Math. 21	13		Electrical Machines, E.E. 117	4	-
Mech. of Materials, C.E. 131	3	******	Servomechanisms, E.E. 210		3
Thermodynamics, M.E. 113	3		Electronics II, E.E. 203	3	
Electrical Circuits II, E.E. 125	4	******	Fluid Mechanics, M.E. 142		3
Circuits and Fields I, E.E. 126		3	Contracts, C. E. 151	*****	2
Electrical Machines, E.E. 116		4	Seminar, E.E. 281, 282	1	1
Electronics I, E.E. 109, 110	3	4	Humanistic-Social Studies ⁴	3	3
Humanistic-Social Studies ⁴	3	3	Elective ⁵	3-4	34
Fluid Mechanice MF 142		1			

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

Management Engineering	lst	2nd
The Sophomore Year	SEM	ESTER
Calculus, Math. 21, 22	3	3
General Physics, Phys15, 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	-

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. ⁸ A course at the "200" level with approval of the Mechanical Engineering Department.

⁴ See distribution of Humanistic-Social Studies on page 88.

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

The Junior Year	1st sem	2nd IESTER	The Senior Year	1st sem	2nd ester
Prin. of Accounting, Ec. 13-14	4	4	Motion and Time, M.E. 175	3	
Differential Equations, Math. 211	3	******	Plant Organization, M.E. 176		4
General Psychology, Psych. 1	3		Industrial Materials, M.E. 271	3	*****
Thermo. and Heat Transfer, M.E.			Corporation Finance, Econ. 207		3
113	3		Business Law, Econ. 109-110	3	3
Mechanisms, M.E. 132		4	Labor Economics, Econ. 141	3	
Electrical Engineering Principles,	,		Statistics, Econ. 187-188	3	3
E.E. 101-102	4	4	Collective Bargaining, Ec. 242	******	3
Fluid Mechanics, M.E. 142	•••••	3	Humanistic-Social Studies ¹	3	3
Mech. of Materials, C.E. 131	3				
World Literature, English 25 or 26	3	or 3			

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

Agricultural Engineering

For the Agricultural Curriculum see pages 62-63.

The Mathematics Curriculim

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	l st SEMI	2nd Ister	The Sophomore Year	1st semi	2nd ster
English, 1-2	3	3	English-American or World Lit.	3	3
Mathematics ² , 11, 12	5	5	Mathematics, 21, 22	3	3
Laboratory Science ³	4-5	4-5	German, French or Russian	4	4
Approved Elective	3		General Physics, -15, 16	4	5
General Physics, 14-	*****	3	Approved Electives	3	3
The Junior Year	lst Semi	2nd STER	The Senior Year	lst semi	2nd ster
German, French or Russian ⁴	3	3	Mathematics Electives ⁵	9	9
Mathematics Electives ⁵	6	6	Advanced Science ⁶	34	3-4
Advanced Science ⁶	3-4	3-4	Approved Electives	3	3
Approved Electives	6	6			

A minimum of 129 approved semester hours is required for the degree in this curriculum, plus required courses in physical education and military science.

¹ See distribution of Humanistic-Social Studies on page 88.

²See 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.
- ⁴ If an intermediate language is taken initially, an elective may be substituted.
- ⁵ Beyond mathematics 22.
- ⁶ Physical science or engineering courses beyond the sophomore level, to constitute a minor specialization.

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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 fundamentals essential for the professional work of the clinical year. During the first three years the Council on Medical Education and Hospitals of the American Medical Association requires a minimum of sixteen semester hours of chemistry, sixteen semester hours in biological sciences and one semester of college mathematics. 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 as Medical Technologists ASCP.

The Freshman Year	1st SEMI	2nd ester	The Sophomore Year	1st SEMI	2nd ESTER
English, 1, 2 Introductory Chemistry, 1-2 Introductory Zoology, 1 Mathematics, Algebra and Trigonometry	3 4 4 3	3 4 	English-American or World Lit. Quantitative Analysis, 21 Mammalian Anatomy and Physiology ² , Zool. 5-6 or Comparative Vertebrate	3 4	3
Introduction to Medical Technology Botany 1 or Zoology 2 Approved Electives ¹	1	 4 3	Anatomy, Zool. 41, 42 Approved Electives ¹	-34 6	34 6
The Junior Year	1st semi	2nd ester	The Senior Year	lst semi	2nd ester
Organic Chemistry, 131 Physics, 5-6 Approved Electives ⁴	4 4 9	4 13	Biochemistry for Medical Technologists, 111-112 Medical Bacteriology, 201 Basic Techniques, 101-102 Clinical Pathology, 103 Hospital Assignments	4 7 6	4 3 2 6

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

² If zoology 5-6 are elected then zoology 115 or botany 115 is required.

¹ Recommended approved electives include chemistry 22 and chemistry 132.

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-six different programs leading to the Master's degree and eight programs leading to the degree of Doctor of Philosophy. It also offers three professional degrees in Engineering. Each student is expected to be familiar with the general regulations and procedures of the Graduate College, and with the specific degree requirements in his chosen field of study.

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

Master of Education

Programs are designed to prepare qualified candidates for school positions in guidance, supervision, and administration, or to give classroom teachers a more complete understanding of professional education as applied to teaching and to membership in the profession. Programs are planned on an individual basis and may include courses in areas outside professional education. Program guides are available from the Department of Education.

In most cases candidates who are in residence during the regular academic year must also attend one or two summer sessions in order to have a suitable selection of available courses.

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

THE GRADUATE COLLEGE

Master of Science

Programs are offered in the following fields:

Agricultural Biochemistry Agricultural Economics Agronomy Anatomy Animal and Dairy Science Animal Pathology Biochemistry Botany Chemistry Civil Engineering Commerce Electrical Biophysics Electrical Engineering Forestry Geology Home Economics Horticulture Mechanical Engineering Medical Electronics Medical Microbiology Microbiology Pathology Pharmacology Physics Physiology and Biophysics Poultry Science 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 cooperative and agricultural business leaders, teachers of agriculture and home economics.

Doctor of Philosophy

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

Admission

Students seeking admission to the Graduate College must make application to the Dean of the Graduate College. The deadline for applications for admission in September 1964 is July 1, 1964. The Graduate College of The University of Vermont will accept applications from foreign students, other than those from the United Kingdom, 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.

THE GRADUATE 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. The deposit will cover 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 (Expenses, pages 47-50).

Dismissal

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.

General Requirements

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 or departments concerned. Acceptance to candidacy can be granted only in cases where a student has fully met all undergraduate prerequisites for the courses that are required in his degree program. A year of graduate study in residence at The University of Vermont is a prerequisite for acceptance to candidacy for the degree of Doctor of Philosophy; candidates for Master's degrees are eligible for acceptance concurrently with admission.

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 established at Lyndon and Castleton. Each candidate for

the Doctor's degree must satisfactorily complete at least thirty hours of graduate credit in residence on The University of Vermont campus; ordinarily a minimum total of fifty hours in residence will be required.

TEACHING REQUIREMENT Each degree 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.

THE GRADUATE COLLEGE

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 if the student has already been accepted to candidacy, and has obtained *in advance* the approval of his department and the Dean for inclusion of this particular course in his degree program. No degree program can include more than ten hours graduate credit for courses numbered between 100 and 199 and many programs include none. Under no circumstances will graduate credit be allowed for a course numbered below 100.

MINIMUM GRADE REQUIREMENTS A candidate for a higher degree must complete his program with an overall average of not less than 85 (B). Credit for a course completed with a final grade lower than 75 (C) will not be accepted in partial fulfillment of degree requirements. No credit will be allowed in transfer for courses whose final grade is lower than 80 (B-).

TIME LIMITS A program leading to the Master's degree must be completed within a span of three years if it is pursued on a full-time basis during the regular academic year; if it is pursued on a part-time basis or in summer sessions, it must be completed within a span of seven years. A Doctoral program must be completed within a span of nine years. Only in special cases will credits earned outside these time limits be re-evaluated and re-instated; 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 presented for transfer of credit.

TRANSFER OF CREDIT A maximum of eight hours credit in the case of master's candidates and twenty-five hours in the case of doctoral candidates may be accepted in transfer for appropriate courses completed in residence in other institutions. 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 degree program offered by the Graduate College, (6) courses which were taken more than seven years prior to the completion of a degree program. No transfer of credit 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 for Master's candidates who are full-time teachers in public schools. No credit for extension courses is allowable in a doctoral program.
Requirements for Master's Degree

All master's programs call for a minimum of thirty semester hours of graduate credit. At least fifteen credit hours must be earned in formal courses and seminars. In programs that require a thesis, the number of credit hours to be earned in thesis research varies between six (minimum) and fifteen (maximum); these credits are included in the minimum of thirty required for the degree.

Master of Arts and Master of Science

FIELD OF SPECIALIZATION 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.

RELATED STUDY A graduate program may 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 in advance by the department in which the student is specializing.

Master of Education

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.

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 either thirty semester hours of approved course work or twentyfour hours earned in courses and six hours in thesis research. 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 before 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.

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. No thesis is allowable in this degree program; a student must complete at least twenty hours, and usually twenty-four, 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 undergraduate major within the area of his specialization and must be acceptable to the department or departments concerned.

In his undergraduate program, a candidate is expected to have completed at least twelve semester hours in education including courses which, when combined with graduate courses, will generally satisfy minimum requirements for certification to teach in the public schools. If candidates have not earned at least twelve undergraduate credits in education, they cannot expect to complete the degree in one academic year. To qualify for the degree of Master of Arts in Teaching, the candidate must present at least eighteen semester hours in education in his combined undergraduate and graduate program.

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 (courses equivalent to Political Science 241 and Economics 204 may be substituted); a minimum of twelve semester hours of course credit in Agriculture and Home Economics or related basic courses; and a minimum of six semester hours of course credit in Agricultural Education, Extension Education, and 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) a combination of three-week and six-week summer sessions, (2) a combination of summer session and extension course offerings in the State, (3) full-time residence on the campus, and (4) a 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.
 - b. A comprehensive oral examination (one 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. All examinations are taken on the University campus in Burlington.
- 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 examination. One re-examination only is permitted for any final comprehensive examination.

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.

Requirements for the Degree of Doctor of Philosophy

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.

STUDIES COMMITTEE Upon admission to the Graduate College, the prospective candidate for the Ph.D. 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 chairman concerned, and the Dean of the Graduate College. The committee will also be responsible for administering and evaluating language examinations.

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.

LANGUAGE REQUIREMENTS In order to satisfy the language requirements, each candidate must be able to comprehend the litera-

ture 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 language 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. The examinations will only be given during the months of October and April.

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

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.

THESIS COMMITTEE 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.

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.

Financial Aids

GRADUATE FELLOWSHIPS The Graduate College offered four Graduate Fellowships in 1963-64, each of \$1,000 plus a full tuition scholarship. These fellowships 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 advanved degree. Requests for application forms 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.

GRADUATE TEACHING FELLOWSHIPS AND GRADUATE RESEARCH FELLOWSHIPS and Research Fellowships are awarded in departments offering graduate

work. Graduate Teaching Fellows are usually appointed for nine months with an initial stipend of \$1,900; Graduate Research Fellows for eleven months with an initial stipend of \$2,200. Teaching and Research Fellows are awarded scholarships to cover tuition and may take a maximum of twelve hours per semester; they are eligible for reappointment.

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. Appointments will be announced between April 1 and April 15.

Residence HALL COUNSELORSHIPS Male graduate students are eligible for appointment as residence hall counselors. Residence hall counselorships afford graduate students opportunity to obtain

practical experience in hall activities, human relationships, government and administration while pursuing an advanced degree in their chosen field of study. 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. Applications should be filed not later than March 15 of the academic year preceding that for which application is made.

GEORGE H. WALKER DAIRY FELLOWSHIP The George H. Walker Dairy Fellowship is awarded every third year;

the next award is to be made in 1964-65. It provides a stipend of not less than \$900 plus a full 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.

NATIONAL DEFENSE EDUCATION ACT FELLOWSHIPS The U. S. Department of Education supported elev-

en fellowships at The University of Vermont during the academic year 1963-64 under provisions of Title IV of the National Defense Education Act. These awards were made to students enrolled in doctoral study in the following departments: Botany, Chemistry, Physiology and Zoology. Additional fellowships may be made available in one or more of the above, or in additional departments during the academic year 1964-65. These awards carry stipends plus a dependency allowance and include payment of tuition and fees. Inquiries concerning NDEA Fellowships should be directed to the Chairman of the department concerned.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION TRAINEESHIPS The National

Aeronautics and Space Administration has supported three graduate traineeships in the Department of Chemistry and Physics during the academic year 1963-64. Additional NASA traineeships may be available in these and other departments during the academic year 1964-65. These awards carry stipends plus a dependency allowance and cover payment of tuition and fees. Inquiries concerning NASA Traineeships should be directed to the Chairman of the department concerned.

NATIONAL SCIENCE FOUNDATION COOPERATIVE FELLOWSHIPS The University of Vermont

participates in the Cooperative Graduate Fellowship program of the National Science Foundation. These fellowships which are open to U. S. citizens for graduate work in the natural sciences, engineering and the quantitative social sciences, carry a stipend plus dependency allowance and tuition and nonrefundable fees. The Graduate Record Examination is required of all applicants. Application forms are available from the office of the Dean of the Graduate College.

GRADUATE TRAINEESHIPS Graduate traineeships have been made available to certain departments through grants from various divisions of the U. S. Public Health Service. Traineeships were awarded to graduate students enrolled in the following departments during the academic year 1963-64: biochemistry, pharmacology, and physiology and biophysics. Traineeships, which carry stipends of \$1,800 upwards plus payment of tuition, will be awarded in these areas again during the academic year 1964-65. The chairman of the department concerned should be contacted for information on the availability of these awards.

OTHER SOURCES Students undertaking graduate work at The University of Vermont may apply for other awards such as the National Science Foundation Graduate Fellowships and National Institutes of Health Predoctoral Fellowships. Further information concerning these programs may be obtained from the respective granting agencies.

LOANS Graduate students may apply for National Defense Students Loans. Applications should be made through the Director of Financial Aid, Waterman Building, prior to April 15 for September enrollment.

Graduate students, after they have successfully completed one semester, are also eligible for university loans on the same basis as undergraduates. Details may be obtained from the Financial Aid Office. 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 of an applicant for admission to the College of Medicine 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. If a majority (all but one or two) of the required courses have been or will be completed by the end of the third year in college, applicants are urged to take the Medical College Admission Test in May of that year.

4. All applicants are required to submit a health report completed by their college or university health service and not by their personal physician.

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, and epidemiology and community medicine.

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

Teaching Facilities

the student to pursue in depth an area of his interest.

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 616 beds (not including bassinets) and 142,081 patient days.

In Burlington there are three outpatient departments with 19,000 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. University Extension.

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

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.

It is recommended that any regularly matriculated student at the University of Vermont obtain prior approval from his academic dean for any courses to be taken in the Summer Session. The purpose of this recommendation is to insure such courses are appropriate for the degree for which the student is working.

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 UNIVERSITY EXTENSION

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.

It is recommended that any regularly matriculated student at the University of Vermont obtain prior approval from his academic dean for any courses to be taken in the Evening Division. The purpose of this recommendation is to insure such courses are appropriate for the degree for which the student is working. All persons desiring graduate credit must secure the approval of the Dean of the Graduate College.

The Government Research Center

The Government Research Center, established in 1950 as the Government Clearing House, 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 in the study of problems in state and local government; operatnig 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.

Many of the activities of the Government Research Center 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 Research Center 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 the Evening Division. The faculty participants in the Program, as well as the visiting professors, are available for public appearances individually or as an interdisciplinary 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.

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, 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. This office also arranges the University Lecture series which brings outstanding speakers to the campus, and coordinates the Speakers Bureau through which University personnel are made available to organizations outside the campus.

Audio-Visual Services

Audio-Visual Services includes an Audio-Visual Aids Library, an Audio-Visual Equipment Service and a Photographic Service.

The Library contains educational films; slides, filmstrips and tape and disc recordings. 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 has available for campus and outside users projection equipment for 16mm sound motion pictures, slides and filmstrips; opaque and large transparent materials; tape recorders and record players, as well as projection and maintenance service.

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.

1

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.

Two numbers with a comma between (17,18) indicate that the separate semester courses may be taken independently for credit.

Two hyphenated numbers (17-18) indicate 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

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. Staff.

201 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.

250 ADVANCED BIOCHEMISTRY (4-2) An advanced study of biochemical systems with emphasis on research methods and plant biochemistry. Laboratory sessions include the use of radioisotopes and chromatographic techniques. This course augments agricultural biochemistry 201 (general biochemistry), the combined sequence providing a base for graduate research in biochemistry and related fields. *Prerequisite*: 201 or medical biochemistry 301. Five hours. Drs. Racusen and Foote.

253 MICROBIAL BIOCHEMISTRY (2-3) The chemical composition, energy utilization and metabolism of microbial cells. *Prerequisite*: 201 or medical biochemistry 301, botany 116; and departmental permission. Three hours. Dr. Johnstone. Alternate years, 1965-66.

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. 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.

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 Samenfink and Sargent (Chairman); Associate Professors Sinclair, Tremblay¹ 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. Dr. Webster.

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 departmental permission. 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. 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. ¹Sabbatical leave first semester 1963-64. 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 The scientific method, statistical methods, sampling methods, use of electronic computers, linear programming, reporting research results. *Prerequisite:* three hours of statistics. Three hours. I or II. Drs. Tremblay and 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 economics, senior standing, and departmental permission. 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*: Departmental permission. Three hours. I or II. Staff.

270 AGRICULTURAL DEVELOPMENT Problems of economic development of underdeveloped agricultural countries. Levels of economic development, prerequisites to development, land reform, theories of development, investment priorities, terms of trade, and national development programs. *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 departmental permission. 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.

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. Practice in applying the methods treated. *Prerequisite:* junior standing, or departmental permission. Three hours. Dr. Gaylord.

152 INTRODUCTION TO TEACHING VOCATIONAL AGRICULTURE (1-2) 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 departmental permission. 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 departmental permission. 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 a 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 departmental permission. Three hours. Dr. Gaylord.

253 METHODS OF TEACHING YOUNG AND ADULT FARMER CLASSES IN VO-CATIONAL 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 departmental permission. Three hours. Dr. Gaylord.

118

AGRONOMY

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 departmental permission. One hour. Dr. Gaylord.

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

College of Agriculture and Home economics

Agronomy

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

10 INTRODUCTORY CROP SCIENCE Principles of establishment and management of agronomic crops. *Prerequisite:* botany 1 or departmental permission. Three hours. Dr. Wood.

21 FIELD CROPS (2-2) Producing, improving and managing field crops. Prerequisite: botany 1 or departmental permission. Three hours. Dr. Flanagan. Alternate years, 1965-66.

23 FORAGE AND PASTURE CROPS (2-2) Producing, improving and managing forage and pasture crops including study of silage and hay making. *Prerequisite*: botany 1 or departmental permission. Three hours. Dr. Wood.

52 GENERAL SOILS 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; chemistry 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 chemistry 1-2 or 11-12. Three hours. Dr. Bartlett. Alternate years, 1965-66.

ANIMAL AND DAIRY SCIENCE

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.

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. 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; chemistry 21 or 131, and departmental permission. 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 departmental permission. 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.

Animal and Dairy Science

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

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

2 MILK AND MILK PRODUCTS (2-2) History, development, role of products made from milk 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. Dr. Balch.

21 DAIRY PRODUCTS JUDGING AND SELECTION (2-1) Critical study of 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) 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, 1965-66.

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. Staff. Alternate years, 1965-66.

153 MILK PROCESSING (2-2) Technical aspects of processing fluid milk and fluid milk products. *Prerequisite*: departmental permission. Three hours. 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. Staff.

206 ANIMAL NUTRITION Nutrients, their function and utilization, and requirements for growth, reproduction and lactation. *Prerequisite*: 105; chemistry 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, 1964-65.

251 DAIRY CATTLE AND MILK PRODUCTION (2-2) Advanced principles of dairy cattle feeding and management. *Prerequisite:* 105. Three hours. Mr. Fitzsimmons. 256 DARY PLANT MANAGEMENT Organization and operation of milk processing and manufactured milk products plants. *Prerequisite*: 153; economics 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, zoology 115 or departmental permission. Three hours. Mr. Fitzsimmons.

271 ENDOCRINOLOGY Anatomy, physiology, glandular interrelationships, and assay methods of the endocrine glands and their hormones. *Prerequisite*: zoology 1 and departmental permission. 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 departmental permission. 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. 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. 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.

Animal Pathology

COLLEGE OF AGRICULTURE AND HOME ECONOMICS

Professor Bolton (Chairman); Associate Professor Durrell

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. 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.

Art College of arts and sciences

Professor Colburn (Chairman); Associate Professors Janson and Mills; Assistant Professor 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 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, 1965-66.

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, 1965-66.

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.

COLLEGE OF AGRICULTURE AND HOME ECONOMICS

Professors Dodge¹, Gershoy, Marvin² (Chairman), Sproston and Taylor³; 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. Staff. (An equivalent course is offered in Summer Session.)

2 THE PLANT KINGDOM (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) Regular field trips conducted to areas around Lake Champlain and in the Green Mountains to study Vermont's rich native flora. Identification and classification of trees, shrubs, flowering plants and ferns. Techniques of collecting and mounting specimens. *Prerequisite:* a semester course in botany. Four hours. Dr. Vogelmann. 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. Dr. Taylor.

55 INTRODUCTORY MICROBIOLOGY (2-4) Systematic study of microorganisms, predominently bacteria, emphasizing fundamental principles and basic laboratory techniques. Relationships of microbiology to public health, food spoilage, fermentations, soil enrichment, and sanitation. *Prerequisite*: 1 or zoology 1, or departmental permission; chemistry 1-2. Four hours. Dr. Fisher.

60 PLANT ECOLOGY Basic principles of plant ecology; climatology; analysis of the environment and its effect on organisms; interrelationships between plants; ecologic adaptions and evolution. *Prerequisite*: 1. Three hours. Dr. Vogelmann. Alternate years, 1964-65.

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 Chemistry 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; develop-

¹ Visiting professor.

² Sabbatical leave 1964-65.

⁸ Sabbatical leave first semester 1963-64.

Botany

BOTANY

ment and migration of floras; modern techniques and biosystematics. Prerequisite: 1; junior standing. Three hours. Dr. Vogelmann. Alternate years, 1965-66.

113 PLANT COMMUNITIES (2-2) Structure and organization of plant communities; plant succession; formations and association; sampling methods; field work. *Prerequisite:* 110 or departmental permission. Three hours. Dr. Vogelmann. Alternate years, 1964-65.

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. 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 departmental permisson. 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 departmental permission. Four hours. Dr. Sproston. Alternate years, 1965-66.

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; zoology 1; botany 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 zoology 115; chemistry 131, 132 or departmental permission. Four hours. Alternate years, 1965-66.

258 PLANT GROWTH (2-4) The nutrition of plant cells, growth hormones, cyclic variation of environmental factors, morphogenesis. *Prerequisite*: 103; chemistry 131, 132 or departmental permission. 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 departmental permission. Four hours. Dr. Raynor. Alternate years, 1964-65.

260 PHYCOLOGY (2-4) The morphology, classification, and general biology of the algae, with special consideration of the freshwater forms. Emphasis on the use of algae as experimental material for the investigation of general biological problems. *Prerequisite:* 2, or departmental permission. Four hours. Dr. Cook. Alternate years, 1965-66.

CHEMISTRY

381, 382 BOTANY SEMINAR A topical seminar with discussion of assigned and collateral reading. Required of botany graduate students. 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.

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.

Chemistry College of Technology

Professors Gregg and White (Chairman); Associate Professors Crooks and Whitcher; Assistant Professors Brown, Criss, Flanagan, Krapcho, Kuehne 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. Drs. Gregg, Crooks, Whitcher 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. Krapcho and staff.

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. Dr. Gregg.

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.

¹ May be taken by certain students for three hours credit, with only one three-hour laboratory period.

CHEMISTRY

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.¹ Dr. White 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. Prerequisite: 1-2. physics 5-6 or the equivalent. Three hours. Dr. Flanagan.

141-142 PHYSICAL CHEMISTRY (3-6)² The kinetic theory; thermodynamics electrochemistry; atomic and molecular structure and properties; chemical kinetics; properties of liquids and crystals. Prerequisite: 1-2 or 11-12; 21-22 recommended: physics 16; mathematics 21. Five hours.¹ 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. Not offered every year.

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. Alternate years, 1964-65.

233, 234 PHYSICAL ORGANIC Physical organic chemistry, emphasis on structural aspects and reaction mechanisms. Prerequisite: 131, 132; credit or concurrent enrollment in 141-142; 233 for 234. Three hours. Dr. Krapcho. Alternate years, 1965-66.

237 IDENTIFICATION OF ORGANIC COMPOUNDS AND ADVANCED TECH-NIQUES 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 chromotography, thin layer, paper and column chromatography, ¹ May be taken by certain students for four hours credit, with only one three-hour laboratory

period.

²May be taken without laboratory work for three hours credit by departmental permission.

CHEMISTRY

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. Kuehne.

238 ORGANIC REACTIONS Discussion, from the preparative viewpoint, of applications, limitations, and experimental conditions of the more important reactions of organic chemistry. *Prerequisite:* 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:* 132; credit or concurrent enrollment in 141-142, 251 for 252. Three hours. Dr. Kuehne.

332 NATURAL PRODUCTS—THE ALKALODS 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:* 252 or concurrent enrollment, or the equivalent with permission of the instructor. Three hours. Alternate years, 1964-65. Dr. Kuehne.

334 NATURAL PRODUCTS—THE TERPENES Chemistry of mono-sequi-di and triterpenes, including degradations, structure proofs, total syntheses, rearrangements reactions and biogenesis. *Prerequisite:* as for chemistry 332. Three hours. Dr. Kuehne. Alternate years, 1965-66.

Advanced Physical Chemistry

247, 248 ADVANCED PHYSICAL CHEMISTRY Higher level consideration of the topics discussed in 141-142. Emphasis on spectra, statistical mechanics and quantum theory. *Prerequisite*: 141-142; 247 for 248; concurrent enrollment in mathematics 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*: 248 or its equivalent. Three hours. Staff.

341 CHEMICAL THERMODYNAMICS Systematic study of the application of thermodynamics in the solution of chemical problems. *Prerequisite*: 248. Three hours. Dr. Criss or Dr. Flanagan.

342 CHEMICAL KINETICS Velocity of chemical reactions in homogeneous and heterogeneous systems. *Prerequisite*: 248. Three hours. 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.

CLASSICS

183-184 SENIOR SEMINAR (2-0) One hour. 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. Staff.

381 through 384 GRADUATE SEMINAR (2-0) 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.

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.

COLLEGE OF ARTS AND SCIENCES

Classics

Professors Gilleland (Chairman) and Kent¹; Associate Professors Davison and Pooley; Assistant Professor Ambrose; Instructor Peloquin²

Greek

1-2 ELEMENTARY GREEK Essentials of Attic Greek. Prose compositions and selected readings from Greek authors. Four hours. Dr. Kent.

11-12 INTERMEDIATE GREEK Plato's Euthyphro and Apology; selections from the *lliad* 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, 1965-66.

203 GREEK HISTORIANS Thucydides, Books I and II; selections from Herodotus and Xenophon's *Hellenica*. Prerequisite: 11-12. Three hours. Dr. Kent. Alternate years, 1965-66.

204 GREEK TRAGEDY Sophocles' Antigone and Euripides' Medea, or two equivalent plays. Prerequisite: 11-12. Three hours. Dr. Ambrose. Alternate years, 1965-66.

¹ Sabbatical leave second semester 1963-64.

² As of February 1, 1964.

CLASSICS

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.

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. 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 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, 1965-66.

¹ Students who have completed two years of high school Latin more than two years prior to their entrance into the University must obtain departmental position to enroll in Latin 1-2 for credit.

(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, 1965-66.

253 ROMAN ORATORY Selections from Cicero's De Oratore, Orator, and Brutus, and from his speeches. Historical development of forensic and other 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 through 384 SEMINAR Graduate level study of Latin authors not read in the candidate's undergraduate program. Credit as arranged. 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 Latin Literature in Translation, see General Literature 52; for The Teaching of Latin, see Secondary Education 252.

Commerce and Economics

COLLEGE OF ARTS AND SCIENCES

Professors Greif¹ (Chairman), Lohman², Nadworny and Woodard; Associate Professors Dellin, Huq³, LeSourd, Maybury and Nyquist; Assistant Professors H. Squire, Wick and Wolotkin; Instructors Alnasrawi, Mills and M. Squire; Lecturers Kelly and Schweyer

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. Staff.

¹ Sabbatical leave second semester 1964-65.

² On leave 1963-64.

³ Resigned Feb., 1964.

13-14 PRINCIPLES OF ACCOUNTING (2-4) Problems of financial control of business, with laboratory practice. *Prerequisite:* sophomore standing. Four hours. Messrs. Nyquist, Wolotkin and Kelly.

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. Drs. Woodard and H. Squire.

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 or II. 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. Messrs. Wick and Schweyer.

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 Theory and function of money and credit. Intensive study of commercial and central banking with special attention given to the Federal Reserve System. International aspect of money. Interrelationship of monetary and fiscal policies. *Prerequisite*: 11-12. Three hours. Dr. Lohman and Mr. Alnasrawi. 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 self-regulation of securities markets. *Prerequisite:* 11-12 and 13-14. Three hours. Dr. Lohman and Mr. Mills.

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 and Mr. Mills.

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 and Mr. Mills.

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, selection of media and agency activities. Practice in preparaton 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 in income levels and concentrations in populations; decentralization of shopping centers; the distribution cycle; 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. Drs. Nadworny and H. Squire.

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. *Pre-requisite*: 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 H. 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.

COMMERCE AND ECONOMICS

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. Dr. Nadworny.

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.
COMMERCE AND ECONOMICS

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; political science 1, 2. Three hours. Staff.

183 ECONOMIC LIFE AND GOVERNMENT CONTROL ECONOMIC causes and consequences of government regulation and control of business activities. *Pre-requisite*: 11-12; political science 1, 2. Three hours. Dr. H. Squire.

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; mathematics 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 Analysis of the economic development of the USSR, its structure, performance and direction. 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. Departmental consent required. Hours to be arranged. Staff.

341 MANAGERIAL ECONOMICS Techniques used in management decisionmaking 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 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.

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.

134 TYPING I 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. Mrs. Squire.

135 TYPING II 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. Mrs. Squire.

138 SHORTHAND I Gregg shorthand writing for the beginner. Shorthand fundamentals and a basic shorthand vocabulary. Application to business material. *Prerequisite:* consent of the instructor. Three hours. Mrs. Squire.

139 SHORTHAND II 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. Three hours. Mrs. Squire.

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. Six hours. Mrs. Squire.

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

Assistant Professors Quinby and Sawabini (Chairman); Instructors Bannister, Faigel, Farnham, M. C. Heininger, P. L. Heininger, Howe, Lampert, Miller 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. Misses Quinby and Miller.

DENTAL HYGIENE

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 (2-2) 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. Three hours. Dr. Faigel.

32 MEDICAL EMERGENCIES (1-0) Basic principles of emergency aid taught to prevent and cope with emergencies that arise in the dental office. One hour. Mrs. Heininger.

51-52 PHARMACOLOGY AND ANESTHESIOLOGY (1-0) (1-0) The reactions and uses of drugs. Anesthesia, general and local, as used in dental practice. Two hours. Dr. Farnham.

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.

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 Miller.

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. Misses Quinby and Miller.

91-92 DENTAL ASSISTING, DENTAL MATERIALS, ETHICS AND OFFICE MAN-AGEMENT (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. Lampert. Education

COLLEGE OF EDUCATION AND NURSING

Professors Baker (Chairman), Gilleland, King, Lidral, Pappoutsakis and Steeves; Associate Professors Keppel, Mills and Rippa; Assistant Professors Adams, Boller, Christensen, Keene, Leggett, Mour, Petrusich, Ruffer, Schultz, Weinrich and Wills; Instructors Gardner, Grant, Greig, Stauff, Marberger and McDonald

2 FOUNDATIONS OF EDUCATION Social foundations of education; development of American education; education as a profession. Two hours. I or II. 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 education 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. Rippa.

152 METHODS OF TEACHING SPORTS Fundamental skills, techniques, and teaching methods in team, dual, and individual sports. One hour. 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. Staff.

157 PREVENTION AND CARE OF ATHLETIC INJURIES Prevention, recognition and care of injuries related to school physical education and athletic programs. Two hours. Mr. Grant.

158 ORGANIZATION AND ADMINISTRATION OF HEALTH AND PHYSICAL EDU-CATION Organization and administration of instructional programs, intramurals, interscholastic athletics, school recreational programs, schedules, personnel, budgets, equipment, records, tests, and public relations. Three hours. 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; twelve 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*: twelve 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 twelve 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 twelve 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:* twelve hours in education and psychology, including an introductory course in the teaching of reading. Three hours.

255 THE SCHOOL AS A SOCIAL INSTITUTION Analysis of major social forces affecting elementary and secondary education; exploration of values underlying educational policy; examination of contemporary social, cultural, economic and political issues and their impact upon the school. *Prerequisite:* twelve semester hours in education and psychology or nine semester hours in sociology. Three hours. 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 twelve hours in education and psychology. Credit to be arranged. 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.

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. Staff.

121 TEACHING READING Principles underlying teaching reading; materials of instruction; reading readiness; vocabulary development; development of correct study skills; observation in elementary school. 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 classfoom work in junior and senior high schools. Discussion meetings on campus. *Prerequisite*: departmental permission. 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 six hours in education; senior standing; departmental permission. 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 145-146; high

achievement in professional courses and in appropriate teaching fields; departmental approval. 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 class-room teachers. *Prerequisite:* senior standing and twelve 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. Gilleland.

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 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*: 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 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*: 145-146 or psychology 1 and 205. Three hours. Dr. Lidral.

390 ORGANIZATION AND ADMINISTRATION OF MUSIC EDUCATION A study of the organization and administration of vocal and instrumental music in the public schools. *Prerequisite:* graduate standing and teaching experience or consent of instructor. Three hours. Mr. Keene.

Other Courses in Education

In addition to the courses offered during the academic year, the following courses may be offered in summer sessions and in the evening division program.

Numbe	e r 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
S1 50	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
\$203	Principles of Physical Education		3
\$204	History of European Education		3
S206	Comparative Education	•	3
S209	Workshop in the Education of Teachers of the Mentally		
020)	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

ENGINEERING, AGRICULTURAL

S232	School Administration	•	•	•	3
S233	Elementary School Supervision			•	3
S234	Secondary School Supervision	•	•		3
S235	Seminar in Educational Administration (Supervision	ı)	•	•	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	Methods and Materials in School Mathematics	•		•	3
S257	Teaching Mathematics in the Secondary Schools .	•	•	•	3
S259	Teaching Foreign Language in the Elementary (Seco	nda	ry)		
	School	•	•	•	3
S260	Improvement in Teaching Bookkeeping and Basic Bu	isine	28 8		
	Subjects	•	•	•	3
S261	Seminar in Business Education	•	•	•	3
S262	Principles, Problems, and Trends in Business Education	on	•	•	3
S263	Improvement in Teaching Secretarial Subjects	٠	•	•	3
S264	Business Education Curriculum	•	٠	•	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
S281	Occupational Information	•	•	•	3
S282	Administration of the Guidance Program	•	•	•	3
S283	Group Testing in Guidance	•	•	•	3
S284	Counseling (Techniques and Group Procedures in Gu	uidaı	nce)	3
S285	Individual Testing	•	•	•	3
S286	Test Interpretation for School Counselors	•	•	•	3
S299	Research Methods in Education	•	•		3

COLLEGE OF AGRICULTURE AND HOME ECONOMICS

Engineering, Agricultural

Professor Schneider (Chairman); Associate Professor 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 DARY 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, 1965-66.

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, 1965-66.

151 FARM STRUCTURES (2-2) Design of farm structures, materials, structural requirements, functional requirements, insulating, heating, and ventilating. *Prerequisite:* civil engineering 131 or concurrent enrollment. Three hours. Dr. Arnold. Alternate years, 1964-65.

152 FARM UTILITIES (2-2) Water systems; plumbing; sewage disposal; refrigeration. *Prerequisite*: mechanical engineering 142 or civil engineering 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. *Pre-requisite:* civil engineering 130 and 131. Three hours. Dr. Arnold. Alternate years, 1965-66.

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, civil engineering 53 or departmental permission. Three hours. Mr. Bornstein. Alternate years, 1965-66.

156 ELECTRICITY IN AGRICULTURE (2-2) Theory and engineering practices in the application of electricity to agriculture. *Prerequisite*: electrical engineering 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:* mechanical engineering 113, civil engineering 131 or concurrent enrollment. Three hours. Dr. Arnold. Alternate years, 1965-66.

ENGINEERING, CIVIL

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 departmental permission. One hour. 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 departmental permission. One hour. Staff.

Engineering, Civil

COLLEGE OF TECHNOLOGY

Instructors Dorwart 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*: mathematics 21 or concurrent enrollment. Three hours, I. II.

Professor Milbank (Chairman); Associate Professors Knight, Root and Fay;

51, 52 SURVEYING (3-4) First semester: Propagation of errors; error application to measurements in surveying; selected items in plane surveying. Second semester: Selected items in analytical photogrammetry; elements of photo-interpretation; control surveys; theory of curves and earthworks. *Pre-requisite:* mathematics 11 for 51, mathematics 12 and 51 or 53 for 52. Four hours.

53 PLANE SURVEYING (3-4) Fundamental surveying methods; elements of topographic surveying; special problems as presented in fields affected. For those not enrolled in civil engineering. *Prerequisite*: mathematics 10 or 11. 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 mathematics 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 mathematics 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 fluids with emphasis on incompressible fluids; flow meters; flow in closed conduits; flow in open channels; elements of hydraulic machinery. *Prerequisite*: 130 and mechanical engineering 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, chemistry 1-2. Three hours.

168 HYDRAULICS LABORATORY (0-3) Laboratory studies for illustration of the theory of mechanics of fluids; flow in closed conduits; and hydraulic machinery. *Prerequisite*: 162 or mechanical engineering 142 or concurrent enrollment in civil engineering 162. One hour.

173 SOIL MECHANICS I (2-3) Identification, description, and physical properties of soils; subsurface exploration; engineering characteristics of natural

ENGINEERING, CIVIL

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:* 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 an introduction to structural dynamics. *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, mathematics 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, mathematics 212. Three hours.

235 PHOTOELASTICITY (2-3) Development of the theories of photoelastic stresses analyses; model similitude; correlation with other stress analysis techniques. Laboratory work on two-dimensional applications such as stress concentrations around holes, notches, and fillets. *Prerequisite:* 131, mathematics 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 mechanical engineering 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 mechanical engineering 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 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.

Engineering, Electrical

Professors Essler (Chairman) and Smith; Associate Professor Hoilman, Rush, Shorey and Taylor; Assistant Professors de la Cuesta and Dudevoir; Instructor Caldwell

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 mathematics 21 and physics 15 for 25; mathematics 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*: mathematics 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.

116, 117 ELECTRIC MACHINES (3-3) A study of the principal types of rotating machinery from the physical and mathematical standpoint. *Pre-requisite:* electrical engineering 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 mathematics 211. Four hours.

126 CIRCUITS AND FIELDS I The transient behavior of electro-mechanical circuits and of electromagnetic wave theory. *Prerequisite:* 125 or physics 242 and permission of instructor; mathematics 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. *Pre-requisite:* 110. Four hours.

204 ELECTROMAGNETIC WAVE THEORY Maxwell's equations, the Poynting vector, guided waves and radiation. Engineering applications are stressed. *Pre-requisite:* 110 and mathematics 211. Three hours.

206 U.H.F. CIRCUITS (3-3) Circuits and techniques for use at ultra-high frequencies. *Prerequisites*: 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, mathematics 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 (3-0), (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.

ENGINEERING, ELECTRICAL

230 CREATIVE ENGINEERING (3-0) Creative techniques and problems approach to applications of these methods to current industrial problems. *Pre-requisite:* mathematics 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 mathematics 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. *Pre-requisite*: mathematics 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 scalers. *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 through 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 numerous oscillatory problems. *Prerequisite*: mathematics 211 and degree in physical sciences or engineering. Three hours.

391 through 399 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

Professors Outwater (Chairman) and Tuthill; Associate Professors Carpenter, Duchacek and Marshall

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 ENGINEERING PROBLEMS Nature of engineering 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:* 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*: mathematics 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. *Pre-requisite:* 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; mathematics 21. Three hours.

117 MECHANICAL ENGINEERING LABORATORY (0-3) Coordinated with mechanical engineering 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*: 2; civil engineering 130. Four hours.

135 MACHINE DESIGN I (3-0) Statically indeterminant members, deflection of beams, columns, connections, energy methods, theories of failure, continuous beams, thick-walled cylinders. *Prerequisite*: 132, civil engineering 131. Three hours.

142 FLUID MECHANICS (3-0) Dynamics of an ideal fluid; energy and momentum relations; similitude; flow in conduits; boundary layer mechanics; compressibility phenomena; wing theory; hydrodynamic lubrication; fluid machines and controls. *Prerequisite*: 111 or 113; civil engineering 130. Three hours.

164 AIR CONDITIONING (3-0) 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. Three 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) Work simplification: analysis, application, introduction to human engineering. Work measurement: time study, work sampling, predetermined data. *Prerequisite*: junior or senior standing. Three hours.

176 PLANT ORGANIZATION (2-6) Analysis of industrial 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, mathematics 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. Photoelasticity. *Prerequisite:* 211. Three hours.

243 ADVANCED FLUID MECHANICS (3-3) Foundations of fluid dynamics; thermodynamics and concepts of compressible flow; isentropic flow; normal shock waves; flow in ducts with friction and with heating or cooling; generalized solution of combined effects. *Prerequisites*: 142 and mathematics 211. Four hours.

244 COMPRESSIBLE FLOW (3-0) Introduction to flow in two and three dimensions; steady irrotational flow; small perturbations; the hodograph method; the Karman-Tsien, Prandtl-Glauert, and Gothert's methods; supersonic airfoils; the method of characteristics; oblique shocks; shock waves and boundary layer interaction. *Prerequisite:* 243. Three 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 mathematics 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 mathematics 211. Three hours.

271 INDUSTRIAL MATERIALS I (3-0) Fundamentals of ferrous and nonferrous 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*: chemistry 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; anistropic materials; hardness; residual stress; brittle, transitional and ductile fractures; fatigue; damping; creep and surface phenomena. *Prerequisite*: 271. Three hours.

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. Presentation of current developments. *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 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.

COLLEGE OF ARTS AND SCIENCES

English

Professors Bogorad¹, Bandel, Hughes, Marston, Pope and Trevithick; Associate Professors Cochran, L. Jones² (Chairman), Long, and McArthur; Assistant Professors Caswell, O'Hara, Orth, Strandberg, Weaver and Woodruff; Instructors Arnold, Foss, Hall, Hopkins, R. Jones, Kimnach, Murbe, Poger and Sargent

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. 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 Sabbatical leave first semester 1964-65.

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. 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. 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, 1965-66.

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 CHAUCER 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, 1965-66.

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, 1965-66.

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. Dr. Woodruff. Alternate years, 1965-66.

231, 232 VICTORIAN LITERATURE A study of the lives and the works, except the novels, of the significant writers from 1832 to 1900. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Long. 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. Dr. O'Hara.

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. Dr. Cochran.

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, 1965-66.

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, 1965-66.

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, 1965-66.

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, discussion and reports. *Prerequisite*: 25, 26 or 27, 28. Three hours. Dr. Marston. Alternate years, 1965-66.

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. Weaver. Alternate years, 1965-66.

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 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.

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) (2-0) The theory and practice of silviculture in the management of farm woodlands and small forest areas. *Prerequisite:* junior standing. Three hours; two hours. Dr. Adams.

106 WOOD IDENTIFICATION (0-3) Indentification of the commercial woods of the United States; basic properties and variations in relation to their use. One hour. 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. Staff.

208 BIOLOGICAL STATISTICS Application of statistics to the analysis of biological data; interpretation of statistical analysis. *Prerequisite*: mathematics 9; senior standing. Three hours. Dr. Post.

381, 382 SPECIAL TOPICS Advanced readings and discussion of forestry research literature. Three hours. Staff.

391 through 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

General Literature E 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. Gilleland.

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. Ambrose.

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 occupance 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. Not open to students who have taken Geography 3. 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. Not open to students who have taken geography 1 or 2. Three hours. Dr. Miles.

GEOLOGY

101 GEOGRAPHY OF AFRICA The significance of geographic factors in the rapid political and economic development of tropical Africa. Attention is focused on the character of the human patterns and cultural development in the various regions against the background of the physical and resource base of the continent. *Prerequisites:* twelve hours in the social sciences. Three hours. Dr. Miles.

102 GEOGRAPHY OF CANADA The character, origin, and development of cultural, industrial and commercial patterns of present-day Canada against the background of the physical and resource base of the country. The analysis of Canadian regions. *Prerequisite*: twelve hours in the social sciences. Three hours. Dr. Miles.

257 POLITICAL GEOGRAPHY The characteristics of the political unit as a geographic area. The consideration of location, resources, and the distributional relationships of the variety of cultural and human factors as they have a bearing on the structure and functioning of the modern political unit. The relationship between geopolitics and political geography. *Prerequisite:* twelve hours in geography and political science, or permission of the instructor. Three hours. Dr. Miles.

COLLEGE OF ARTS AND SCIENCES

Geology

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 (2-3) 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.

GEOLOGY

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. *Pre-requisite*: 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, 1965-66.

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, 1965-66.

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. 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.

COLLEGE OF ARTS AND SCIENCES

Professor White (Chairman); Associate Professor Webster¹; Assistant Professors Kahn and Wurthmann; Instructor Eurich

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. 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. Staff.

81-82 SCIENTIFIC GERMAN Development of ability to read accurately and efficiently original German in the field of each student's scientific interest. *Pre-requisite:* 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, 206 GOETHE Life and works of the poet through the Italian journey (205). Goethe in the years of his maturity: 1790-1832 (206). Prerequisite: 101-102 or the equivalent. Three hours. Dr. White. Alternate years, 1965-66.

207 NINETEENTH CENTURY PROSE Masterpieces of narrative prose by representative authors such as Mörike, Keller, O. Ludwig, C. F. Meyer, Stifter, Raabe, and the early Thomas Mann will be read. *Prerequisite:* 101-102 or the equivalent. Three hours. Dr. White. Alternate years, 1964-65.

208 NINETEENTH CENTURY DRAMA Works by Kleist, Büchner, Grillparzer, Hebbel, O. Ludwig, Wagner, and the early Hauptmann will be read. *Prerequisite:* 101-102 or the equivalent. Three hours. Dr. White. Alternate years, 1964-65.

¹ Sabbatical leave second semester 1964-65.

Jerman

HEBREW

209, 210 THE TWENTIETH CENTURY Selected works in poetry, prose and drama by Brecht, George, Hauptmann, Hofmannsthal, Kafka, Thomas Mann, Rilke, and others will be read. *Prerequisite:* 101-102 or the equivalent. 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 HISTORY OF THE GERMAN LANGUAGE Introduction to Germanic linguistics, the comparative method, and linguistic reconstruction. The linguistic development of German from Indo-European to the present. No knowledge of the older stages of the language is presupposed or required. *Prerequisite*: 121-122 or the equivalent. Three hours. Dr. White.

235 THE STRUCTURE OF GERMAN Linguistic analysis of the phonological, morphological, and syntactic structure of modern German with special attention to problems useful for teachers. *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 through 399 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 OLLEGE 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, 1965-66.

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 Evans and Schultz (Chairman); Associate Professors Daniels, Davison, Keppel, Pooley and Putnam; Assistant Professors Felt, Hand, Newhall and Schmokel; Instructors Metcalfe, Moody and Spinner

CEEB and Advanced-Placement tests may in some cases be accepted as prerequisites in place of history 23, 24 and history 11, 12. A student desiring to use test scores as prerequisites should consult the instructor of the course into which he desires to be admitted.

11, 12 EUROPEAN CIVILIZATION European ideas and institutions in world history. Prerequisite: 11 for 12. Three hours. Drs. Daniels, Hand, Newhall and Schmokel; Messrs. Metcalfe, Moody 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.

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. *Prerequisite:* 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.

112 THE REFORMATION Sixteenth-Century Europe. Prerequisite: six semester hours in European history. Three hours. Dr. Newhall.

116 INTRODUCTION TO AFRICAN HISTORY Survey of the history of Africa south of the Sahara from earliest times to independence. *Prerequisite*: 12; geography 101 recommended.

123-124 AMERICAN HISTORY SINCE 1900 Prerequisite: six semester hours in history including 12 or 24. Three hours. Drs. Putnam and Felt.

191, 192 SENIOR HONORS RESEARCH Prerequisite: three hours of a history course numbered 200 and departmental permission. Three hours.

HISTORY

195 READINGS IN DEPARTMENTAL HONORS¹ Prerequisite: an average of 80 through the junior year; an average of 85 in at least eighteen hours of history department courses; completion of at least six hours in history department courses numbered above 200. Three hours. Staff.

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.

241-242 ERA OF THE FRENCH REVOLUTION AND NAPOLEON French history from 1789 to 1815 with special attention to the impact of French ideas and power upon Europe. *Prerequisite*: junior standing and 12. Three hours. Dr. Evans.

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 12. Three hours. I. Mr. Spinner.

251-252 CONTEMPORARY HISTORY The world since 1918, stressing the background of current events. *Prerequisite:* junior standing and 12. Three hours. Drs. Daniels 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 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 12. Three hours. Drs. Schmokel and 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 institutions. *Prerequisite*: twelve semester hours in history. Three hours. Dr. Putnam.

¹Candidates for departmental honors should consult with the chairman of the history department at the time of spring enrollment. Students accepted for this course will do their readings between November and March; official enrollment will be in the second semester.

HOME ECONOMICS

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 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.

Home Economics

COLLEGE OF AGRICULTURE AND HOME ECONOMICS

Professor Samenfink; Associate Professors Brown, Caldwell, Knowles¹, Morse and Williams (Chairman); Assistant Professors Duroe², Hand, V. Little, Powell, Smith, Wakefield³ and Webster; Instructors Lepeschkin, Mmes. Cook, Hart, Kittle⁴, Reeves and Woodworth

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.

²Effective January, 1964.

⁸ On leave 1964-65.

⁴ First semester 1963-64.

¹ Sabbatical leave second semester 1963-64.

HOME ECONOMICS

105 EXPERIMENTAL EQUIPMENT (1-4) Performance measurement and rating of household equipment. Prerequisite: 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.

153 HOME MANAGEMENT RESIDENCE Practical application of home management and group living in the Home Management Residence. A charge of \$95.00 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 student in University residence halls. *Prerequisite*: 101, 137. Three hours. I, II. Miss Smith.

203 HOME MANAGEMENT PROBLEMS Application of economic and sociological principles to some problems of the home and family. *Prerequisite*: 101, psychology 1. Three hours. Staff.

204 FAMILY ECONOMICS The consumer and the market. Use of credit, savings and investments, insurance and estate planning for the family. *Pre-requisite:* 101, economics 12. Three hours. Miss Knowles.

301 READINGS IN FAMILY ECONOMICS Critical survey of the literature and recent research in family economics. Three or four hours. 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 problems, place of homemaking in general education. *Prerequisite*: junior standing. Two hours. Miss Smith.

165 METHODS OF TEACHING Methods of teaching home economics in junior and senior high schools, and of general administration of home economics departments in secondary schools. *Prerequisite*: 115, psychology 1. Three hours. Miss Brown.

166, 167 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 Smith.

168 STUDENT TEACHING Supervised observation and teaching in approved secondary schools in Vermont. Prerequisite: 165. Seven hours. Miss Brown.

169 COMMUNICATION METHODS (2-4) Presentation of information through the media of press, radio and television, and lecture-demonstration. *Prerequisite:* junior standing. Three hours. I, II. Mrs. Reeves.

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 HUMAN DEVELOPMENT AND PERSONALITY (I) The biological, psychological, and social growth and development of the child and his relationships with his family, peers and institutions. Observation in the preschool laboratory. *Prerequisite:* sophomore standing or permission of instructor. Three hours. I, II. Dr. Samenfink, Miss Wilson.

65 EXPERIENCE WITH PRESCHOOL FAMILIES (2-2) An opportunity to work in the laboratory preschool program to understand better the role of the teacher consultant in relationship to young children and their families. *Prerequisite:* 63. Three hours. I, II. Staff.

67 CREATIVE CURRICULUM ACTIVITIES (2-2) The theory and practice of developing a creative curriculum for preschool and kindergarten children: experimenting with art, science, and language materials and experience with preschoolers. *Prerequisite:* 63. Three hours. Mrs. Lepeschkin. Alternate years, 1965-66.

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, 1965-66.

170 INTRODUCTION TO SOCIAL WORK History, philosophy, fields, and objectives of social work; process of social case work through discussion of cases. *Prerequisite:* sociology 21, psychology 1. Three hours. Dr. V. Little.

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. Mrs. Lepeschkin and staff.

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, 1965-66.

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, 1965-66.

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. Mrs. Webster.

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73 PATTERN DESIGN AND ADVANCED CONSTRUCTION (0-6) Techniques of designing and altering flat patterns. Advanced construction techniques and original design. *Prerequisite:* 22 or departmental permission. Three hours. I, II. Mrs. Webster and Mrs. Hart.

83 SURVEY OF TEXTILES (2-2) Fibers, their properties and manufacturing processes. Identification, care and use of clothing and household fabrics. Three hours. Miss Caldwell and Mrs. Hart.

123 TAILORING (0-6) Construction techniques with emphasis on tailoring problems. Prerequisite: 73 or departmental permission. Three hours. Mrs. Webster.

182 ADVANCED TEXTILES (1-4) Historical and sociological background to textiles and textile design; testing techniques and recent developments in the field. *Prerequisite:* Three hours. Staff.

221 COSTUME DESIGN AND DRAPING (1-4) Draping techniques used in creative fashion design. Handling of fabrics in relation to line in dress. Original projects developed according to individual interests. *Prerequisite:* 21, 73, or departmental permission. Three hours. Mrs. Webster.

273 CLOTHING, TEXTILES AND RELATED ART SEMINAR Theory and research in the field of Clothing, Textiles and Related Art, analysis of current problems; review and discussion of recent research, book and publication; individual studies. *Prerequisite:* departmental consent. Three hours. Staff.

Related Art

21 DESIGN (1-4) Color and design in theory and practice. Work with various media as a means of creative expression and understanding of art principles. Three hours. Miss Caldwell, Miss Kittle.

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:* history 12. 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.

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
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selection presented through demonstration lectures. Four hours. I, II. Miss Powell and Mrs. Reeves.

48 ELEMENTARY NUTRITION For preclinical nursing students only. Not for college credit. Miss Powell.

87 FUNDAMENTALS OF NUTRITION Basic principles of nutrition. Laboratory experience in planning adequate meals, calculating food values and adapting this knowledge to the specific needs of the individual and to groups in medically related areas. Three hours. Miss Powell.

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 Powell.

135 ADVANCED FOOD PREPARATION (2-4) Scientific principles and fundamental processes underlying food preparation and preservation with practical applications. *Prerequisite:* 43, chemistry 4, 131. Four hours. Miss Williams and Mrs. Woodworth.

137 MEAL MANAGEMENT (1-5) Principles and practice in planning, preparing and serving family meals at different cost levels. *Prerequisite:* 43. Three hours. I, II. Mrs. Hand.

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. Dr. Morse.

236 INTRODUCTION TO FOOD RESEARCH (1-4) Methods and techniques in experimental work in foods. Independent laboratory study of problems in food preparation. *Prerequisite*: 135. Three hours. Miss Williams.

238 WORLD DIETARY PROBLEMS The complex interrelationships which are responsible for the nutritional status of persons living in representative countries. A background for the understanding of the causes of malnutrition in various areas in the world and the study of the agencies and techniques working to alleviate the problems. *Prerequisite:* 144, 135, sociology 21, or permission of instructor. 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 201; zoology 6, or 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 Powell.

246 READINGS IN FOODS Critical survey of the literature on the recent developments in food research. *Prerequisite:* senior standing; 135. Two or three hours. Staff.

248 READINGS IN NUTRITION Critical survey of the literature on recent developments in nutrition. *Prerequisite:* 243. Two or three hours. Staff.

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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 personnel 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 Home economics in the Land-Grant college—teaching, research, and extension. The historical development of the field, its common core of family and individual and the professional opportunities which are available. One hour. Staff.

151 SENIOR SEMINAR Ethics and responsibilities of the professional home economist. Readings and discussion of research and progress in the field. One hour. Staff.

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. Staff.

386, 387 GRADUATE SEMINAR Advanced study in a special field; opportunities for independent work are provided. Three hours. 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. Staff.

Horticultural Science

COLLEGE OF AGRICULTURE AND HOME ECONOMICS

Professors Wiggans (Chairman) and Hopp¹; Mr. Calahan

11 HOME AND GARDEN HORTICULTURE (3-0) Enrichment of every day home living through horticulture. Planning of the home grounds for maximum use and enjoyment. Selection and maintenance of plants for the home grounds, including shrub, tree and flower plantings, the home lawn, home fruit and vegetable gardens, and house plants. Designed for students with a noncommercial interest in horticulture. Three hours. Staff.

52 FUNDAMENTALS OF HORTICULTURE (3-0) Principles underlying the culture, propagation, harvesting, storage and utilization of important horticultural crops. *Prerequisite*: botany 1. Three hours. Staff.

152 TREE FRUIT CULTURE (2-2) Cultural practices and principles involved in modern tree fruit production. *Prerequisite:* 52. Three hours. Mr. Calahan. Alternate years, 1964-65.

153 VEGETABLE CULTURE (2-2) Cultural practices and principles involved in modern vegetable production, including a review of recent experimental work. *Prerequisite:* 52. Three hours. Mr. Hopp. Alternate years, 1965-66.

155 SMALL FRUIT CULTURE (2-2) Principles underlying plant growth and fruit production of small fruits. *Prerequisite:* 52. Three hours. Staff.

157 ORNAMENTAL HORTICULTURE (2-2) The identification, climatic requirements, cultural management, and use of ornamental plant materials in landscape plantings. *Prerequisite:* 52. Three hours. Staff. Alternate years, 1964-65.

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

202 PLANT NUTRITION (2-2) Effect of soil management, fertilizers, environmental factors, and mineral deficiencies on the functioning and performance of plants. *Prerequisite*: botany 103. Three hours. Staff. Alternate years, 1964-65.

205 PLANT PROPAGATION (2-2) Physiological and anatomical principles involved in the propagation of plants and their application to specific propagation problems. *Prerequisite*: Credit or concurrent enrollment in botany 103. Three hours. Staff. Alternate years, 1965-66.

210 HORTICULTURAL RESEARCH TECHNIQUES (2-2) Methods of conducting research with plants. Organizing and planning of experiments. The ¹Sabbatical leave first semester 1964-65.

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use of field and laboratory equipment. Three hours. *Prerequisite:* botany 103, agronomy 52, junior or senior standing in a plant science. Dr. Wiggans and Mr. Hopp. Alternate years, 1965-66.

281 through 284 HORTICULTURE SEMINAR (1-0) Presentation and discussion of papers on selected topics of horticultural interest by students and staff. Required of all seniors and graduate students. 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.

Mathematics COLLEGE OF TECHNOLOGY

Professors Riggs and Schoonmaker (Chairman); Associate Professors Dwork, Izzo, Lighthall, Moser and Nicholson; Assistant Professor Chamberlain; Instructors Bohmont, Burke, Dickson, 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 1964-65.

¹ The enrollment of students who desire eventually to take mathematics 12 will depend on their previous record and their score on a mathematics achievement 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.

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.

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 mathematics achievement test. Five hours. Not offered in 1964-65.

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 mathematics achievement 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:* departmental permission. Three hours.

¹ See footnote page 172.

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 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.

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. *Pre-requisite*: 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.

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, 1965-66.

228 NUMBER THEORY Divisibility, prime numbers, Diophantine equations, congruence of numbers, and methods of solving congruences. *Prerequisite*: 22. Three hours.

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, 1965-66.

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, 1965-66.

244 GALOIS THEORY The study of Galois theory leading to the insolvability of general quintic equations by radicals and theorems on constructions with ruler and compasses. *Prerequisite*: 243. Three hours. Alternate years, 1965-66.

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, 242 highly desirable. Three hours.

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 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.

Medical Technology

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. Coon and staff.

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 departmental permission. Dr. Coon and staff.

103 SEMINAR IN CLINICAL PATHOLOGY Limited to students of medical technology. Spring semester. Two hours. Dr. Coon and staff.

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

Colonel Robinson (Chairman); Majors Brodin, Cram, Hussey and Wenz; Captains Fene, Mahoney, Serven, Short and Strickler

1-2 U. S. ARMY AND HISTORY Organization for national defense; rifle functioning, maintenance and marksmanship; American military history; leadership laboratory. Two hours.

11-12 FUNDAMENTALS FOR SMALL UNIT LEADERS Military map and aerial photograph reading; United States Army and national security; introduction to

MUSIC

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 Keene, Schultz and Weinrich; Instructor Marberger; Part-time Instructors Auchter, Dahl and Kinsey

Students in all music courses are required to attend a designated portion of 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. Dr. Lidral.

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, Miss Marberger, and Mrs. Auchter.

105-106 THEORY II (2-3) Contrapuntal and harmonic dictation, advanced harmony, and elementary counterpoint. *Prerequisite:* 5-6. Three hours. Mr. Pappoutsakis and Mrs. Auchter.

201-202 ADVANCED HARMONY AND HARMONIC ANALYSIS Contemporary harmonic practice and sonority organizations; traditional and contemporary analysis. *Prerequisite*: 105-106. Three hours. Dr. Kinsey. Alternate years, 1964-65.

203, 204 ORCHESTRATION First semester: characteristics of instruments, arranging for orchestra; second semester: advanced exercises in orchestral scoring. *Prerequisite*: 105-106; 203 for 204. Three hours. Mr. Pappoutsakis.

¹ Sabbatical leave first semester 1963-64.

² Enrollment in music 5 will cancel credit for music 9 and music 1 or 2 will cancel music 10.

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205, 206 COUNTERPOINT First semester: tonal counterpoint; second semester: canon and fugue. *Prerequisite*: 105-106; 205 for 206. Three hours. Dr. Kinsey.

207 PEDAGOGY OF THEORY Objectives, viewpoints, content and specific approach to the organization and teaching of theory courses. *Prerequisite*: eighteen hours in Theory. Three hours. Dr. Lidral.

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. Kinsey.

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, 1965-66.

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. 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. Dr. Kinsey and Miss Marberger.

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 through 228 MUSIC LITERATURE Advanced studies in the literature of music. *Prerequisite:* 105-106 and 221, 222. Three hours. Mr. Bennett.

229 CHORAL LITERATURE A study of selected masterpieces of choral literature through analysis and performance. *Prerequisite*: twelve hours or the equivalent in voice. Two hours. Mr. Weinrich.

230 VOCAL LITERATURE A study of selected masterpieces of the vocal literature through analysis and performance. *Prerequisite:* twelve hours or the equivalent in voice. Two hours. Mr. Weinrich.

245-246 CHAMBER MUSIC LITERATURE study through analysis and performance of masterworks for small groups leading to public performance. *Prerequisite:* twelve hours or the equivalent in applied field and consent of instructor. One hour. Staff.

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281, 282, 283, 284 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. Dr. Kinsey.

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 students. 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 Dr. Lidral and Messrs. Keene and Schultz.

45, 46 CHAMBER MUSIC (0-2) Study and performance of masterworks for small groups. Outside practice required. *Prerequisite*: consent of instructor. One hour.¹ Messrs. Keene, Weinrich 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.

¹ Indicated courses in applied music may be taken for several years, but no B.A. candidate 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 music 1, 2 or 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

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.

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.

COLLEGE OF EDUCATION AND NURSING

Associate Professors Milligan (Chairman) and Woodruff²; Assistant Professors Davis, Demers, Emerson, Lombard, Palmer, Phillips, Schwalb and Thompson; Instructors Farrington, Marcou, Mour 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. Mrs. Rodgers.

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 and Lombard; Mrs. Palmer and Mrs. Rodgers.

¹ See footnote page 179.

² On leave 1963-64.

Nursing

PHILOSOPHY AND RELIGION

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.

121-122 INTERMEDIATE NURSING (4-20) Development of understandings, concepts and skills necessary to provide nursing care to the family and its members. One semester: laboratory experience with mothers and children through a family centered approach. One semester: laboratory experience with adults who face illnesses which necessitate short and long term adjustments in patterns of living. Nine hours. Staff.

123 MATERNAL-CHILD NURSING (5-20) Concepts and skills necessary for promotion of maternal and child health through a family centered approach. For special students only. Permission of instructor required. Ten hours. Misses Davis, Marcou and Schwalb.

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. Miss Thompson and Mrs. Mour.

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 Phillips.

Philosophy and Religion College of Arts and Sciences

Professor Dykhuizen (Chairman); Associate Professors Hall¹ and Sadler; Assistant Professors Beckett, Brkić and Kahn; Instructor Penner

Philosophy

1 INTRODUCTION TO PHILOSOPHY The chief problems of philosophy. Prerequisite: sophomore standing. Three hours. Drs. Dykhuizen, Beckett and Brkić.

2 LOGIC Principles and conditions of correct thinking with emphasis on the detection of fallacies of thought. Three hours. Dr. Beckett. ¹ On leave 1963-64.

PHILOSOPHY AND RELIGION

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, Beckett and Brkić.

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. Brkić.

107, 108 HISTORY OF PHILOSOPHY First semester: ancient and medieval philosophy; second seemster: 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. Brkić.

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. Brkić.

206 SOCIAL PHILOSOPHY The meanings and values inherent in social life. Prerequisite: 1 or 4; junior standing. Three hours. Dr. Brkić.

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. Brkić.

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. Staff.

PHILOSOPHY AND RELIGION

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. 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, 1964-65.

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 101; sophomore 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; sophomore standing. Three hours. Dr. Sadler.

122 MYTH AND RITUAL A critical analysis of the understanding of myth and ritual as religious structures of expression through symbol and act. Emphasis upon modern interpretations of myth and ritual, the relationship between myth and ritual, and their historical patterns. *Prerequisite:* 1, 2 or sociology 21; sophomore standing. Three hours. Mr. Penner.

201 METHODS OF UNDERSTANDING RELIGION Investigation of some major methodological contributions to the understanding and interpretation of religion since the appearance of the writings of Tylor and Frazer, concluding with an analysis of the contemporary phenomenological movement and its contribution to the methodology of religion. *Prerequisite:* 1, 2; junior standing. Three hours. Mr. Penner.

205, 206 AREA STUDIES IN RELIGION A study in depth of religion in a particular area of the modern world, for example, the Indian sub-continent, Japan, the Middle East, Latin America. *Prerequisite:* six hours in religion, or the consent of the instructor. Three hours. Staff.

211 CONTEMPORARY TRENDS Significant modern developments in the world religions. Prerequisite: 1, 2; junior standing. Three hours. Dr. Sadler.

281, 282 PROBLEMS IN THE HISTORY AND PHENOMENOLOGY OF RELIGION Topics of current concern to historians of religions. *Prerequisite*: 201 and senior standing; or consent of the instructor. Three hours. Staff.

Physical Education

COLLEGE OF EDUCATION AND NURSING

Associate Professors Evans and Post; Assistant Professors Christensen (Chairman for Men), Clifford, Lapointe, Leggett, Ruffer, Strassburg and Wills (Chairman for Women); Instructors Albert, Cochran, Coons, Farrell, Grant, Greig, Mays and Stauff

For requirements in physical education see page 53

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. Mr. Grant.

26 WATER SAFETY (2-2) American National Red Cross Water Safety Instructors' Training Course. Red Cross certificate for successful completion. *Prerequisite:* at least eighteen 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.

MEN

1-2 FRESHMAN PHYSICAL EDUCATION Two hours weekly. One credit.

11-12 SOPHOMORE PHYSICAL EDUCATION Two hours weekly. One credit.

A diversified seasonal sports offering 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: to develop knowledge of individual physical potentials and limitations, to provide a program of developmental activities, and to provide a program of individual and dual activities which will enable the participant to improve his level of competency.

The uniform required in this program consists of T-shirt, shorts, supporter, socks, sweat clothes and white tennis shoes. The T-shirts, shorts and sweat clothes *must* be obtained at the University Store. The other items of equipment may be purchased there also.

PHYSICS

WOMEN

1-2 FRESHMAN PHYSICAL EDUCATION Two hours weekly. One hour.

11-12 SOPHOMORE PHYSICAL EDUCATION Two hours weekly. One hour.

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 program is designed to provide a variety of activities to meet the needs and interests of women. The purpose of the program is: to develop an awareness of the physical self, to provide an opportunity to apply basic movement patterns in new sports and dance activities, and to increase proficiency in activities already learned.

The uniform required consists of regulation shorts and shirt, white rubbersoled tennis shoes, white ankle socks, black leotard and dance tights. All uniforms must be the regulation style and color.

COLLEGE OF ARTS AND SCIENCES

Professors Crowell (Chairman), Nyborg and Walbridge; Associate Professor Rooney; Assistant Professors Foley, Krizan, Sachs and Scarfone

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 mathematics 10 or 11; for physics 15, 14 and concurrent enrollment or credit in mathematics 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*: 15¹. Five hours. Staff.

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*: 15¹; mathematics 22. Four hours. Dr. Sachs.

¹ May be replaced by physics 5-6 with the consent of the department.

Physics

PHYSICS

116 MECHANICS (3-0) Mechanics of a particle, including central forces, forced and coupled vibrations; introductory rigid body motion. *Prerequisite*: 15¹; mathematics 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, chemistry 2, mathematics 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:* 16¹ and mathematics 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 equilibrium conditions in homogeneous and heterogeneous systems. Introduction to kinetic theory and statistical mechanics. *Prerequisite*: 15^1 and mathematics 22. Three hours. Dr. Foley. Alternate years, 1965-66.

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, fours. 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; mathematics 212 concurrently. Three hours. Dr. Nyborg.

225, 226, 227 SPECIAL TOPICS IN BIOLOGICAL PHYSICS For research students in the field of biological physics. Lectures, reports and directed readings related to the research of the department. *Prerequisite*: 122, mathematics 22 and departmental permission. Credit as arranged. Dr. Nyborg. Offered as occasion warrants.

231, 232, 233 SPECIAL TOPICS IN ACOUSTICS For research students in the field of acoustics. Lectures, reports and directed readings on problems of particular interest to the current research of the department. *Prerequisite:* 212 and departmental permission. Credit as arranged. Drs. Nyborg and Sachs. Offered as occasion warrants.

242 ELECTROMAGNETISM (3-2)² 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; mathematics 211. Four hours. Dr. Sachs.

251, 252, 253 SPECIAL TOPICS IN THE PHYSICS OF SURFACES For research students in the field of surface chemistry and physics. Background of particular interest to the current research of the department is presented and dis-

¹ May be replaced by physics 5-6 with the consent of the department.

² May be taken without laboratory for three hours credit.

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cussed. *Prerequisite*: 173, chemistry 142, mathematics 212 and departmental permission. Credit as arranged. Dr. Crowell. Offered as occasion warrants.

271, 272 ADVANCED MODERN PHYSICS $(3-2)^2$ Background and concepts of relativity, quantum theory, and nuclear physics. Topics selected from relativity, electron physics, atomic structure and spectra, wave mechanics, molecular and solid state physics, X-rays, nuclear physics. *Prerequisite:* 115 and 116 or electrical engineering 110 or chemistry 142 and mathematics 211. 271 for 272. Four hours. Drs. Foley and Scarfone.

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; mathematics 211. Three hours. Dr. Krizan. Alternate years, 1964-65.

276 SOLID STATE PHYSICS (3-0) 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; mathematics 212 or 220. Three hours. Dr. Foley. Alternate years, 1965-66.

301, 302 MATHEMATICAL PHYSICS Required of all graduate students in physics. Introduction to basic mathematical methods of theoretical physics; vector and tensor analysis, partial differential equations, orthogonal functions, complex variables and variational techniques presented with appropriate physical illustrations. *Prerequisite:* 212 and 242, or mathematics 213, 301 for 302. Three hours. Dr. Krizan.

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; mathematics 211 and either 220 or 212. Three hours. Dr. Krizan. Alternate years, 1964-65.

313 ELECTROMAGNETIC THEORY (3-0) Mathematical theory of electricity and magnetism. Field equations, energy and radiation. *Prerequisite*: 242, mathematics 211 and 212 or 220. Three hours. Dr. Crowell. Alternate years, 1965-66.

314 CLASSICAL ELECTRODYNAMICS A continuation of electromagnetic theory and the dynamics of charged particles in fields. *Prerequisite:* 313. Three hours. Dr. Scarfone. Alternate years 1965-66.

281 through 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. Staff.

361, 362 QUANTUM MECHANICS Principles of quantum mechanics including wave and matrix formulations. Applications to physical situations. Prerequisite: 212, 242, 272, 301 and 302 concurrently, 361 for 362. Three hours. Dr. Krizan. Alternate years, 1964-65.

391 through 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 Babcock, Haugen¹ (Chairman), G. T. Little, Nuquist² and Shen⁸; Associate Professors Flash, Gould, Hilberg and Miles; Assistant Professors Matthews, Sigler and Simon⁴; Instructors Berke, Eastman and Staron

1,2 AMERICAN GOVERNMENT First semester: state and local governments; Second semester: national government. Three hours. 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. 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.

61, 62 LOCAL GOVERNMENT First semester: government of counties, towns, and other rural units. Second semester: municipal government. Prerequisite: sophomore standing. Three hours. Mr. Berke.

71, 72 EUROPEAN GOVERNMENTS Political and legal ideas, institutions, and processes in the context of national life. First semester; emphasis on the United Kingdom and France; second semester; emphasis on the U.S.S.R. and Germany. *Prerequisite*: sophomore standing. Three hours. Mr. Staron.

74 CANADA 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, 1965-66.

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, 1965-66.

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 hours. Staff.

211, 212 POLITICAL THEORY First semester: development of political theory. Second semester: recent political theory. *Prerequisite:* 1, 2 or 11, 12; ¹ Sabbatical leave second semester 1964-65.

² Sabbatical leave second semester 1964-6). ² Sabbatical leave 1963-64.

- Sabballcal leave 190.

³ Visiting professor.

⁴ On leave second semester 1963-64.

POLITICAL SCIENCE

one other course or one sophomore course in social science; senior standing. Three hours. Drs. Babcock and Sigler.

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*: 221 or 241 or 263. Three hours. Dr. Sigler.

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 and parliamentary 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, 1965-66.

232 LAWMAKING AND PUBLIC POLICY Influence of the executive and problems of congressional and parliamentary 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, 1965-66.

241 PUBLIC ADMINISTRATION Introduction to the role of administration in government, theories of administrative organization and their application, the basic functions of administrative management, and problems of democratic control. *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, 1965-66.

256 INTERNATIONAL ADMINISTRATION Theory and practice in international agencies. *Prerequisite:* 51, 52; junior standing. Three hours. Dr. Little. Alternate years, 1964-65. 257 POLITICAL GEOGRAPHY The characteristics of the political unit as a geographic area; location, resources, and the distributional relationships of the variety of cultural or human factors as they have a bearing on the structure and functioning of the modern political unit; the relationship between geopolitics and political geography. *Prerequisite:* twelve hours in geography, history, and political science, or permission. Three hours. Dr. Miles.

263 STATE GOVERNMENT Processes of basic policy formulation and popular control, the nation-wide effort to improve governmental systems, the theoretical bases of reform movements, and trends in the treatment of governmental problems. *Prerequisite*: 1, 2 or 11, 12; one other course or one sophomore course in social science; junior standing. Three hours. Dr. Haugen.

264 STATE ADMINISTRATION The effect of expansion in state activity, problems in policy determination, the responsibility and accountability of officers and agencies, the organization and maintenance of central services and controls, and the impact of study and investigation by legislative committees, interim commissions, councils, and citizens groups. *Prerequisite:* 263 or 241. 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.

277 GOVERNMENT OF THE U.S.S.R. Theoretical background, structure and development of the Soviet state and the Communist party; economic, social and cultural policies; current changes. *Prerequisite*: 51 and 72 or history 243. Three hours. Dr. Daniels.

278 FOREIGN POLICY OF THE U.S.S.R. Theoretical background; history of Soviet foreign relations; development of the international Communist movement; current problems of East-West relations. *Prerequisite:* 51 and 72 or history 243. Three hours. Dr. Daniels.

279 COMPARATIVE PUBLIC ADMINISTRATION Universal applicability of basic administrative concepts evident in the administrative systems and environments in selected countries in Europe, the Commonwealth, and elsewhere; problems and developments in established and in emergent countries. *Prerequisite*: 241. Dr. Flash.

281, 282 SEMINAR Popular government and other selected topics; for senior and graduate students. *Prerequisite*: departmental permission. Three hours. Dr. Sigler.

291 through 294 READING AND RESEARCH For advanced undergraduates and graduate students. Three hours. Staff.

391 through 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. 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.

58 INTRODUCTORY AVIAN BIOLOGY (2-0) A study of the evolution of birds, including development from physiological and morphological viewpoints. The endocrinology and physiology of reproduction and possible correlations with morphological characters. Two hours. Dr. Donovan and 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 departmental permission. 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:* 1. Two hours. Staff. Alternate years, 1965-66.

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:* animal and dairy science 105; chemistry 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:* 1. One hour. 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. Staff.

391 through 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

PSYCHOLOGY

Psychology

COLLEGE OF ARTS AND SCIENCES

Professors Ansbacher, Chaplin (Chairman) and Murdock; Associate Professor Slamecka¹; 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. Staff.

21 SOCIAL PSYCHOLOGY A psychological approach to social phenomena with emphasis on the concepts and methods used in the study of the behavior of individuals in various social situations. Topics include: the nature, formation, and change of attitudes and norms; group dynamics; leadership; conformity; group conflict and social change; social movements; and language, symbols, and communication. *Prerequisite*: 1. 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; mathematics 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.

222 PHYSIOLOGICAL PSYCHOLOGY Relationships between psychological processes and the functions of the nervous system and endocrine glands. *Pre-requisite:* 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 adminstration 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. ¹ On leave 1963-64. 231 PERCEPTION (2-2) 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; 223. Three hours. Dr. Perrine.

232 EXPERIMENTAL SOCIAL PSYCHOLOGY (2-2) 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. *Pre-requisite:* 110, 223. One hour. 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. Staff.

391 through 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 Daggett (Chairman) and Johnston; Associate Professors Julow and Parker; Assistant Professors Hardin, Towne, Tuilier (visiting) and Ugalde; Instructors Danielson, Freer, Hanson, Heller, Hopkins, Sargeant, Sogor and Urso

French

1-2 ELEMENTARY FRENCH Grammar, pronunciation, composition, translation, dictations, and use of the spoken language, for those who present less 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. Daggett, 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.

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. Johnston. Alternate years, 1965-66.

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, 1965-66.

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 through 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 SPANISH Grammar, composition, and translation, practice in the spoken language. *Prerequisite*: departmental permission. Three hours. Dr. Julow.

11-12 INTERMEDIATE ITALIAN Grammar, composition, translation, and conversation. Prerequisite: 1-2 or its equivalent. Three hours. Dr. Johnston.

ROMANCE LANGUAGES

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 staff.

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 staff.

101 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*: 12 or permission of the instructor. Three hours. Mr. Ugalde.

102 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*: 101. Three hours. Mr. Ugalde.

105 READINGS IN SPANISH AMERICAN LITERATURE: COLONIAL PERIOD Outstanding works from the Colonial Period to *modernismo*. Prerequisite: Spanish 12. Three hours. Alternate years, 1964-65.

106 READINGS IN SPANISH AMERICAN LITERATURE: CONTEMPORARY PERIOD Outstanding works of the 20th Century. *Prerequisite*: 105. Three hours. Alternate years, 1964-65.

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.

201 SPANISH SYNTAX Theory of grammar and analysis of the structure of the language. Recommended for those who plan to teach Spanish. *Prerequisite*: 121-122. Three hours. Mr. Hardin. Alternate years, 1965-66.

202 MEDIEVAL SPANISH LITERATURE OUTStanding works from *El cantar de Mío Cid* to *La Celestina. Prerequisite:* 101-102 or 105-106. Three hours. Mr. Hardin. Alternate years, 1965-66.

213 SPANISH LITERATURE: GOLDEN AGE Selected readings from the novel, poetry, drama of the 16th and 17th centuries excluding Cervantes and the dramatists. *Prerequisite*: 101-102 or 105-106. Three hours. Mr. Ugalde. Alternate years, 1963-64.

214 SPANISH LITERATURE: CERVANTES Los entremeses, las novelas ejemplares, Don Quijote. Prerequisite: Spanish 213 or permission of the instructor. Three hours. Mr. Hardin.

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.

103-104 ADVANCED RUSSIAN Guided conversation, discussion, and advanced oral and written drill in Russian. Lectures, readings, and reports on works by classic and modern Russian writers. *Prerequisite*: 101-102. Three hours.

Sociology and Anthropology

COLLEGE OF ARTS AND SCIENCES

Professor Oren (Chairman); Assistant Professors Lewis, Maher and Scheans; Instructor Gulyas

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 A comparative analysis of conflicts and problems in modern American society focusing upon the sources of undesirable behavior in institutional conflict: this is an inquiry into the world of the outcast. It examines the recruitment and training of outcasts and how they manage their relations with "insiders." *Prerequisite:* 21. Three hours. Mr. Gulyas.

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.

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*: nine 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:* nine 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:* nine 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*: nine hours of sociology, including 101. Three hours. Mr. Maher.

221 CULTURE AND PERSONALITY Relationship of socialization to the sociocultural 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:* nine 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*: nine hours of sociology, including 101. Three hours. Dr. Scheans.

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228 SOCIAL ANTHROPOLOGY Evaluation of the comparative method in anthropology; its use in the formation of generalizations concerning the nature of society. *Prerequisite*: nine hours of sociology, including 101. Three hours. Dr. Scheans.

251 SOCIAL RESEARCH METHODS The logic and techniques of sociological inquiry. *Prerequisite:* twelve hours of sociology, and consent of instructor. Three hours. Staff.

282 SEMINAR Readings in current sociological literature to acquaint advanced students with contemporary issues in sociology. *Prerequisite:* twelve hours of sociology, senior standing, and consent of instructor. Three hours. Staff.

NOTE: For Introduction to Social Work, formerly Sociology 72, see Home Economics 170.

COLLEGE OF ARTS AND SCIENCES

Speech

Professors Huber (Chairman), Lewis and Luse; Associate Professor Wamboldt; Assistant Professors Feidner, Lefevre, London and Travis; Instructors Ackley and Ellenwood

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. 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. Staff.

12 ARGUMENTATION Inductive, deductive, casual, 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. Dr. London and Mr. Travis.

31 ORAL INTERPRETATION OF LITERATURE Principles and techniques of oral interpretation of literature; analysis and appreciation of poetry, prose and

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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, London, Luse, Wamboldt, and Mr. Feidner.

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.

61 INTRODUCTION TO BROADCASTING Radio and television broadcasting; development, structure, and use. Laboratory in speaking for broadcast and in operation of equipment. *Prerequisite:* 1. 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, 1964-65.

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 Lefevre.

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.

141 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:* 41 and permission of the instructor. Three hours. Mr. Feidner. Alternate years, 1964-65.

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, 1965-66.

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.

151 STAGECRAFT AND LIGHTING Lecture and laboratory in the physical elements of play production; analysis of theatre forms, study and application of basic elements of scenery construction and stage lighting. Three hours. Mr. Ackley.

161 RADIO AND TELEVISION BROADCASTING The social, psychological, historical, educational, and technical aspects of radio and television with laboratory

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work in announcing, interviewing, and production of various types of programs. *Prerequisite:* 61. 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:* 61. Three hours. Dr. Lewis.

163 BROADCAST MATERIALS A comprehensive survey and analysis of the style and content of all types of broadcast materials including selected critical and research works. Extensive use is made of source materials such as recordings, tapes, films and kinescopes. *Prerequisite*: 161. Three hours. Dr. Lewis.

171, 172 SPEECH CORRECTION First semester; the etiology, symptoms and principles of habilitation for voice disorders, cleft palate speech, stuttering; problems of foreign accent. Second semester; the etiology, symptoms and treatment of retardation of speech, including congenital aphasia, cerebral palsy; aphasia in adults. *Prerequisite*: 74. Three hours. Drs. Luse and Lefevre.

201 PHONETICS Analysis of speech sounds used in the International Phonetic Alphabet. Application to standards of English pronunciation and foreign dialect. *Prerequisite:* six hours, including 1. Three hours. Dr. Luse.

221 GENERAL SEMANTICS A study of the theory of communication, both verbal and non-verbal with an emphasis upon the factors of interpersonal and intrapersonal communication breakdowns. *Prerequisite:* six hours. Three hours. Mr. Travis.

254 SCENE DESIGN Lecture and laboratory. Analysis of the drama from the standpoint of its visual creation upon the stage; audience-stage relationships, styles of production. *Prerequisite*: 151. Three hours. Mr. Ackley. Alternate years, 1965-66.

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: twelve hours of speech and psychology, including 74. Dr. Falck.

275, 276 CLINICAL STUDY IN SPEECH DIAGNOSIS AND THERAPY Observation and practice in diagnosis and therapy of speech disorders. *Prerequisite:* 74. One or two hours. (May be repeated up to five credit hours.) Mr. Ellenwood.

294 SEMINAR FOR PROSPECTIVE TEACHERS OF SPEECH—A study of the resources, procedures and methods utilized in teaching the different areas of speech at the various instructional levels. *Prerequisite:* twelve hours, including 1 and 11. Three hours. Dr. London.

orld 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 EGE OF ARTS AND SCIENCES

Professors Lochhead¹ and Moody; Associate Professors Bell, Bond², Glade (Chairman), Potash and Torch; Assistant Professors 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. I and II. Dr. Torch and staff.

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.⁸ Three hours. Dr. Chipman.

21 ORGANIC EVOLUTION A nonlaboratory 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.

¹ Sabbatical leave second semester 1963-64.

² Sabbatical leave second semester 1964-65.

³ May be taken for credit in the College of Arts and Sciences but does not satisfy the requirement of a course in laboratory science for students concentrating in nonscience fields, nor the requirement of a course in biology for premedical and predental students. Students will not receive credit for both this course and zoology 42.

ZOOLOGY

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. Chipman.

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.

108 GENERAL ENTOMOLOGY (2-4) Study of insects; morphology, physiology, and evolution. Prerequisite: 1, and 2 or 41. Four hours. I. Dr. Potash.

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, 1964-65.

115 HEREDITY Principles of inheritance and their physical basis. *Pre-requisite:* 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 108; 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, 1965-66.

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. Pre-

ZOOLOGY

requisite: 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 1965-66.

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; chemistry 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. Prerequisite: 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; chemistry 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; chemistry 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, 1965-66.

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, 1964-65.

281-282 SEMINAR Review and discussion of current zoological research. Required of graduate students and seniors in zoological research programs; open to others by special permission only. One hour. 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. 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.

The Alumni Council

Officers of the Council consist of a president, vice-president, secretary, and treasurer. The president and vice-president are elected biennially, and neither office may be held by the same individual for more than one term.

Council membership represents clubs, classes and areas. Members-at-large are nominated by the Nominating Committee as deemed necessary, and are elected for a term of one year. Vacancies may be filled in between elections by appointment of the Council President.

The officers of the Council:

Honorary: John T. Fey, President of the University. Ex-officio: Lawrence H. Averill, '27, 1532 Tottenham 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. Council Secretary: Mrs. Constance Dena Zolotas, '32, Alumni House, University of Vermont.
Enrollment Statistics

Summary of Resident Enrollment

	F	all Seme	ster, 1963-	-64			
The Undergraduate Colleges:				M	en	Women	Total
Arts and Sciences				14	86	541	2027
Education and Nursing		79	500	579			
Technology	3	64	88	452			
Agriculture and Home I	1	81	193	374			
TOTAL	21	10	1322	3432			
College of Medicine				1;	77	9	186
Graduate College				20)4	47	251
Unclassified					52	50	112
School of Dental Hygiene					0	36	36
TOTAL	255	13	1464	4017			
Undergraduate Colleges by Cl	asses:			Me	n	Women	Total
Senior				42	22	259	681
Junior				48	37	320	807
Sophomore				51	5	337	852
Freshman				68	6	406	1092
Total				211	0	1322	3432
		In-Sta	te	c	Out of State		
	М	F	Т	М	F	Т	Total
Arts and Sciences	541	319	860	94 5	222	1167	2027
Technology	239	38	277	125	50	175	452
Education and Nursing	60	264	324	19	236	255	579
Agric. and Home Economics	115	102	217	66	91	157	374
Graduate	122	27	149	82	20	102	251
Medicine	41	3	44	136	6	142	186
Unclassified	54	46	100	8	4	12	112
Dental Hygiene	0	23	23	0	13	13	36
TOTAL	1172	822	1994	1381	642	2023	4017
Gran	d Total	-FALL	Semester,	1963-401	17		

ENROLLMENT STATISTICS

Enrollment by Divisions

I. COLLEGE OF ARTS AND SCIENCES

		In-State	?	0	Total		
	М	F	Т	М	F	Т	In & Out
Class of 1964	103	45	148	203	65	268	416
Class of 1965	141	67	208	223	70	293	501
Class of 1966	157	91	248	221	50	271	519
Class of 1967	140	140 116	256	298	37	335	591
TOTAL	541	319	860	945	222	1167	2027
By Curricula:	м	F	T				
Liberal Arts	871	487	1358				
Premedical/Dental	334	34	368				
Commerce and Economics	281	20	301				
TOTAL	1486	541	2027				

II. COLLEGE OF TECHNOLOGY

	In-State		C	Total		
М	F	T	М	F	Т	In & Out
54	10	64	16	7	23	87
42	6	48	16	8	24	72
51	4	55	31	14	45	100
92	18	110	62	21	83	193
239	38	277	125	50	175	452
	M 54 42 51 92 239	In-State M F 54 10 42 6 51 4 92 18 239 38	$ \begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	In-State Out-of-St M F T M F 54 10 64 16 7 42 6 48 16 8 51 4 55 31 14 92 18 110 62 21 239 38 277 125 50	In-State Out-of-State M F T M F T 54 10 64 16 7 23 42 6 48 16 8 24 51 4 55 31 14 24 92 18 110 62 21 83 239 38 277 125 50 175

By Curricula:	Men	Wome n	Total
Engineering-undecided	6	0	6
Civil Engineering	92	0	92
Electrical Engineering	82,	0	82
Management Engineering	21	0	21
Mathematics	34	21	55
Mechanical Engineering	92	0	92
Professional Chemistry	34	10	44
Medical Technology	3	57	60
	······		
TOTAL	364	88	452

III. College of Education and Nursing

		In-State		C	Total			
	М	F	Т	М	F	T	In & Out	
Class of 1964	10	44	54	3	53	56	110	
Class of 1965	19	68	87	1	50	51	138	
Class of 1966	10	65	75	4	67	71	146	
Class of 1967	21	87	108	11	66	77	185	
Total	60	264	324	19	236	255	579	
By Curricula:	Men	Women	Total					
Elementary	2	184	186					
Secondary	69	130	199					
Business	1	16	17					
Music	7	15	22					
Nursing	0	155	155					
Total	79	500	579					

ENROLLMENT STATISTICS

		In-State		Ou	Out-of-State				
	М	F	Т	М	F	Т	In & Out		
Class of 1964	27	17	44	6	18	24	68		
Class of 1965	31	29	60	14	22	36	96		
Class of 1966	23	19	42	18	27	45	87		
Class of 1967	34	37	71	28	24	\$2	123		
Total	115	102	217	66	91	157	374		
By Curricula:	Men	Women	Total						
Agriculture (General)	104	11	115						
Agricultural Engineering	6	0	6						
Pre-Forestry	44	0	44						
Pre-Veterinary	27	5	32						
Home Economics		177	177						
TOTAL	181	193	374						
V. GRADUATE COLLEGE				Men	W	omen	Total		
In-State				122		27	149		
Out-of-State				82		20	102		
TOTAL				204	-	47	251		
VI. COLLEGE OF MEDICINE		In-State		Out	Out-of-State				
	М	F	т	М	F	T	In & Out		
Class of 1964	8	0	8	36	. 1	37	45		
Class of 1965	11	2	13	30	1	31	44		
Class of 1966	9	1	10	36	1 .	37	47		
Class of 1967	13	0	13	34	3	37	50		
TOTAL	41	3	44	136	6	142	186		
VII. UNCLASSIFIED DIVISION (SP	ECIAL	Student	s)						
		In-State		Out	-of-Sta	te	Total		
	М	F	Т	М	F	Т	In & Out		
Arts and Sciences	22	21	43	. 5	1	6	49		
Education and Nursing	11	16	27	2	2	4	31		
Technology	12	2	14	1	1	2	16		
Agric. and Home Economics	9	7	16	0	0	0	16		
TOTAL	54	46	100	8	4	12	112		
VIII. SCHOOL OF DENTAL HYGI	INE								
Second Year				8		7	15		
First Year				15		6	21		
TOTAL				23		13	36		
IX. UNDERGRADUATE MARRIED S	TUDEN	ITS					Percent		
-a -a -a-a-a-a-a-a-a-a-a-a-a-a-a-a-a-		М		F	T		of Class		
Class of 1964		54		18	72		10.6%		
Class of 1965		42		11	53		6.6%		
Class of 1966		15		4	19		2.2%		
Class 01 196/		8		2	10		0.9%		
Total		119		35	154		4.5%		

IV. COLLEGE OF AGRICULTURE AND HOME ECONOMICS



JUNE, 1963

School of Dental Hygiene

Nancy Jean Best, St. Albans Mina Joan Carter, Newport Patricia Ann Davison, Brattleboro Judith Ann Geuther, Horsham, Pa. Gail Louise Greenslet, Ludlow *Carol Ann Greer, Poultney Margaret Mary Healy, Barton Ruth Catherine Heyse, Valley Stream, N. Y. Rae Marie Highter, Montpelier Marian Sarah Kittell, Richford Margaret Rose Lamb, Barre Rebecca Gedney Marks, North Haven, Conn. Martha Ann Mason, Augusta, Me. Louise-Ann Nichols, Canajoharie, N. Y. Nancy Ann Nichols, Dorset Nancy Lee Ogden, Hightstown, N. J. Arlene Eva Poglitsch, Bristol, Conn. Mary Anne Proulx, Plattsburgh, N. Y. Suzanne Rex, Winthrop, Mass.

College of Education and Nursing

Bachelor of Science in Nursing

Margot Ann Bellin, Great Neck, N. Y. Marcia Coleman Bickel, Westfield, N. J. Bargara Alice Boyce, Plantsville, Conn. Arlene Shutts Cleary, cum laude, Bennington Hanna Louise Crane, Shelburne Falls, Mass. Rita Carol Day, Burlington Mary Todd Donaldson, Westfield, N. J. Nancy Whitcomb Dowd, Derby Nancy Elaine Dutton, Burlington Susan Hope Eatcon, cum laude, Middlebury Coral Gillespie, Bedford, Mass. Susan Griswold, Clifton Springs, N. Y. Joan Ellen Hindson, Albany, N. Y. Vivian Lynne James, Central Valley, N. Y. Mary Ardee Langlois, Newburyport, Mass. Ellen Louise Lawrence, St. Johnsbury Janet Joyce McLaughlin, Burlington Mary Ann Mingolla, Barre Rolaine Alice Morck, Glenn Rock, N. J. Margaret Taylor Murch, Milton, Mass. Carole Ann Nagelsmith, New York, N. Y. †Joanne Gregar Nason, Chester Maureen Jacqueline Oliver, St. Johnsbury Mary Louise Palmer, Pownal Sara Jackson Simpson, St. Johnsbury Sarah Martin Standefer, Burlington †Paula Stevenson, Proctor †Kathleen Mawn Tabor, St. Albans Gretchen Van Raalte, Milton, Mass. Leslie Van Raalte, Milton, Mass.

Bachelor of Science in Business Education

Barbara Judd, Bayonne, N. J.

*Mary Ann McMorrow, Poultney

Bachelor of Science in Music Education

Mona Marjorie Ford, Northfield Sandra Jane Stearns, Bethel Lavel Parker Zelazny, Pittsford

* As of October 20, 1962. † As of February 23, 1963.

Bachelor of Science in Education

Neal Munroe Adams, Union, N. J. James Scott Astle, Lyndon Center Lorraine Claire Beaudoin, Craftsbury Judith Bell, Burlington Betty Bergman, Burlington Lucille Frances Blau, Woodmere, N. Y. Philip Omer Bouchard, Northfield Barbara Jean Brunjes, New York, N. Y. Caroline Fuller Chevalier, Brattleboro Carolyn Rae Child, Malone, N. Y. Ann Toni Citarella, Red Bank, N. J. Virginia Clark, Waltham, Mass. Barbara Joyce Clayton, Bennington Christian Nicholas Collins, Putney Margaret Mumford Collins, West Rutland Joyce Victoria Drwiega, Cedar Grove, N. J. Barbara Ann Dutton, Roseland, N. J. *Merle Ashe Dutton, Burlington Sally Herschede Duval, Essex Junction +Thomas Woodrow Eck, Jr., Chelmsford, Mass. Monica Simon Farrington, Burlington Joyce Marie Flesher, Syracuse, N. Y. Marion Force, West Caldwell, N. J. *Patricia Purcell Fuller, Burlington Virginia Mae Gadapee, St. Johnsbury Roberta Hubbard Garcia, Morrisville, Pa. Marilyn Joanne Gardner, Fairhaven, Mass. Judith Anne Grimes, West Hartford, Conn. Sally Ann Hall, Paterson, N. J. Polly Anne Hare, White Plains, N. Y. Paul Gordon Henry, Montpelier Melissa Stafford Hertzel, Glen Rock, N. J. Janet Adella Hill, East Brookfield Patricia Houston, St. Albans Thelma Jean Houston, Craftsbury †Rachel Clark Howes, Montpelier Anne Helen Hudson, New York, N. Y. Beverly Jean Hume, Scarsdale, N. Y. Jacqueline Diane Hussey, Waccabuc, N. Y. Gail Hutchinson, St. Albans Joanne Evelyn Juel, West Englewood, N. J.

Ann Josselyn Keilty, Rutland Elinor Margaret Knandel, cum laude, Glen Rock, N. J. Isabel Phoebe Lent, South Strafford Gertrude Hallock Leskowitz, Burlington Norma Lynda Martin, Alburg Charles Owen McCuin, Highgate Lawrence Franklin McNutt, Burlington Rosemary Louise Mello, New Bedford, Mass. Sandra Perler Meridy, West Hartford, Conn. Diane MacMannus Milliken, West Hartford, Conn. Elizabeth Anne Miner, Woodstock Theda Thompson Moran, New Orleans, La. Sara Anne Moreau, Burlington Joel Francis Morris, Brooklyn, N. Y. Shirley Anne Mumford, Westfield, N. J. Helen Williams Newton, Williamsville Edith Philomena Olympia, Newburgh, N. Y. †Susan Oshlag, New Rochelle, N. Y. *Charlotte Clark Patterson, Shelburne Jacqueline Flick Peterson, Valley Stream, N. Y. *Edith Kemp Pitts, Burlington Allen Roy Ploof, Highgate Center Hedy Margaret Ries, Maplewood, N. J. Anne Janet Rowell, Hardwick †Nancy Schwartz Rudman, West Hartford, Conn. Sandra Jean Sargent, Windsor [†]Susan Schwartz, West Hartford, Conn. Richard Allan Smith, St. Johnsbury *Doris Arnold Somaini, Burlington Kathleen Louise Uttendorfer, West Hempstead, N. Y. Marilyn Ruth Van Guilder, Ludlow Robert Edward Villemaire, Winooski Antoinette Maria Vince, North Bennington Grace Lamson Waldo, Randolph Center Georgene Elsie Walter, Rutherford, N. J. Ann Hinsdale Whitman, Richmond

College of Technology

Bachelor of Science in Chemistry

Helen Hutchinson Lytle, Thomaston, Conn.

Bachelor of Science in Commerce and Economics

Bruce Atkins Adams, Saxtons River Richard Herman Ader, New York, N. Y. Frank Charles Amato, Oceanside, N. Y. *Arthur Stephen Ashton, Sheldon *Charles Elliott Beardsley, Westport, Conn. Steven Theodore Bernstein, New York, N. Y. Stanley William Berry, Ludlow *Arthur Weldon Cannon, Rouses Point, N. Y. * As of October 20, 1962.

+ As of February 23, 1963.

*Nicki Hanson Carmolli, Barre Janet Christenson, Northampton, Mass. John Graham Clark, Atherton, Calif. James Baker Conant, Johnstown, N. Y. William John Costello, West Rutland *Louis Dellefave, Jr., Seneca Falls, N. Y.

*Robert Emmet Dempsey, Jr., Fayetteville, N. Y. James Lionel Durrell, Northfield Warren Francis Ellis, Burlington Wayne Hart Erla, Burlington †Rosindo Antonio Geerman, San Nicholas Aruba, Netherlands Antilles David Robert Haas, New York, N. Y. Paul Malcolm Harris, Mt. Kisco, N. Y. Lester Wilfred Hodgdon, Burlington Carlton Jonathan Houghton, Essex Junction Charles Bernard Jackson, Richford John Vladimir Leskowitz, Burlington Martin Donald Lewis, Rockville Center, N. Y. Charles Douglas Lowenstein, South Orange, N. J. Thomas Carl Luck, Burlington Keyle Ralph Mabin, Troy, N. Y. Raouf Elias Malak, Burlington Gerard Allen McGee, Croton-on-Hudson, N. Y. John Pacheco Mello, New Bedford, Mass. Kenneth James Miller, Great Neck, N. Y.

Daniel Thomas Monte, Barre

Bachelor of Science in Civil Engineering

Thomas Mitchell Allen, Tannersville, N. Y. Joseph Edward Barcomb, East Montpelier John Teachout Booth, Essex Junction Thomas Edward Chase, Essex Center Albert Patrick Farrington, Burlington Myron Leach Jones, Waitsfield

Bachelor of Science in Electrical Engineering

- Richard Harold Bruce, Springfield
- Abraham Nelson Daudelin, Jr., cum laude, Jericho
- Anthony Joseph Desany, Burlington
- Alan Otis Hefflon, Jamaica
- Roger Edwin Holbrook, Hartford
- Eugene Joseph Letourneau, East Barre
- *Neil Stevens Marples, Whitstone, N. Y.

Bachelor of Science in Management Engineering

Douglas Bennett Clark, Barre	†David Hoagsland Shader, Brielle, N. J.
Robert Patrick Donahue, Manchester, Conn.	Frank Redden West, Yulan, N. Y.
†Joseph Kramer Locke, Rochester, N. Y.	Dudley Rood Wheeler, Richmond

Bachelor of Science in Mechanical Engineering

Joseph Victor Agresta, Bennington James Willard Card, Oradell, N. J. William Leon Germain, Winooski Donald John Gerry, Winooski Joseph Adam Godrick, cum laude, Brandon Gary Warner Green, Burlington * As of October 20, 1962. + As of February 23, 1963.

Albert Hermel LeBlanc, Williamstown †George Martin Macary, Waterbury, Conn. †Louis Henry Miner, Burlington David Porter Perrin, Burlington * Jean Howard Raas, Morris Plains, N. J. Michael Robert Yendrzeski, South Burlington

Edward Joseph Nadeau, North Bennington David Roger Nelson, Barrington, R. I. William James Osborn, III, Darien, Conn. Claude Joseph Paquette, Beecher Falls Garth Lewis Peterson, Waterbury Center Jeffrey Blake Pollock, Detroit, Mich. Charles Etienne Poulin, Jr., Newport John Rolla Pratt, Chelsea Ronald Wade Purdum, Queens Village, N. Y. Judith Parant Rooney, Jeffersonville Michael Martin Rosenbaum, Maplewood, N. J. * James Howard Rosenblum, Mamaroneck, N. Y. Jay Sidney Sheinfeld, Keene, N. H. Gilbert Wayne Smith, Orwell Sidney Robert Smith, Stockbridge, Mass. Charles Stewart Sumner, St. Johnsbury Harold Norton Trombley, Bristol Joyce Ann Webster, Island Pond John Stark White, Ridgewood, N. J. John Joseph Wojcik, Proctor

- Donald Gilbert Wright, Burlington
- D. Gregory Pierce, St. Albans Fred David Robinson, Burlington
 - +Paul James Sausville, Bennington Thomas Charles Shepard, Burlington †Ronald Leon Stancliff, Morrisville Howard Robert Young, Pawlet

Paul Steven Naski, Bellows Falls

Stuart B. Rauch, Jamaica, N. Y.

James Earl Selleck, Middlebury

Jon Ovitt Stanley, North Hero

Arthur Henry Stringer, Shelburne

William Anton Sandrin, North Bennington

Arnold Howard Turner, cum laude, Middlesex

DEGREES GRANTED

Bachelor of Science in Mathematics

John Edward Desautels, Burlington John Joseph Salengo, West Rutland Stanley Joseph Zielinski, *cum laude*, Bellows Falls

Bachelor of Science in Medical Technology

Nora Ellen Barclay, Branford, Conn. Marianne Bayley, Winchester, Mass. Phyllis G. Burbank, West Burke Carol Ann Fischer, Burlington Marie Elena Guyer, St. Johnsbury Martha Temple Hakins, Rutland Mary Ellen LaVoice, Rutland Barbara Ruth Lord, Montpelier Inese Ringmanis, Dumont, N. J. Rita Marie St. Amand, St. Albans Susan Lee Tinsley, Burlington *Janice Annette Wightman, Vergennes

College of Agriculture and Home Economics

Bachelor of Science in Agriculture

James Wesley Ameden, Londonderry Richard Allan Angney, Arlington Duane Douglas Barber, Bradford, R. I. Harold Edward Billings, North Clarendon Robert Carroll Brown, Morrisville †William David Burke, Middlebury Donald William Burton, Middlebury James Kermit Bushey, Milton Peter Howard Carr, Wallingford John Thomas Cooper, Westfield, Mass. James Thomas Davenport, Jr., Wallingford Allen Frederick Gear, Montpelier Lawrence Gerard Hamel, Orleans †Carl Louis Hausler, Waynesboro, Va. Robert Walter Hazelton, Londonderry David Aaron Holden, Brookfield Ivan Frederick Lawton, Newport Donald James McFeeters, Sheldon Krisdean Hunt Moore, Fleetwood, Pa. William Burton Musson, Gilbertsville, N. Y. Neil Hugh Pelsue, Jr., Townshend †Larry Kinson Pillsbury, Burlington Lewis James Sherman, West Rupert Timothy James Simpson, Lyndonville Natale Lavine Smith, Pawlet Harry Edward Sommer, Chatham, N. Y. Fred George Stone, Manchester Center †Hall Thompson, Woodstock John Harvey Waterhouse, South Burlington

Bachelor of Science in Agricultural Engineering

Robert Leo Hansen, West Brattleboro *George Crawford Randall, Arlington +Ronald Ralph Wilson, Essex Junction

Bachelor of Science in Home Economics

Constance Phyllis Anderson, Brandon Anita Mae Boright, Morrisville Patricia Eileen Boyce, Springfield †Janet Ruth Clayton, Burlington Lola Jean de Girolamo, West Orange, N. J. Barbara Helen Driver, Binghamton, N. Y. Hope Ellis, Tiverton, R. I. Alexandra Ann Fryzell, West Rutland †Louise Bowman Gallagher, Northfield Patricia Marie Hess, Arlington Janice Sylvia Jackson, South Hero Ann Elizabeth Johnston, Montpelier Phyllis Claire Koledo, Springfield

* As of October 20, 1962. † As of February 23, 1963. Jane Hackett Ledden, West Danville Peggy Ann Lund, Bloomfield, N. J. †Elise Moeller, Tenafly, N. J. Eugenia Rideout, Shrewsbury, Mass. Carolyn Anne Risley, Torrington, Conn. Betty Lou Sherry, Danville Carol Susan Smith, Keeseville, N. Y. Elaine Carol Stauber, Great Neck, N. Y. Marjorie Elizabeth Tabor, Burlington Judith Ann Tooker, Old Lyme, Conn. Selenda Margot Whitney, South Newbury Patricia Durlandt Wood, Middlebury Maureen Zwerling, New York, N. Y.

College of Arts and Sciences

Bachelor of Arts

Sharon B. Comey, Massapequa Park, N. Y. Ira Robert Adelman, Poughkeepsie, N. Y. James Grant Barclay Allardice, Brick Town, Patricia Conwit, Tenafly, N. J. James Edward Cooke, Poultney *William Alfred Coons, Silver Springs, Md. N. J. Harvey Alpart, Albany, N. Y. Michael Costello, Brooklyn, N. Y. *Arthur Allen Altholz, New York, N. Y. Robert John Cousins, Kingston, N. Y. George Allan Cronk, Jr., Burlington Marshall Charles Armstrong, East Bethel Joyce Edith Babbitt, Barre William Richard Cullen, Hamden, Conn. Barbara Claire Babcock, Montpelier Rodney John Badgewick, Rutland Brenda Marie Cummings, Somerville, Mass. Robert Edward Curtin, Needham, Mass. Michael Alan Baker, West Orange, N. J. †Philip Meredith Dantzscher, Manhasset, N. Y. * Joyce Elizabeth Spooner Ballard, Randolph Wendy A. David, Flushing, N. Y. Frank Rizzo DeCavalcante, Princeton, N. J. Brenda-Lou Burpee, Bristol Daniel Batonick, Shaftsbury Lorraine Frances Reilly DeNicola, magna cum Joel Jay Bauer, cum laude, Brooklyn, N. Y. Rose Benedict Beagan, Cranston, R. I. laude, Rutland Benjamin Becton, Brooklyn, N. Y. Mary Louise Dente, Barre Jeffrey Spencer Bennett, Tampa, Fla. *Robert Lane Dente, Barre Richard Henry Diefenbach, Tenafly, N. J. Charlie Arthur Bentley, Manchester Center Charles Whitney Diggle, III, Randolph Robert William Bernard, Burlington Stanley Dober, Bridgeport, Conn. Francis William Billado, Jr., Burlington Peter Lockwood Dooley, Fairlee * John Thomas Black, Hyde Park Charles Joseph Douglas, Barre Susan Elizabeth Black, Bellows Falls Robert George Blaiklock, Glen Ridge, N. J. Michael Edward Effron, Poughkeepsie, N. Y. Frank Augustus Bolden, Brooklyn, N. Y. *Thomas Farell Eldridge, Rouses Point, N. Y. †Christine Borgmann, Scarsdale, N. Y. Judith Anne Evans, Wells River *James Sherwood Bowers, North Troy Terrance Michael Evarts, Vergennes †Frank Edward Boynton, Florence, Mass. Jeffrey Alan Falk, Scarsdale, N. Y. David Ennis Farber, Worcester, Mass. +Harlan William Bradford, East Weymouth, Barbara Jean Dillow Fiddler, Pittsfield, Mass. Mass. Douglas Jay Filler, Great Neck, N. Y. Robert Stephen Brandschain, Elkins Park, Pa. †David Z. Brandstein, New York, N. Y. Neil Benson Fink, Bayonne, N. J. Peter Michael Brem, Worcester, Mass. Leon Fischer, New York, N. Y. Terence Sean Fitzgerald, St. Albans +Norman Doric Brochu, East Hardwick †Wayne Hazen Fogg, White River Junction Craig Edward Brodie, Orlando, Fla. * Joseph William Ford, Methuen, Mass. +Ashley Wilson Brown, Burlington George Anthony Fortier, Barre Carl Leroy Buffum, Jr., Manchester Center *Maurille Joseph Fournier, Jr., Barre Sylvia Jeanne Bugbee, Randolph Thomas Francis Gale, Southampton, N. Y. Mary Bunting, Cambridge, Mass. *Keith Winthrop Gallup, Burlington Richard Bailey Burgess, Needham, Mass. [†]Sandra Jean Cameron, East Barre Louis Garcia, Jr., Burlington Donald Maurice Gaskell, West Burke Edith Thompson Candee, South Burlington Lois Barbara Gaspic, West Hartford, Conn. Gary Lee Carrier, Brattleboro †John Slavomir Carterson, Rochester, N. Y. William Cushing Ghiorse, Braintree, Mass. David Lee Gibbs, Wardsboro Richard Louis Cassani, Barre Miriam Gladstone, Burlington Gerald J. Cassidy, Hopkinton, Mass. Lee Anne Cauley, Pleasantville, N. Y. Todd Mitchell Gladstone, Burlington Norman Martin Chatzinoff, Riverdale, N. Y. Alfred Seymour Glazier, Hartford, Conn. Warren Richard Cheever, Springfield Kae Gleason, East Dorset Jay Barnett Goldblatt, New York, N. Y. Paul Niesen Chervin, Worcester, Mass. †John Raymond Goodwin, Burlington *Richard Edgar Chiott, Burlington William George Cioffi, Burlington David Charles Gouchoe, Rutland Stephen Edward Clark, St. Johnsbury Lawrence Peter Cohen, Schenectady, N. Y. Charles Edward Goudey, Burlington Keith Alan Gould, Wilder John Gar Graff, Burlington Lester Stephen Cohen, Brookline, Mass. Michael David Cohen, Essex Junction Richard Alan Greenberg, Fairfield, Conn. * As of October 20, 1962.

+ As of February 23, 1963.

Charity Ann Greenwood, Beebe Plains Emilie Ann Gruppe, Gloucester, Mass. Seung Bok Hahn, Seoul, Korea James Paul Hammond, Jr., Old Bennington Margaret Ann Hanbridge, Essex Junction Richard Bruce Harris, Worcester, Mass. Guy Duane Haskell, Groton John Francis Hathorn, White River Junction Miles Sanford Heller, Albany, N. Y. Barbara Mary Hentz, Springfield Evelyn Laing Hicks, Brattleboro Rodney Gilbert Hill, Newport Center Jerome Kenneth Hoffman, Brooklyn, N. Y. Lloyd Ray Hoffman, Newark, N. J. Robert Lewis Hoffman, West Hartford, Conn. Chesley Hamilton Horton, Mendon Raymond John Houle, Burlington Susan Rachel Houston, Craftsbury 'Harland Wray Howard, Burlington Richard Miner Hubbard, Middlebury * Jean Rowena Humphreys Hults, West Rutland Martha Collins Russell Humphreys, Rutland Richard Linton January, Colchester Peter Anthony Jellinek, Larchmont, N. Y. Allen Theodore Jenkins, Braintree, Mass. Gwendolyn Rae Johnson, Allentown, Pa. Shelley Elizabeth Johnson, Northfield Theodore Winthrop Jones, Jr., Cheshire, Conn. Linda Gail Joseph, Howard Beach, N. Y. Caroline Frances Josephs, Worcester, Mass. Gary Herbert Kaye, Ardsley, N. Y. Joan Ellen Pickel Kendall, Orleans *Don Edwin Kerr, Burlington Gretchen Kiphuth, Pittsburgh, Pa. †Sok Nam Ko, Burlington Barbara Helen Kohl, Buffalo, N. Y. †Sandra Lea Kornstedt, Bristol, Pa. Steven Elliot Krintzman, Worcester, Mass. Mark Ira Kroner, Newton, Mass. Benjamin Arthur Kropsky, Burlington Lorraine Dale Kugell, Winthrop, Mass. Jane Marie Lague, Newport James Peter Lanctot, Burlington Arnold John LaRock, Jr., Forestdale Robert John Lavallee, Winooski Edward Joseph Layden, Jr., Rutland Susan Ann Laythe, Middlebury Alan Irving Levenson, Warwick, R. I. James Benjamin Levett, New Haven, Conn. Lewis Barton Levine, Hudson, N. Y. Phyllis Stark Levine, Swampscott, Mass. Harry Bernard Levins, Jacksonville, Ill. Burton Edward Levy, cum laude, Douglaston, N. Y. Kenneth Loudon Lewis, Huntington, N. Y. William Harrison Lewis, West Rupert Philip Malcolm Lintilhac, Stowe Betsy Rae Lisman, Burlington

- Carmen Joseph Loffredo, Schenectady, N. Y.
- * As of October 20, 1962.
- * As of February 23, 1963.

- A. Peter Low, New York, N. Y.
- David Read Lyddon, Rochester, N. Y.
- Thomas Joseph Lyons, Montpelier
- Ronald Smith McGurn, Bridgeport, Conn.
- †Caroline Naomi McKeighan, Rupert
- Phillip Charles Mahoney, Springfield
- *Stuart Michael Makowsky, Brooklyn, N. Y.
- *Forrest Clifton George Manning, Sunnyvale, Calif.
- Douglas Lee Marks, Manchester Depot
- Russell Jeffrey Marx, East Meadow, N. Y.
- *Owen Danforth Mathewson, Montpelier
- Ann Daigle Maynes, Woodstock
- Frederica Anne Means, Springfield
- Pamela Jane Middleton, cum laude, Webster, N. Y.
- Arlene Ruth Miele, Ludlow
- Mary Jane Milne, Barre
- * John Peter Monte, Barre
- *Stephen Gard Moore, Manchester, N. H.
- †Michael Adrian Nagurney, Stamford, Conn.
- Richard Joel Nalin, New York, N. Y.
- Thomas Joseph Neapolitano, Schenectady, N. Y.
- *James Albert Nelson, St. Johnsbury
- Anne Maureen Larrow Newman, cum laude, Burlington
- David Huntington Nichols, Burlington
- Natalie Nisbet, Springfield
- Donald Hill Noble, North Tarrytown, N. Y.
- Ruth May Nunamaker, New Hope, Pa.
- Maryann Elizabeth O'Brien, North Quincy, Mass.
- William David Odin, Laurelton, N. Y.
- Donald Vincent Oprendek, West Rutland
- *David Alden Osborne, Springfield
- Frank Joseph Pagliaro, Jr., New York, N. Y.
- Nenos Arestedes Papageorgopoulos, Windsor
- Margaret Ellen Parker, Pleasantville, N. Y.
- *Richard Allan Paul, Jr., Winooski
- Arnold Gene Pellegrini, Barre
- Richard Robert Peloquin, cum laude, Holyoke, Mass.
- Carleen Ruth Otis Pelsue, Townshend
- Devora Perlman, Springfield, Mass.
- *Carol Sue Phillips, Burlington
- Susan Lynn Pine, Montpelier
- Gregory Bruno Politi, Barre
- Joan Stella Powell, Forest Hills, N. Y.
- Paul David Price, Bradford
- Edward Rabinowitz, Kew Gardens, N. Y.
- Elizabeth Jean Randall, Halifax, Mass.
- Gerald Alan Ravitz, Verona, N. J.
- †Richard Arthur Raymo, Wilmington
- Max Claus Reimerdes, Hawthorne, N. Y.
- David Lawrence Resnick, Brooklyn, N. Y.
- Mary Theresa Rivard, Winooski
- Nan Lee Rivers, South Burlington
- *Neil Frederick Rockoff, Westfield, N. J.

Lawrence Bernard Sternberg, Middletown, Phoebe Gail Rodbart, New York, N. Y. Peter Fellows Rood, Greenfield, Mass. N. Y. Mark Leslie Rosen, New York, N. Y. Roberta Anne Wagner Stevens, Fort Edward, Charles Rosenbaum, West Newton, Mass. Lee Rosenfeld, New York, N. Y. N. Y. Bonnie Jean Stewart, Rochester, N. Y. Stanley Isaac Rothenberg, Stamford, Conn. Guy Warren Stone, Jr., Burlington John William Sturzenberger, Burlington Robert Alan Rothstein, Flushing, N. Y. William Edward Rowe, Durham, N. H. Margaret Sullivan, Newburyport, Mass. John Clemenceau Sulton, Orangeburg, S. C. †Melvyn Harris Rudman, Medford, Mass. George Stephen Tabor, Bronx, N. Y. Joel Stephen Rutstein, Burlington John Robert Tank, Mamaroneck, N. Y. Joanne Elizabeth Ryan, Fairfax Arthur Truman Safford, 3rd, New Canaan, Ellen Lorraine Taylor, South Burlington Steven Karl Teplick, Elkins Park, Pa. Conn. Christopher Marlowe Terrien, Burlington †Kay Elizabeth Sanderson, New York, N. Y. Elizabeth Cocks Thayer, Rumney, N. H. †Joan Karen Sandfort, Warwick, N. Y. Frederick Clifford Thomas, III, St. Albans David Bea Sequist, East Hartford, Conn. Jack Shabel, Brooklyn, N. Y. †Frederick Stephen Sharff, Brookline, Mass. Neil Eliot Sherman, New York, N. Y. Katherine Cragg Thomas, White Plains, N. Y. Robert Charles Thompson, Ridgewood, N. J. *Edwin Charles Thorn, Jr., Greenfield, Mass. Carl Bervl Sherter, Newton, Mass. *Nancy Laidlaw Thorn, Greenfield, Mass. Jack Hayden Titus, South Burlington John Chamberlain Tonseth, Norwich *Lawrence Alan Sherwin, South Shaftsbury David Drake Shiverick, Albany, N. Y. *Lawrence Frederick Simon, Queens Village, Richard Henry Towle, Jr., Bath, Me. Robert Guy Tremblay, Woonsocket, R. I. Joseph Paul Valicenti, East Weymouth, Mass. N. Y. Judith Ann Simonds, Burlington Maurice Abraham Singer, Larchmont, N. Y. Peter Edward Voytek, St. Albans Robert Emmet Walsh, Burlington Stephen Joseph Singer, Forest Hills, N. Y. Marjorie Ann Slater, Cleveland, Ohio Grace Lane Waters, Buffalo, N. Y. Thomas Kennedy Slayton, Montpelier Paul Fernando Webster, Montpelier Robert Richard Smith, Auburndale, Mass. Susan Elizabeth Smith, Bridgeport, Conn. Michael Harold Wetterer, Burlington David Earle Whitney, Springfield Lewis Robert Wiener, Whitestone, N. Y. Robert Melvyn Smolen, Great Neck, N. Y. Sarah Evans Spencer, Middlebury Barry Stephen Wilbur, Bronx, N. Y. John Charles Stahler, Huntington Station, †Anița Elizabeth Williams, Rosendale, N. Y. Gerald Michael Winkler, Merrick, N. Y. N. Y. †Roy Howard Stanton, Richmond Hill, N. Y. Diane Woodley, Cincinnati, Ohio Elizabeth Jane Wurthmann, Burlington Francis Louis Staro, Pittsfield, Mass. Larry Eugene Yarkin, Brighton, Mass. Emily Ann Stelljes, Teaneck, N. J. Michael Zeltzerman, Berlin, N. H.

Bachelor of Science

Howard Stefan Schwartz, Oceanside, N. H.

Graduate College

Master of Education

*Victor Dow Borst, B.A. (UVM), 1955; Homewood, Ill.

+Carol Elizabeth Ellms, A.B. (Bates), 1957; Barre, in absentia

*Harold Jesse Feiner, B.A. (Castleton), 1955; Burlington

Harvey Frederick Harkness, Jr., B.S. (Southern Connecticut State), 1956; Bristol

Grace Giarratano Hill, B.A. (Hunter), 1941; Burlington

*Gloria Jane Morse, B.S. in Ed. (UVM), 1953; Danville, in absentia

*Robert Ernest Roseen, B.S. (New Mexico), 1953; St. Paul, Minn., in absentia

†Willis Spaulding, B.S. in Ed. (UVM), 1950; Essex Junction, in absentia

*Rodney Lee Storey, B.S. in Ed. (Castleton), 1952; Brattleboro, in absentia

*James Edward Ulkus, B.S. (Connecticut Teachers), 1958; Burlington, in absentia

* As of October 20, 1962.

+ As of February 23, 1963.

DEGREES GRANTED

Master of Arts in Teaching

*Ann Davis Chadbourne, B.A. (Maine), 1957; Watertown, N. Y., in absentia

* James Philip Chadbourne, B.S. in Ed. (Maine), 1959; Watertown, N. Y., in absentia

†Ruth Ann Hawkins Groh, B.A. (Allegheny), 1954; West Hartford, Conn., in absentia Clifton Newell Heaton, A.B. (Hamilton), 1962; Montpelier *Mary Kathryn Masterson, B.S. (Trenton State Teachers), 1956; Lambertville, N. J. *Paul Joseph McLaughlin, B.A. (UVM), 1958; Washington, D. C., in absentia William Willard Stone, B.S. (UVM), 1939; South Burlington

Master of Science

Agricultural Economics

*Miguel Lisandro Anzola, B.A. (Central University of Venezuela), 1960; Caracas, Venezuela. in absentia

Thesis: Agricultural Cooperatives, a Development Factor in Rural Areas within the Venezuelan Agrarian Reform.

*John Frederick Ruitberg, Jr., B.S. (Norwich), 1957; Canton, N. Y., in absentia

Thesis: An Economic Budgetary Analysis for a 50,000-Quart Milk Bottling Plant.

Richard Frank Wood, B.S. (UVM), 1955; Burlington, in absentia

Thesis: Large Dairy Farms in Vermont,

Agronomy

*Alan Ralph Langille, B.S. (McGill), 1960; Truro, Nova Scotia, Canada, in absentia Thesis: Further Physiological Studies on Agropyron repens (L.) Beauy.

Anatomy

Robert James McCoubrie, Jr., B.S. (Union), 1952; Hebron, Me.

Thesis: The Effect of Cortisone and of Deoxycorticosterone on the Susceptibility of the Reticular Formation to Sodium Pentobarbital in Adrenalectomized Cats.

Animal and Dairy Science

Roland Earl Jenkins, A.A.S. (N. Y. State University), 1957; B.S.A. (Georgia), 1959; Rockaway, N. J.

Thesis: The Influence of Fluorescent Light on the Flavor of Milk Packaged in Various Colored Paper Cartons.

Leslie Cobb Lewis, B.S. (UVM), 1961; Woodstock

Thesis: The Influence of Plant Species and Stage of Maturity on Estrogenic Activity in First Crop and Regrowth Forages.

Biochemistry

Sylvia Schechner, B.S. (City College of N. Y.), 1960; Bronx, N. Y., in absentia

Thesis: Studies on a Possible Mechanism of Steroid Resistance in a Mouse Lymphosarcoma. Fred Fu Tung, B.S. (Taiwan Provincial College of Agriculture), 1956; Taichung, Taiwan, China

Thesis: The Appearance of Parenterally-Administered Proteins in Saliva.

Botany

*Phyllis Goodenough Collins, B.A. (Wellesley), 1956; Burlington

Thesis: Cinnabarinin, An Anthraquinone Isolated from Polyporus cinnabarinus. Jacq. ex Fries.

Jane Elizabeth Wark, B.A. (UVM), 1960; Barre

Thesis: Temperature Effects on the Intercellular Movement of Radioactive Sucrose and Glucose in Sugar Maple Stems.

* As of October 20, 1962.

† As of February 23, 1963.

Chemistry

Roger Charles Eckhardt, S.B. (M.I.T.), 1961; Wheaton, Md.

Thesis: Kinetic Studies of Sorption and Desorption Phenomena.

Sandra June Weaver, B.S. (Lowell Technological Institute), 1961; Graniteville, Mass. Thesis: The Reactions of Enamines as 1, 3-dipolarophiles: A New Synthesis of Pyrazoles.

Civil Engineering

Philip Norcross Eldred, B.S. (UVM), 1956; Burlington, in absentia Thesis: Analysis of Two-Dimensional Stresses Using the Method of Finite Differences.

Commerce

Paul Sargent Donahue, B.S. (UVM), 1960; Burlington

Thesis: The Rising Importance of the Retirement Market with Emphasis on Its Meaning to the Housing Industry in the United States.

Carl Francis Steinmetz, B.F.A. (Bradley), 1951; Burlington

Thesis: Management and Reorganization of a Handbook Sub-Unit (A Case Study of Sub-Unit Management).

Electrical Engineering

Joseph Gomes Silveira, B.S. (UVM), 1962; New Bedford, Mass.

Thesis: Economic Scheduling of Kilovars (A Computer Study).

Dinesh Kumar Tewarson, B.Sc. (Lucknow), 1953; B.S. (Agra), 1957; B.S. (Tuskegee Insti-tute), 1961; Bombay, India

Thesis: Principle of Optimality Applied to Generating Units for the Economic Dispatch of Load on a Utility System.

Mechanical Engineering

Willard Julius Seibert, B.S. (UVM), 1958; Titusville, Fla. Thesis: Static Fatigue Characteristics of Fiber Glass Filament Wound Pressure Vessels.

Pathology

Frank Platt Bolles, B.S. (UVM), 1959; Bellows Falls Thesis: Studies on the Pathogenesis of Fever and Tissue Injury in Pneumococcal Infection.

Physics

Ronald Parsons Brand, B.S. (UVM), 1960; South Burlington

Thesis: Normal and Parametrically Excited Surface Waves. Colin Charles Connolly, B.Sc. (Imperial College of Science and Technology, London), 1961; London, England, in absentia

Thesis: Ultrasonic Stable Cavitation and Its Effects on Human Erythrocytes.

Zoology

Steven Jerome Bongard, A.B. (Hunter), 1962; Yonkers, N. Y., in absentia

- Thesis: An Investigation of Growth Inhibition Found in Crowded Rana pipiens Tadpoles. Robert David Goldman, B.A. (UVM), 1961; Port Chester, N. Y. Thesis: An Investigation of Growth-Inhibiting Substances Produced by Kirchneriella
 - subsolitaria, a Green Alga.

Linda Ann Hufnagel, B.A. (UVM), 1961; East Ryegate

Thesis: Morphology and Morphogenesis of Euplotes plumipes Stokes and Euplotes crassus DuJardin with Special Reference to Variation in Number of Caudal Cirri.

Rhea Dolorese Paro, B.S. (UVM), 1961; Burlington

Thesis: A Test of the Capacity of Limb Regenerates of Triturus viridescens to Continue Differentiation in Lung Pockets.

Nancy Jean Scott, B.A. (UVM), 1961; Beverly, Mass. Thesis: A Test of the Inductive Capacity of Axolotl Tail Tissue Upon Undifferentiated Axolotl Ectoderm.

Master of Arts

English

+John Leland Brown, B.A. (Massachusetts), 1948; Concord, Mass., in absentia

Thesis: T. S. Eliot's Anti-Miltonic Prejudice.

Virginia Prescott Clark, B.A. (UVM), 1961; Burlington

Thesis: Criticism of Courtly Love in Chaucer's Troilus and Criseyde from 1913 to 1962. *Richard Edward Dufour, B.S. in Ed. (UVM), 1954; Bridgeport, Conn., in absentia

Thesis: Jeremiah in the Wilderness: Style and Structure in the Synoptic Novels of John

Dos Passos.

Rosalyn Diane Lipman Lifshin, B.A. (Syracuse), 1960; Middlebury, in absentia Thesis: Dylan Thomas' Unsuccessful Struggle for Faith.

Dennis J. McKevlin, A.B., M.A. (Catholic University of America), 1945; Barre, in absentia Thesis: Development of the Poetic Experience in the Odes of John Keats.

History

William Harry Soule, B.A. (UVM), 1956; Burlington

Thesis: History of St. Paul's Church, Burlington, Vermont, 1830-1930.

Gerda Elizabeth Weitz (Marburg); Hessen, Germany, in absentia Thesis: Theodore Roosevelt and His Relationship to the Senate.

Mathematics

Franklin Roy Kellogg, B.S. (M.I.T.), 1950; Stowe, in absentia

Thesis: A Modern Approach, with Applications, to Integration. Donald Joseph Livengood, B.S. (Villanova), 1961; Philadelphia, Pa. Thesis: Elementary Game Theory.

Eugene Keith Vedder, A.B. (California), 1961; Berkeley, Calif.

Thesis: An Investigation Into the Logical Properties of Selected Four-Valued Algebras and Logics.

Music

Don Edwin Kerr, B.A. (UVM), 1963; Burlington

Thesis: Dissonance Treatment in the Masses of Clemens non Papa.

John Kenneth Park, B.S. (Fredonia), 1957; North Tonawanda, N. Y.

Thesis: The Horn Scoring Technique of Brahms as Represented in the Symphonies.

Jane Evelyn Perlis, B.S. (Skidmore), 1961; Newton Highlands, Mass. Thesis: The Passion Settings of Heinrich Schütz and Their Antecedents.

Political Science

Paul Clinton Dunham, B.A. (UVM), 1959; Burlington

Thesis: Analysis of the Development of Administrative Agencies in Vermont State Government, 1777-1946.

*Phillip Eugene Hassman, B.S. (Iowa), 1948; LL.B. (Louisville), 1958; Seaton, Ill., in absentia Thesis: Theoretical Analysis of Army Organizational Structure.

*David Colvin Tilton, B.A. (UVM), 1960; Lancaster, Mass., in absentia Thesis: The Development of State Educational Responsibility in Vermont and Its Effect Upon the Administrative Relationships and Organizational Structure of the Vermont State Department of Education, 1945-1960.

* As of October 20, 1962.

† As of February 23, 1963.

Psychology

David Esmond Crowley, B.A. (Middlebury), 1961; Marblehead, Mass.

Thesis: The Role of Prior Visual Experience in Maze Learning in Rats Subjected to Blinding and Occipital Lesions.

Doctor of Philosophy

Biochemistry

John William Collins, A.B. (Bowdoin), 1957; M.S. (Middlebury), 1959; Rhinebeck, N. Y. Thesis: An Exploratory Characterization of Bean Leaf Proteins.

John Conrad Hartnett, B.S. (St. Michael's), 1943; M.S. (UVM), 1947; Burlington

Thesis: Isolation, Crystallization and Characterization of an Esteroproteolytic Enzyme from Porcine Pancreas.

College of Medicine

Doctor of Medicine

- Charles Curtis Beebe, III, A.B., Hollis, N. H.
- Thomas George Brault, A.B., Burlington
- John Barry Burns, B.S., Montpelier
- James Chrysostom Cabral, B.S., Middleton, Mass.
- Joseph Donald Capra, B.A., cum laude, Barre
- James Ford Clapp, III, A.B., cum laude, Cambridge, Mass.
- Joseph Valentine Cresci, B.A., Brooklyn, N. Y.
- Peter Clowes Dowling, B.S., M.S., Laconia, N. H.
- Ann Marie Tompkins Dvorak, B.A., Island Falls, Me.
- Gerald Louis Evans, B.A., Gloucester, Mass.
- Jesse Lewis Ginsburg, B.A., Burlington
- Philip Anthony Goddard, Jr., B.A. Morrisville Alan Burton Gruskin, B.S., cum laude, Spring-
- field, Mass. Thomas Joseph Halligan, Jr., B.S., Concord,
- N. H.
- Thomas Michael Hanlon, Jr., B.S., Salem, Mass.
- Frederick Perry Hobin, B.S., cum laude, Chelsea, Mass.
- John David Izsak, B.A., Longmeadow, Mass.
- Robert Lowell Jennings, B.S., Mandan, N. D.
- Leigh Wakefield Kendall, A.B., Brattleboro Arnold Martin Kerzner, B.A., Springfield,
- Mass.
- William Edward Layden, B.A., Rutland
- Neil Nason Mann, B.A., Waban, Mass.
- Leroy George Meshel, B.A., Lido, L. I., N. Y. Edward Richard Mulcahy, Jr., A.B., Malden,
- Mass.
- John Joseph Murray, Jr., B.A., Somerville, Mass.
- * As of October 20, 1962.
- † As of February 23, 1963.

- Ronald Stanley Nadel, B.A., Brookline, Mass.
- Henry Modestino Stephen Nigro, A.B., West Newton, Mass.
- John Lowrey Noyes, B.A., Brattleboro
- Cathleen Connaughton O'Brien, B.S., St. Albans
- Felix Anthony Perriello, B.S., Medford, Mass. Allen Douglas Price, B.S., M.S., Concord, N. H.
- Peter Ivan Rabinovitch, B.A., Norwich, Conn. Paul Chester Rutkowski, B.A., Malone, N. Y.
- Edward Charles Saef, B.A., Mattapan, Mass.
- David Giles Saunders, A.B., Wakefield, Mass.
- Frederick Stephen Shmase, B.A., Peabody, Mass.
- Richard Norman Stein, B.A., Brooklyn, N. Y.
- Derwood Lynn Stetson, B.S., Morrisville
- Duncan Edward Stewart, B.A., Bellows Falls
- Peter Dodds Upton, B.S., M.S., cum laude, Burlington
- Philip Joseph Villandry, B.A., Biddeford, Me. Howard Alan Walker, B.A., Barre
- Hervey Allan Weitzman, B.S., Longmeadow, Mass.
- Houghton McLellan White, B.A., Brunswick, Me.
- Carol Marion Wildman, B.S., Cochituate, Mass. Walter George Wrobleski, Jr., B.S., Nashua, N. H.
- Alan Yagoda, B.A., Brooklyn, N. Y.
- Graham Yelland, B.A., Watertown, Mass.
- George Nabile Yerid, B.S., Lebanon, N. H.
- Sheldon David Zigelbaum, B.S., D.M.D., Swampscott, Mass.

DEGREES GRANTED

Degrees Honoris Causa

David Marsh Bosworth, Doctor of Science New York, New York Mary Ingraham Bunting, Doctor of Science

Cambridge, Massachusetts Natt Bryant Burbank, Doctor of Laws

Boulder, Colorado Nona Faye Crabbe, Doctor of Science Burlington, Vermont

Lewis Leary, Doctor of Laws

New York, New York

- William Murray Lockwood, Doctor of Laws Burlington, Vermont Leo A. Rudloff, O.S.B., Doctor of Divinity
- Weston, Vermont and Jerusalem, Israel

Department of Military Science

Commissioned Second Lieutenant, United States Army

*Neal Monroe Adams, Infantry

*Duane Douglas Barber, Infantry

*Craig Edward Brodie, Ordnance Corps

*Peter Howard Carr. Infantry *Donald Hill Noble, Infantry

*Robert Emmet Walsh, Infantry

Commissioned Second Lieutenant, United States Army Reserve

Thomas Mitchell Allen, Artillery *Frank Charles Amato, Quartermaster Corps Joseph Edward Barcomb, Corps of Engineers Charlie Arthur Bentley, Infantry †Frank Augustus Bolden, Infantry Stuart Harold Burroughs, Corps of Engineers * ±Lester Stephen Cohen, Transportation Corps William John Costello, Armor Robert Edward Curtin, Army Intelligence and Security

*Robert Patrick Donahue, Transportation Corps

Jeffrey Alan Falk, Transportation Corps

Albert Patrick Farrington, Infantry

Timothy Arnold Grant, Ordnance Corps

Paul Malcolm Harris, Armor

Jeffrey Lynn Harvey, Transportation Corps

Richard Miner Hubbard, Infantry

Robert John Lavallee, Infantry

- Albert Hermel LeBlanc, Army Intelligence and Security
- Eugene Joseph Letourneau, Army Intelligence and Security

Harry Bernard Levins, Infantry

* Distinguished Military Graduates.

William Harrison Lewis, Army Intelligence and Security

Keyle Ralph Mabin, Ordnance Corps

Gerard Allen McGee, Signal Corps

John Pacheco Mello, Infantry

Daniel Thomas Monte, Quartermaster Corps

*Paul Steven Naski, Ordnance Corps

David Roger Nelson, Quartermaster Corps

Frank Joseph Pagliaro, Jr., Army Intelligence and Security

Arnold Gene Pellegrini, Medical Service Corps *D. Gregory Pierce, Corps of Engineers

Mark Leslie Rosen, Armor

Edward Mark Rosenthal, Ordnance Corps

Thomas Charles Shepard, Corps of Engineers

Timothy James Simpson, Artillery

- Maurice Abraham Singer, Signal Corps
- Robert Melvyn Smolen, Army Intelligence and Security
- Harry Edward Sommer, Chemical Corps

*John Charles Stahler, Quartermaster Corps Joseph Paul Valicenti, Transportation Corps

John Stark White, Armor

- *Stanley Joseph Zielinski, Ordnance Corps
- + Will be commissioned in Regular Army upon attaining age 21, August, 1963.

Accepted for Regular Army commission pending Congressional approval.

Sources of Financial Aid Awarded by the University

General Financial Aid

Scholarship Funds

LIZZIE P. ALLEN Founded in 1900 by Lizzie P. Allen, a descendant of Ira Allen, founder of the University.

REV. LUCIUS E. BARNARD, Class of 1853 Established by bequest in 1903.

ADA S. BLAIR Established by bequest in 1926.

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.

ROLLO J. FRANCISCO Established by bequest in 1951.

GENERAL SCHOLARSHIP

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

CHARLES A. HOYT, Class of 1858 Established by bequest in 1904.

MORETOWN AND MIDDLESEX Founded by the Rev. E. C. Bass, Class of 1859.

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.

MINNIE A. PICKERING Established in 1938 by gift in memory of her daughter.

SAMUEL SIDNEY SMITH Founded in 1896 by bequest of Mrs. Eliza Smith in memory of her husband.

HATTIE LAURA WETHERBY WESTON Established by bequest in 1936.

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.

NORMAN WILLIAMS

- 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.
- MINNIE ADAMS SEGAR Established in 1962 by the friends of Minnie Adams Segar for worthy students, male or female.

Loan Funds

ELIZABETH CHAPMAN Established by bequest in 1950.

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.

DONALD DRESSER MEMORIAL FUND No restrictions.

- JOSEPH LAWRENCE HILLS Established by friends of Dean Hills, who completed fifty years of service to the University in 1937.
- NATIONAL DEFENSE STUDENT LOAN FUND.
- NEW ENGLAND SOCIETY IN THE CITY OF NEW YORK LOAN FUND Temporary loans.
- F. H. AND GRACE M. SHEPARDSON For deserving students, subject to such regulations as the Board of Trustees shall prescribe.
- HENRY MARTIN STANTON AND HARRIET BABCOCK STANTON MEMORIAL LOAN FUND Established by the Estate of Eleanor Louise Stanton.

General Financial Aid for Women

Scholarship Funds

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.

GAMMA PHI BETA FOUNDATION SCHOLARSHIP FUND For a female undergraduate student of at least sophomore standing.

CELINDA A. B. LILLEY Founded in 1880 for women students.

PANHELLENIC COUNCIL Proceeds of the Panhellenic picnic or similar function are donated each year to the University to provide a scholarship for an out-of-state girl.

Loan Funds

CATHERINE ARMSTRONG LOAN FUND For women only.

MATTHEW HENRY BUCKHAM Any needy girl.

- ASA FISKE Established for women students by Annette Fiske Mereness in memory of her father.
- MARY GRAVES Established for women students by Annette Fiske Mereness in memory of her mother.
- LADIES OF THE FACULTY For women students. Not more than fifty dollars is loaned to any one student.
- MARY A. SHAW AND FANNY E. SHAW Established by Mrs. Willard Pope, daughter of Mary A. Shaw, for women 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.

General Financial Aid for Men

Scholarship Funds

LOUIS COLLINS DODD Established by bequest in 1962 for worthy and deserving male students who need financial assistance.

LOUISA H. HOWARD Founded in 1882; available for men.

CLARK AND EDWARD S. ISHAM SCHOLARSHIP FUND Established by Lois C. Isham to aid needy boys.

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.

CORNELIUS A. JEUDEVINE Established by Allen E. Jeudevine as a memorial to his son to aid Vermont men in obtaining a liberal education.

Financial Aid by Geographical Area

Scholarship Funds

ANONYMOUS Craftsbury preference.

FRANKLIN BALDWIN Established in 1915 by bequest of Mr. Baldwin for students from Putney.

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.

ELIZABETH F. BRIGHAM Established by bequest in 1910; preference to be given to students from Brigham Academy.

EZRA HOYT BYINGTON Founded in 1905 in memory of Mr. Byington by Mrs. Louise 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.

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 Ex-Gov. Redfield Proctor for students from Proctor.

ISLE LA MOTTE Founded in 1884 by Nathan S. Hill; for students from Isle La Motte or from Craftsbury.

SARAH B. JACOBS Founded in 1882; available for graduates of Brigham Academy only.

ROBERT J. KIMBALL Founded in 1900 for students from Randolph. The Trustees of Randolph High School may make nominations for this scholarship.

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.

JUSTIN S. MORRILL Founded in 1900 by Senator Justin S. Morrill; for students from Strafford.

- ARTHUR W. AND LOUISE S. PERKINS Established in their memory in 1947 by their sons 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.
- 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.
- ANNA C. SMITH SCHOLARSHIP FUND To aid deserving and needy students from the Ludlow, Vermont area.
- 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.
- JOHN A. S. WHITE Established by bequest; for students from Washington County or from Vermont.
- 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.

Loan Funds

- 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.
- ELLIS EDWIN FOSTER LOAN FUND Preference to Graduates of Peoples Academy of Morrisville, Vt.
- GREATER NEW YORK CITY ALUMNI LOAN FUND Preference given to students from the greater New York area.
- 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.
- CHARLES D. AND CARRIE D. ORDWAY Bequeathed by Charles D. Ordway in 1933, for Vermont students.
- RIXFORD MANUFACTURING COMPANY For students from Highgate.

Financial Aid by Academic Areas

College of Agriculture and Home Economics

Scholarship Funds

- 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.
- 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 Science, on the basis of need, character, and scholarship.
- 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.

SOURCES OF FINANCIAL AID

- 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.
- DR. CHARLES H. HOOD Given by the Charles H. Hood Dairy Foundation. Six of \$250 each awarded to upperclass students studying milk production.
- 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.
- 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 of \$250 for a sophomore in Agriculture, awarded on the basis of need, scholarship, and farm origin.
- 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.

Loan Funds

- THURSTON M. ADAMS MEMORIAL FUND Preference given to students in Agricultural Economics.
- AMERICAN AGRICULTURIST RESEARCH FOUNDATION For juniors and seniors in Home Economics.
- ROBERT M. CARTER Agriculture and Home Economics students.
- KENNETH J. SHELDON LOAN FUND Gift from various donors established as a loan fund for Vermont Agricultural students.
- TERRILL-HOLBROOK For women students, preference being shown to those in Home Economics.

College of Medicine

Scholarship Funds

- MOSES D. CARBEE, Class of 1873 Established by a bequest from Mrs. May D. Carbee in memory of her husband; available for medical students.
- 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.
- DR. EDWARD EVERETT HAWES Established by bequest in 1946; available for medical students.
- EDITH BLANCHE KIDDER Established by Joseph W. Kidder for students in the College of Medicine; preference to be given to legal residents of Barre.
- ALDO LEANI MEDICAL Established in 1961 for students in the College of Medicine.
- JOHN ORDRONAUX Founded in 1909; for students in the Academic and Medical Colleges. DR. H. C. TINKHAM Established by bequest in 1956; for students in the College of Medicine.

Loan Funds

- 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.
- 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.

KELLOGG FOUNDATION LOAN FUND Medical students.

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.
- DR. THOMAS PLOWRIGHT Established in 1963 for medical students from New Hampshire.
- ELIZABETH D. AND CLIFFORD R. PROCTOR Established in 1953 for students in the College of Medicine.
- QUARTER-OF-A-CENTURY LOAN FUND A loan fund for medical students established by the Class of 1938 and added to by the following 25-year classes.
- JAMES A. SINGISER MEDICAL STUDENT LOAN FUND Established by James A. Singiser, M.D., to aid needy medical students.
- MRS. HAROLD T. WHITE MEDICAL STUDENT LOAN FUND Preference given to medical students.

College of Arts and Sciences

Scholarship Funds

- LIZZIE S. CONVERSE Founded by bequest of Sarah Elizabeth Converse for students of classics.
- CHARLES W. RICH, Class of 1836 Founded in 1883 for students in the College of Arts and Sciences.
- SOPHIA STOW Endowed in 1937 by bequest of George L. Stow, '73, in memory of his mother; for students of classical languages.

NORMAN SARETT MEMORIAL FOUNDATION, INC. In memory of Norman Sarett. To be awarded to a sophomore student in liberal arts curriculum.

Loan Fund

STEPHEN DWIGHT AND LIDA MASON HODGE For women students in the College of Arts and Sciences.

Department of Chemistry

Scholarship Fund

LELAND MASON WILLEY Preference to students majoring in Chemistry.

Department of Education

Loan Fund

MARY MAUD PATRICK Established by Epsilon Sigma as a memorial to Mary Maud Patrick for students in Elementary Education.

Department of Athletics

Scholarship Funds

ANONYMOUS ATHLETIC Restricted to students who participate in intercollegiate athletics. EDWARD G. NEMER Established in 1961 from a gift in memory of the late Edward G. Nemer, for athletic scholarships.

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.

School of Dental Hygiene

Loan Fund

DENTAL MEMORIAL LOAN FUND Established by Vermont Dental Society for financial assistance to second year Dental Hygiene students.

Departments of Engineering

Scholarship Funds

JOHN M. EVANS Established in 1958 in memory of himself and his wife, Mary Hickley Evans, for worthy students in Civil Engineering.

VERMONT ELECTRICAL ASSOCIATION SCHOLARSHIP FUND Awarded to a junior or senior majoring in Electrical Engineering who is a resident of Vermont.

WESTERN ELECTRIC SCHOLARSHIP FUND Awarded to an undergraduate in the Engineering Department. \$800 or the cost or 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-guarters of the amount of the scholarship.

Loan Funds

CHESTNUT FUND For students in Mechanical Engineering upon recommendation of the department chairman.

LEONARD PERLEY DICKINSON For students in Engineering, preference to be given to those in Electrical Engineering.

HORACE E. STEVENS, Class of 1870 Established in 1926 by his relatives for students in Engineering.

Professions

Law

Loan Fund

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.

Ministry

Scholarship Fund

DR. DANIEL WASHBURN Founded in 1853 for young men; preference to be given to those studying for the ministry.

Financial Aid With Special Restrictions

Scholarship Funds

PARKER J. BUXTON Available to a needy and deserving member of the Senior Class.

DANIEL PITKIN MINER Established by bequest in 1943; for native-born students, not over twenty-five years of age.

DR. WALTER CARPENTER Established by bequest; preference to be given to sons of clergymen and physicians.

SOLDIERS' Founded in 1913 by a group of Civil War Veterans for students who are descendants of soldiers in the Civil War.

Loan Funds

PHI BETA KAPPA Available to members of the Senior Class; preference being shown to members of the society.

REV. STEPHEN G. BARNES To provide loans or gifts for needy students to attend religious conferences.

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Academic Calendar

Spring Semester 1964

January	31	Friday	Second semester enrollment
February	1	Saturday	Second semester enrollment
February	3	Monday	Classes resume
February	21-22	Friday-Saturday	Kake Walk Holiday
March	25	Wednesday	Spring recess begins, 8:00 a.m.
April	1	Wednesday	Classes resume 8:00 a.m.
May	1	Friday	Honors' Day, no classes 10:00 a.m. to 1:00 p.m.
May	21	Thursday	No classes
May	22	Friday	Final examinations begin
June	2	Tuesday	Examination period ends
June	7	Sunday	Commencement
June	17-24	·	Orientation sessions for new students

The University calendar for 1964-65 has been revised to begin and to end the academic year earlier in the calendar year. The former winter recess and the former intersemester period became one in the new calendar. In this new schedule fall registration will always occur on Wednesday and Thursday and classes begin on Friday in the week of which Monday is Labor Day.

Fall Semester 1964

September	8–9	Tuesday-Wednesday	Final orientation session
September	10	Thursday	Registration
September	10	Thursday	Opening convocation
September	11	Friday	Classes begin
November	26	Thursday	Thanksgiving Day, no classes
December	14	Monday	Examinations begin
December	22	Tuesday	Examinations end
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Intersemester Recess

Spring Semester 1965

January	18-19	Monday-Tuesday	Registration
January	20	Wednesday	Classes begin
February	26-27	Friday-Saturday	Kake Walk Recess
March	13	Saturday	Grade reports
March	29	Monday	Spring Recess begins, 8:00 a.m.
April	5	Monday	Classes resume 8:00 a.m.
April	30	Friday	Honors' Day, no classes 10:00 a.m. to 1:00 p.m.
May	8	Saturday	No classes
May	10	Monday	Examinations begin
May	18	Tuesday	Examinations end
May	23	Sunday	Commencement

CALENDAR

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