

Microbiology and Molecular Genetics Curriculum Checklist 2004/2005

Student's Name: _____

Major: Microbiology_____ Molecular Genetics_____

**University Credit Requirements for Graduation: 120 course credits
2 Physical Education credits
cumulative GPA > 2.0**

CALS Core Curriculum (<http://www.uvm.edu/~jleonard/CALS/Core.html>):

1. Knowledge:

A. Science

1. Physical and Life Sciences: satisfied by Program Core Requirements.
2. Social Science (Anthropology, Community Development and Applied Economics, Economics, Geography, History, Political Science, Psychology, Sociology).
 1. _____
 2. _____ (6 credits)

B. Humanities and Fine Arts (Art, Classics, Drama, Music, Philosophy, Religion, Foreign language, Literature, Poetry, Film).

1. _____
2. _____ (6 credits)

2. Skills:

A. Communication skills:

1. Oral: (3 credits)
AGRI 001: Foundations: Communication Methods _____

One or more courses in which the student
presents a total of three graded oral
presentations: _____

2. Written: (3 credits)
ENGS 001 or **ENGS 050** _____

One or more courses in which the student
writes a total of three graded "process" papers
(papers requiring redrafting): _____

B. Information Technology Skills:

AGRI 002: Foundations: Information Technology _____

Applications of Information Technology are satisfied by Program Core Requirements

C. Quantitative Skills:

1. Mathematics: satisfied by Program Core Requirements
2. Statistics: **STAT 141**
3. Quantitative Skills Application: satisfied by Program Core Requirements

D. Critical Thinking Skills: satisfied by Program Core Requirements

E. Interpersonal Skills: satisfied by Program Core Requirements

3. Values:

A. Citizenship and Social Responsibility: satisfied by **EDSS 011*: Race and Culture** and CALS and Program Core Requirements

Race and Culture _____

B. Environmental Stewardship: satisfied by Program Core Requirements

C. Personal Growth: satisfied by **AGRI 001/002: Foundations** and Program Core Requirements, plus 2 Physical Education courses

PEAC Courses: 1. _____ 2. _____

* **EDSS 011** may only be taken during the first year for 1 credit. However, one of the following three credit courses may substitute for EDSS 011; these courses may be taken at any time during the student's tenure at UVM. Furthermore, these courses also fulfill 3 credits of the CALS Social Science requirement: **ALANA 51 or 55, SOC 19, 32, 118 119, or 219, ANTH 187, CMSI 160, EC 153, ENGS 57 or 170, GEOG 60, HST 60 or 68, POLS 29 or 129, REL 21.**

Program Core Requirements:**Major Requirements:**

	<u>Semester & Year completed</u>	
First-year Colloquium: MMG 095	_____	(1 credit)
Exploring Biology: BCOR 11 & 12	_____	(8 credits)
Calculus: MATH 19 & 20 <u>or</u> 21 & 22	_____	(6/8 credits)
General Chemistry: CHEM 31 & 32	_____	(8 credits)
Organic Chemistry: CHEM 141 & 142 <u>or</u> 143 & 144	_____	(8 credits)
Physics: PHYS 11, 12 with 21/22 <u>or</u> 31 & 42 with 21/22	_____	(10 credits)
Biology of Microorganisms: MMG 101	_____	(4 credits)
Intro. to Recombinant DNA Tech.: MMG 104	_____	(2 credits)
Genetics: BCOR 101 (Fall)	_____	(3 credits)
Cell Biology: BCOR 103 (Spring)	_____	(4 credits)
Biochemistry I: CHEM/BIOC/MMG 205[#]	_____	(3 credits)
Biochemistry II: CHEM/BIOC/MMG 206[#]	_____	(3 credits)
Biochemistry Lab: CHEM/BIOC/MMG 207 (May be taken either in Fall or Spring)	_____	(2 credits)
Statistics: STAT 141	_____	(3 credits)

Additional Requirements for Microbiology Majors:*Nine credits chosen from among the following electives:*

MMG 201	Molecular Cloning Lab	_____	(3 credits)
MMG 203	Mammalian Cell & Molecular Biology Lab	_____	(4 credits)
MMG 220	Environmental Microbiology	_____	(3 credits)
MMG 222	Clinical Microbiology	_____	(4 credits)
MMG 223	Immunology	_____	(3 credits)
MMG 225	Eukaryotic Virology	_____	(3 credits)

Six additional credits chosen from the list above or the following electives:

MMG 195,196	Special Topics	_____	(variable)
MMG 197,198	Undergraduate Research	_____	(6 credits maximum)
MMG 211	Prokaryotic Molecular Genetics	_____	(3 credits)
MMG 240	Int. Macromol.Struct. Proteins & Nucleic Acids	_____	(3 credits)
NFS 203	Food Microbiology	_____	(4 credits)
MLS 255	Advanced Clinical Microbiology	_____	(4 credits)
BIOL 223	Developmental Biology	_____	(3 credits)
BOT 234	Ecology of Freshwater Algae	_____	(3 credits)
PHRM 272	Toxicology	_____	(3 credits)
PHRM 290	Topics in Molecular & Cell Pharmacology	_____	(3 credits)
PSS 232	Biological Control of Insect Pests	_____	(3 credits)
MMG 320*	Cellular Microbiology	_____	(4 credits)

*** 300-level courses should only be taken with special permission of both the course instructor and the student's faculty advisor.**

Additional Requirements for Molecular Genetics Majors:

MMG 211 Prokaryotic Molecular Genetics _____ (3 credits)

Six credit hours chosen from among the following electives:

MMG 201 Molecular Cloning Lab _____ (3 credits)

MMG 203 Mammalian Cell & Molecular Biology Lab _____ (4 credits)

MMG 223 Immunology _____ (3 credits)

MMG 225 Eukaryotic Virology _____ (3 credits)

MMG 231 Bioinformatics _____ (3 credits)

MMG 312* Eukaryotic Genetics _____ (3 credits)

MMG 352* Protein:Nucleic Acid Interactions _____ (3 credits)

Six additional credit hours chosen from the list above or the following electives:

MMG 195,196 SpecialTopics _____ (variable)

MMG 197,198 Undergraduate Research _____ (6 credits maximum)

MMG 240 Int. Macromol.Struct. Proteins & Nucleic Acids _____ (3 credits)

BIOL 263 Genetics of Cell Cycle Regulation _____ (3 credits)

BIOL 265 Developmental Molecular Genetics _____ (3 credits)

MMG 320* Cellular Microbiology _____ (4 credits)

Additional Requirements for Microbiology and Molecular Genetics Double Majors:

Double majors must take **12** additional credits beyond the 15 credits required for a single major **and** must satisfy the distribution requirements of each individual major. Only one of these courses may be double-counted.

Additional Requirements for Microbiology and Molecular Genetics Major/Minor:

Any student enrolled as a Major/Minor must take **6** additional credits beyond the Major; no courses may be double-counted.

To declare a double major or major/minor, students must obtain the appropriate form from Student Services, Dean's Office, 206 Morrill Hall, complete the form, obtain the signature of the MMG Undergraduate Program Director, and return the form to the Dean's Office.

The following descriptions are intended only as examples.

FOR MOLECULAR GENETICS MAJORS

FALL

FIRST YEAR

BCOR 11	4 credits
CHEM 31	4 credits
MATH 19 or 21	3 (4) credits
AGRI 001	3 credits
MMG 095	1 credit

SECOND YEAR

CHEM 141 or 143	4 credits
MMG 101	4 credits
BCOR 101	3 credits
ENGS 001	3 credits

THIRD YEAR

Elective	3 credits
MMG 201	3 credits
MMG 223 or 225	3 credits
MMG 205	3 credits
MMG 207	2 credits

FOURTH YEAR

PHYS 11 or 31 /21	5 credits
MMG 197	3(var) credits
MMG 211	3 credits
MMG 223 or 225	3 credits

SPRING

BCOR 12	4 credits
CHEM 32	4 credits
MATH 20 or 22	3 (4) credits
AGRI 002	3 credits
PEAC	1 credit

CHEM 142 or 144	4 credits
BCOR 103	4 credits
MMG 104	2 credits
STAT 141	3 credits
PEAC	1 credit

Mol. Gen. Elective	3 credits
Elective (Fine Arts)	3 credits
Elective (Soc. Sci.)	3 credits
MMG 206	3 credits
Mol. Gen. Elective	3 credits

PHYS 12 or 42 /22	5 credits
MMG 198	3(var) credits
Mol. Gen. Elective	3 credits
Elective (Fine Arts)	3 credits

FOR MICROBIOLOGY MAJORSFALLFIRST YEAR

BCOR 11	4 credits
CHEM 31	4 credits
MATH 19 or 21	3 (4) credits
AGRI 001	3 credits
MMG 095	1 credit

SPRING

BCOR 12	4 credits
CHEM 32	4 credits
MATH 20 or 22	3 (4) credits
AGRI 002	3 credits
PEAC	1 credit

SECOND YEAR

CHEM 141 or 143	4 credits
MMG 101	4 credits
BCOR 101	3 credits
ENGS 001	3 credits

CHEM 142 or 144	4 credits
BCOR 103	4 credits
MMG 104	2 credits
STAT 141	3 credits
PEAC	1 credit

THIRD YEAR

Elective	3 credits
Microbiol. Elective	3 credits
MMG 223 or 225	3 credits
MMG 205	3 credits
MMG 207	2 credits

Microbiol. Elective	3 credits
Elective (Fine Arts)	3 credits
Elective (Soc. Sci.)	3 credits
MMG 206	3 credits
Elective	3 credits

FOURTH YEAR

PHYS 11 or 31 /21	5 credits
MMG 197	3(var) credits
Microbiol. Elective	3 credits
MMG 223 or 225	3 credits

PHYS 12 or 42 /22	5 credits
MMG 198	3(var) credits
Microbiol. Elective	3 credits
Elective (Fine Arts)	3 credits

If one is interested in pursuing a **clinically oriented career**, consider the following courses as "Microbiol. Elective": **MMG 201**, **MMG 222** and **MEDT 255** are absolutely essential. Also, **MMG 197/198**, **MMG 203**, **MMG 223** and **MMG 225** are strongly suggested.

If one is interested in pursuing an **applied microbiology career**, consider the following courses as "Microbiol. Elective": **MMG 201**, **MMG 220**, **ASCI 203** are absolutely essential. Also, **MMG 203**, **MMG 222**, **MMG 223** and **ASCI 204** are strongly suggested.

If one is interested in pursuing a **general microbiology experience**, consider the following courses as "Microbiol. Elective": **MMG 201**, **MMG 222**, **MMG 223** and **MMG 225** are absolutely essential. **MMG 211** or any of the other courses listed in the above descriptions would suffice to fill out the program.