

Microbiology and Molecular Genetics Advising Form 2014-2015

Student's Name: _____

Major: Microbiology_____ Molecular Genetics_____

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

CALS Core Curriculum

1. Knowledge:

A. Science

1. Physical and Life Sciences: satisfied by Program Core Requirements.
2. Social Sciences (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, HCOL185 or 186).

1. _____ 2. _____(6 credits)

2. Skills:

A. Communication skills:

1. Oral: (3 credits)
CALS 001, CALS183, or SPCH011: Communication Methods _____

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

2. Written: (3 credits)
Any sub-100 ENGS course or HCOL 085 or 086 _____

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

B. Information Technology Skills:

CALS 002, CALS 085, or CS 021:

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 or STAT 200**
- 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: Two 3-credit University Approved Diversity Courses. All students are required to complete 6 credits addressing race relations and ethnic diversity before graduation, 3 of which have to come from Category 1 courses.

Course options can be found at: <http://www.uvm.edu/provost/diversity/>

Category D1 (take as soon as possible) _____

Category D1 or D2 _____

B. Environmental Stewardship: satisfied by Program Core Requirements

C. Personal Growth: satisfied by **CALS 001/002: Foundations** and Program Core Requirements

For Transfer Students:

The University's Transfer sheet, which will arrive with a transferring advisee's folder, will list the course(s) being transferred and whether UVM accepts or rejects the transfer. The course(s) may be acceptable to UVM but not for a particular UVM course, in which case it will be listed with X's in the number. It will then be up to the MMG Undergraduate Program Director to decide if this course will replace one of the required or elective courses. If so, it will be noted with a copy to the advisee's file. It is recommended that transfer students take **CALS085/CS021 and CALS183/SPCH011** instead of CALS 001 and 002. MMG001 will be waived for transfer students.

Program Core Requirements:

(http://www.uvm.edu/microbiology/ugrad_program_overview.htm)

<u>Major Requirements:</u>	<u>Semester & Year completed</u>
First-Year Colloquium: MMG 001	_____ (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)
Microbiology & Infectious Disease: MMG 101	_____ (4 credits)
Intro. to Recombinant DNA Tech.: MMG 104	_____ (2 credits)
Genetics: BCOR 101	_____ (3 credits)
Cell Biology: BCOR 103/MMG196C	_____ (4/3 credits)
Biochemistry I: MMG 205	_____ (3 credits)
Biochemistry II: MMG 206 <u>or</u> BIOC 212	_____ (3 credits)
Statistics: STAT 141 <u>or</u> STAT 200	_____ (3 credits)
Senior Seminar: MMG 299 (Spring)	_____ (1 credit)

Although one year of physics (PHYS11/21 and 12/22) is not required for MMG majors, most graduate, medical, dental, and other post-graduate programs do still require this.

Additional Requirements for Microbiology Majors:

MMG 211 Prokaryotic Physiology and Regulation _____ (3 credits)

12 credits from these electives (≥ **6** credits must be MMG courses, excluding Research):

MMG 195,196	Special Topics (Internships; Teaching Assistants)	_____	(variable)
MMG 197,198	Undergraduate Research	_____	(6 credits
			maximum with 297/298)
MMG 201	Molecular Cloning Lab	_____	(3 credits)
MMG 203	Mammalian Cell & Molecular Biology Lab	_____	(4 credits)
MMG 207	Biochemistry Laboratory	_____	(2 credits)
MMG 220	Environmental Microbiology	_____	(3 credits)
MMG 222	Clinical Microbiology I	_____	(4 credits)
MLS 255	Clinical Microbiology II	_____	(4 credits)
MMG223/MLRS242	Immunology	_____	(3 credits)
MMG 225	Eukaryotic Virology	_____	(3 credits)
MMG 231	Programming in Bioinformatics	_____	(3 credits)
MMG 232	Methods in Bioinformatics	_____	(3 credits)
MMG 233	Genetics & Genomics	_____	(3 credits)
MMG 240	Macromol.Struct. Proteins & Nucleic Acids	_____	(3 credits)
MMG 295,296	Special Topics	_____	(variable)
MMG 295,296	Special Topics (Internships; Teaching Assistants)	_____	(variable)
MMG 297,298	Advanced Undergraduate Research	_____	(6 credits
			maximum with 197/198)
MMG 312*	Eukaryotic Genetics	_____	(3 credits)
MMG 320*	Cellular Microbiology	_____	(4 credits)
MMG 352*	Protein:Nucleic Acid Interactions	_____	(3 credits)
ASCI 216	Endocrinology	_____	(3 credits)
BIOC 212	Biochemistry of Human Disease	_____	(3 credits)
BIOL 223	Developmental Biology	_____	(3 credits)
BIOL 246	Ecological Parasitology	_____	(3 credits)
BIOL 261	Neurobiology	_____	(3 credits)
BIOL 263	Genetics of Cell Cycle Regulation	_____	(3 credits)
BIOL 265	Developmental Molecular Genetics	_____	(3 credits)
BIOL 275	Human Genetics	_____	(3 credits)
BIOL 286	Forensic DNA Analysis	_____	(3 credits)
MLRS 244	Immunology Lab	_____	(1 credit)
NFS 203/295	Food Microbiology	_____	(4/3 credits)
PHRM201	Introduction to Pharmacology	_____	(3 credits)
PHRM 272	Toxicology	_____	(3 credits)
PHRM 290	Topics in Molecular & Cell Pharmacology	_____	(3 credits)
XXX 200+	200-level course in Life Sciences (By Permission of MMG Advisor)		

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

Additional Requirements for Molecular Genetics Majors:

MMG 233 Genetics & Genomics _____ (3 credits)

12 credits from these electives (≥ **6** credits must be MMG courses, excluding Research):

MMG 195,196	Special Topics (Internships; Teaching Assistants)	_____ (variable)
MMG 197,198	Undergraduate Research	_____ (≤ 6 credits maximum with 297/298)
MMG 201	Molecular Cloning Lab	_____ (3 credits)
MMG 203	Mammalian Cell & Molecular Biology Lab	_____ (4 credits)
MMG 207	Biochemistry Laboratory	_____ (2 credits)
MMG 211	Prokaryotic Physiology and Regulation	_____ (3 credits)
MMG 220	Environmental Microbiology	_____ (3 credits)
MMG 222	Clinical Microbiology I	_____ (4 credits)
MLS 255	Clinical Microbiology II	_____ (4 credits)
MMG223/MLRS242	Immunology	_____ (3 credits)
MMG 225	Eukaryotic Virology	_____ (3 credits)
MMG 231	Programming in Bioinformatics	_____ (3 credits)
MMG 232	Methods in Bioinformatics	_____ (3 credits)
MMG 240	Macromol.Struct. Proteins & Nucleic Acids	_____ (3 credits)
MMG 295,296	Special Topics	_____ (variable)
MMG 295,296	Special Topics (Internships; Teaching Assistants)	_____ (variable)
MMG 297,298	Advanced Undergraduate Research	_____ (≤ 6 credits maximum with 197/198)
MMG 312*	Eukaryotic Genetics	_____ (3 credits)
MMG 320*	Cellular Microbiology	_____ (4 credits)
MMG 352*	Protein:Nucleic Acid Interactions	_____ (3 credits)
ASCI 216	Endocrinology	_____ (3 credits)
BIOC 212	Biochemistry of Human Disease	_____ (3 credits)
BIOL 223	Developmental Biology	_____ (3 credits)
BIOL 246	Ecological Parasitology	_____ (3 credits)
BIOL 261	Neurobiology	_____ (3 credits)
BIOL 263	Genetics of Cell Cycle Regulation	_____ (3 credits)
BIOL 265	Developmental Molecular Genetics	_____ (3 credits)
BIOL 275	Human Genetics	_____ (3 credits)
BIOL 286	Forensic DNA Analysis	_____ (3 credits)
MLRS 244	Immunology Lab	_____ (1 credit)
NFS 203/295	Food Microbiology	_____ (4/3 credits)
PHRM201	Introduction to Pharmacology	_____ (3 credits)
PHRM 272	Toxicology	_____ (3 credits)
PHRM 290	Topics in Molecular & Cell Pharmacology	_____ (3 credits)
XXX 200+	200-level course in Life Sciences (By Permission of MMG Advisor)	

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

DOUBLE MAJORS AND MINORS

Students must obtain signatures of MMG advisor and MMG Undergraduate Program Director. Signed forms must be given to Rose Laba in Rm. 107 Morrill Hall. Forms are available at http://www.uvm.edu/~rgweb/?Page=forms/f_forms.html or from MMG advisors.

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 requirements of each major. Only 1 of these courses may be double-counted.

Microbiology and Molecular Genetics Major/Minor:

Major/Minors must take 6 additional credits beyond the Major; no courses may be double-counted.

Microbiology or Molecular Genetics Minor: core requirements plus additional requirements must total 19 credits; ≤ 3 credits from research or special topics

Core Requirements:

Microbiology & Infectious Disease: MMG 101	_____	(4 credits)
Intro. to Recombinant DNA Tech.: MMG 104	_____	(2 credits)
Genetics: BCOR 101	_____	(3 credits)
Cell Biology: BCOR 103/MMG 196C	_____	(4/3 credits)

Additional Requirements for Microbiology or Molecular Genetics Minor:

6/7 additional credits of **MMG** courses, chosen from among the following courses:

MMG 195,196	SpecialTopics	_____	(variable)
MMG 197,198	Undergraduate Research	_____	(≤ 3 credits)
MMG 295,296	Special Topics	_____	(variable)
MMG 297,298	Advanced Undergraduate Research	_____	(≤ 3 credits)
MMG 201	Molecular Cloning Lab	_____	(3 credits)
MMG 203	Mammalian Cell & Molecular Biology Lab	_____	(4 credits)
MMG 207	Biochemistry Laboratory	_____	(2 credits)
MMG 211	Prokaryotic Physiology & Regulation	_____	(3 credits)
MMG 220	Environmental Microbiology	_____	(3 credits)
MMG 222	Clinical Microbiology I	_____	(4 credits)
MMG 223	Immunology	_____	(3 credits)
MMG 225	Eukaryotic Virology	_____	(3 credits)
MMG 231	Bioinformatics	_____	(3 credits)
MMG 232	Methods in Bioinformatics	_____	(3 credits)
MMG 233	Genetics & Genomics	_____	(3 credits)
MMG 240	Macromol.Struct. Proteins & Nucleic Acids	_____	(3 credits)
MMG 312*	Eukaryotic Genetics	_____	(3 credits)
MMG 320*	Cellular Microbiology	_____	(4 credits)
MMG 352*	Protein:Nucleic Acid Interactions	_____	(3 credits)

The following descriptions are intended only as examples.

FOR MICROBIOLOGY MAJORS

FALL

FIRST YEAR

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

SPRING

BCOR 12	4 credits
CHEM 32	4 credits
MATH 20 or 22	3 (4) credits
CALS 002	3 credits

SECOND YEAR

CHEM 141 or 143	4 credits
MMG 101	4 credits
BCOR 101	3 credits
Sub-100 ENGS	3 credits

CHEM 142 or 144	4 credits
BCOR103/MMG196	4 credits
MMG 104	2 credits
Elective (Divers. I)	3 credits

THIRD YEAR

MMG 205	3 credits
MMG 201 or 225	3 credits
Elective (Soc. Sci.)	3 credits
STAT 141/200	3 credits
Elective (Fine Arts)	3 credits

MMG 206/BIOC 212	3 credits
MMG 222/MLS 255	4 credits
MMG 198	3(var) credits
Elective (Divers. II)	3 credits
Elective (Soc. Sci.)	3 credits

FOURTH YEAR

MMG 211	3 credits
PHYS 11 or 51 /21	5 credits
MMG 201 or 225	3 credits
Elective (Fine Arts)	3 credits

PHYS 12 or 42 /22	5 credits
MMG 222/MLS 255	4 credits
MMG 198/298	3(var) credits
MMG223/MLRS242	3 credits
MMG299	1 credit

If one is interested in pursuing a **clinically oriented career**, consider the following courses: **MMG 201, MMG 222, and MLS 255** are absolutely essential. Also, **MMG 197/297 and 198/298, MMG 203, MMG223/MLRS242, and MMG 225** are strongly suggested.

If one is interested in pursuing an **applied microbiology career**, consider the following courses: **MMG 201** and **NFS 203** are absolutely essential. Also, **MMG 203, MMG 220, MMG 222, MLS 255, and MMG223/MLRS242** are strongly suggested.

If one is interested in pursuing a **general microbiology experience**, consider the following courses: **MMG 201, MMG 220, MMG 222, MLS 255, MMG223/MLRS242, and MMG 225** are absolutely essential. Any of the other courses listed would suffice.

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
CALS 001	3 credits
MMG 001	1 credit

SPRING

BCOR 12	4 credits
CHEM 32	4 credits
MATH 20 or 22	3 (4) credits
CALS 002	3 credits

SECOND YEAR

CHEM 141 or 143	4 credits
MMG 101	4 credits
BCOR 101	3 credits
Sub-100 ENGS	3 credits

CHEM 142 or 144	4 credits
BCOR103/MMG196	4 credits
MMG 104	2 credits
Elective (Divers. I)	3 credits

THIRD YEAR

MMG 205	3 credits
MMG 201 or 225	3 credits
Elective (Soc. Sci.)	3 credits
STAT 141/200	3 credits
Elective (Fine Arts)	3 credits

MMG 206	3 credits
MMG 198	3(var) credits
MMG Elective	3 credits
Elective (Divers. II)	3 credits
Elective (Soc. Sci.)	3 credits

FOURTH YEAR

PHYS 11 or 31 /21	5 credits
MMG 197/297	3(var) credits
MMG 233	3 credits
MMG 201 or 225	3 credits

PHYS 12 or 42 /22	5 credits
MMG 198/298	3(var) credits
MMG Elective	3 credits
Elective (Fine Arts)	3 credits
MMG 299	1 credit