

**Microbiology and Molecular Genetics
Advising Form 2016-2017**

Student's Name: _____

Major: **Microbiology**_____ **Molecular Genetics**_____

UVM Requirements:

Graduation Requirements: 120 course credits; cumulative GPA > 2.0

Courses: _____ **Semester & Year completed** _____

Foundational Writing and Information Literacy Requirement:

ENGS 001 or HCOL 085 _____

Diversity Requirement: All students are required to complete two 3-credit University Approved Diversity Courses addressing race relations and ethnic diversity before graduation. Course options can be found at: <http://www.uvm.edu/provost/diversity/>

Category D1 _____

Category D1 or D2 _____

Sustainability Requirement: One 3-credit University Approved Sustainability (SU) Course _____

CALS Core Requirements:

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, Women and Gender Studies)

1. _____ 2. _____ (6 credits)

B. Humanities and Fine Arts: (Art, Classics, Theater, Music, Philosophy, Religion, Foreign

Language, American Sign Language, English/Literature, Poetry, Film, HCOL185 or 186)

1. _____ 2. _____ (6 credits)

2. Skills:

A. Communication skills:

1. Oral: (3 credits)

CALS 001 or 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)

Foundational Writing and Information Literacy Requirement: _____

ENGS 001 or HCOL 085 _____

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 or 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

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 **CALS183 or SPCH011** and **CALS085 or CS021** instead of CALS 001 and 002, respectively. MMG001 will be waived for transfer students.

Microbiology and Molecular Genetics Major Core Requirements:**<http://www.uvm.edu/microbiology/undergraduate-program-overview/program-requirements/>**

<u>Major Requirements:</u>	<u>Semester & Year completed</u> (54 total credits)
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)
Molecular Cell Biology: BCOR 103/MMG196C	_____ (4/3 credits)
Biochemistry I: MMG 205 <u>or</u> BIOC 295B	_____ (3 credits)
Biochemistry II: MMG 206 <u>or</u> BIOC 295B	_____ (3 credits)
Statistics: STAT 141 <u>or</u> STAT 200	_____ (3 credits)
Senior Seminar: MMG 299	_____ (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.

Minimum Upper-Level Requirements for Microbiology Majors – 18 credits

MMG 211 Prokaryotic Physiology & Regulation _____ (3 credits)

9 credits from these MMG courses:

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)
 MMG 223 Immunology _____ (3 credits)
 MMG 225 Eukaryotic Virology _____ (3 credits)
 MMG 230 Adv. Studies Emerging Infectious Diseases _____ (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)

6 credits from these additional approved electives:

MMG 195,196 Special Topics (Internships; Teaching Assistants) _____ (variable)
 MMG 197,198 Undergraduate Research _____ (variable)
 MMG 295,296 Special Topics _____ (variable)
 MMG 295,296 Special Topics (Internships; Teaching Assistants) _____ (variable)
 MMG 297,298 Advanced Undergraduate Research _____ (variable)
 ASCI 216 Endocrinology _____ (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)
 MLS 255 Clinical Microbiology II _____ (4 credits)
 MLRS 242 Immunology _____ (3 credits)
 MLRS 244 Immunology Lab _____ (1 credit)
 NFS 203/295 Food Microbiology _____ (4/3 credits)
 PHRM 201 Introduction to Pharmacology _____ (3 credits)
 PHRM 240 Molecules and Medicine _____ (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 can only be taken with permission of course instructor and student's MMG advisor

Minimum Upper-Level Requirements for Molecular Genetics Majors – 18 credits

MMG 233 Genetics & Genomics _____ (3 credits)

9 credits from these MMG courses:

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 230	Adv. Studies Emerging Infectious Diseases	_____ (3 credits)
MMG 232	Methods in Bioinformatics	_____ (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)

6 credits from these additional approved *electives*:

MMG 195,196	Special Topics (Internships; Teaching Assistants)	_____ (variable)
MMG 197,198	Undergraduate Research	_____ (variable)
MMG 295,296	Special Topics	_____ (variable)
MMG 295,296	Special Topics (Internships; Teaching Assistants)	_____ (variable)
MMG 297,298	Advanced Undergraduate Research	_____ (variable)
ASCI 216	Endocrinology	_____ (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)
MLS 255	Clinical Microbiology II	_____ (4 credits)
MLRS 242	Immunology	_____ (3 credits)
MLRS 244	Immunology Lab	_____ (1 credit)
NFS 203/295	Food Microbiology	_____ (4/3 credits)
PHRM 201	Introduction to Pharmacology	_____ (3 credits)
PHRM 240	Molecules and Medicine	_____ (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 can only be taken with permission of course instructor and student's MMG advisor

MMG COURSE OFFERINGS BY SEMESTER AND YEAR

MMG 001	First-Year Colloquium	Every Fall
MMG 002	Unseen Worlds: Microbes and You	Every Fall
MMG 101	Microbiology and Infectious Disease	Every Fall
MMG 104	Intro. Recombinant DNA Technology	Every Spring
MMG 195	Special Topics (Internships; Teaching Assistants)	Every Fall
MMG 196	Special Topics (Internships; Teaching Assistants)	Every Spring
MMG 197	Undergraduate Research	Every Fall
MMG 198	Undergraduate Research	Every Spring
MMG 201	Molecular Cloning Lab	Fall, Odd Years
MMG 203	Mammalian Cell & Molecular Biology Lab	Spring, Odd Years
MMG 205	Biochemistry I	Every Fall
MMG 206	Biochemistry II	Every Spring
MMG 207	Biochemistry Laboratory & Discussion	Every Spring
MMG 211	Prokaryotic Physiology & Regulation	Every Fall
MMG 220	Environmental Microbiology	Spring, Even Years
MMG 222	Clinical Microbiology I	Spring, Even Years
MMG 223	Immunology	Spring, Odd Years
MMG 225	Eukaryotic Virology	Fall, Even Years
MMG 230	Adv. Studies Emerging Infectious Diseases	Fall, Odd Years
MMG 232	Methods in Bioinformatics	Every Spring
MMG 233	Genetics and Genomics	Every Fall
MMG 240	Macro. Structure Proteins & Nucleic Acids	Spring, Even Years
MMG 295	Advanced Special Topics	Every Fall
MMG 296	Advanced Special Topics	Every Spring
MMG 295	Advanced Special Topics (Internships; TAs)	Every Fall
MMG 296	Advanced Special Topics (Internships; TAs)	Every Spring
MMG 297	Advanced Undergraduate Research	Every Fall
MMG 298	Advanced Undergraduate Research	Every Spring
MMG 299	Senior Seminar	Every Fall and Spring
MMG 312*	Eukaryotic Genetics	Spring, Odd Years
MMG 320*	Cellular Microbiology	Spring, Even Years
MMG 352*	Protein:Nucleic Acid Interactions	Spring, Even Years

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

DOUBLE MAJORS AND MINORS

Online addition or change of Major: https://www.uvm.edu/~rgweb/?Page=forms/mjrmnr_main.html

Microbiology and Molecular Genetics Double Majors:

Double majors must take **12** additional credits beyond the 18 credits required for a single major **and** must take MMG 211 and MMG 233 to satisfy the upper-level course requirements of each major. Only **1** course may be double-counted.

Required

MMG 211 Prokaryotic Physiology & Regulation
MMG 233 Genetics & Genomics

First Major

9 credits 200-level MMG courses (see previous page)
6 credits MMG electives (see previous page)

Second Major

9 credits 200-level MMG courses (see previous page)
3 credits MMG electives (see previous page)

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: **15/16** total credits

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

6 additional credits of 200-level **MMG** courses* chosen with the approval of your minor advisor (only 3 credits of MMG195/295 Special Topics courses or MMG 197/198, MMG 297/298 research may apply). *No courses may be double counted between your major and minor.*

* MLRS 242 (Immunology) cannot be used to satisfy a minor requirement.

The following descriptions are intended only as examples.

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

SECOND YEAR

CHEM 141 or 143	4 credits
MMG 101	4 credits
BCOR 101	3 credits
ENGS 050	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

FOURTH YEAR

MMG 211	3 credits
PHYS 11 or 51 /21	5 credits (Pre-Med; Pre-Grad)
MMG 201 or 225	3 credits
Elective (Fine Arts)	3 credits
MMG 197/297	3(var) credits

SPRING

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

CHEM 142 or 144	4 credits
BCOR103/MMG196C	4 credits
MMG 104	2 credits
Elective (D1)	3 credits

BIOC 295B	3 credits
MMG 220`	4 credits
MMG 198	3(var) credits
Elective (D2)	3 credits
Elective (Soc. Sci.)	3 credits

MMG 222	4 credits
PHYS 12 or 42 /22	5 credits
MMG 198/298	3(var) credits
MMG223	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, MMG 225, and MMG230** 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, MMG230, 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.

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

SECOND YEAR

CHEM 141 or 143	4 credits
MMG 101	4 credits
BCOR 101	3 credits
ENGS 050	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

FOURTH YEAR

PHYS 11 or 31 /21	5 credits (Pre-Med; Pre-Grad)
MMG 197/297	3(var) credits
MMG 233	3 credits
MMG 201 or 225	3 credits

SPRING

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

CHEM 142 or 144	4 credits
BCOR103/MMG196C	4 credits
MMG 104	2 credits
Elective (D1)	3 credits

MMG 206	3 credits
MMG 198	3(var) credits
MMG 232	3 credits
Elective (D2)	3 credits
Elective (Soc. Sci.)	3 credits

PHYS 12 or 42 /22	5 credits
MMG 198/298	3(var) credits
MMG 203	4 credits
Elective (Fine Arts)	3 credits
MMG 299	1 credit