

**Microbiology and Molecular Genetics  
Advising Form 2015-2016**

**Student's Name:** \_\_\_\_\_

**Major:**        **Microbiology**\_\_\_\_\_        **Molecular Genetics**\_\_\_\_\_

**UVM Requirements:**

**Total Credits for Graduation: 120 course credits; cumulative GPA > 2.0**

**Courses:**

**Foundational Writing and Information Literacy Requirement:**

ENGS 001 or HCOL 085 for first-year students \_\_\_\_\_

ENGS 050 for other students \_\_\_\_\_

**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)

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 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 for first-year students \_\_\_\_\_

ENGS 050 for other students \_\_\_\_\_

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

**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 University Diversity Requirement

**B. Environmental Stewardship:** satisfied by University General Education Requirement in Sustainability

**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 or CS021 and CALS183 or SPCH011** 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/ugrad\\_program\\_overview.htm](http://www.uvm.edu/microbiology/ugrad_program_overview.htm))

<b><u>Major Requirements:</u></b>	<b><u>Semester &amp; Year completed</u></b> (54 total credits)
First-Year Colloquium: <b>MMG 001</b>	_____ (1 credit)
Exploring Biology: <b>BCOR 11 &amp; 12</b>	_____ (8 credits)
Calculus: <b>MATH 19 &amp; 20</b> <u>or</u> <b>21 &amp; 22</b>	_____ (6/8 credits)
General Chemistry: <b>CHEM 31 &amp; 32</b>	_____ (8 credits)
Organic Chemistry: <b>CHEM 141 &amp; 142</b> <u>or</u> <b>143 &amp; 144</b>	_____ (8 credits)
Microbiology & Infectious Disease: <b>MMG 101</b>	_____ (4 credits)
Intro. to Recombinant DNA Tech.: <b>MMG 104</b>	_____ (2 credits)
Genetics: <b>BCOR 101</b>	_____ (3 credits)
Molecular Cell Biology: <b>BCOR 103/MMG196C</b>	_____ (4/3 credits)
Biochemistry I: <b>MMG 205</b> <u>or</u> <b>BIOC 212</b>	_____ (3 credits)
Biochemistry II: <b>MMG 206</b> <u>or</u> <b>BIOC 212</b>	_____ (3 credits)
Statistics: <b>STAT 141</b> <u>or</u> <b>STAT 200</b>	_____ (3 credits)
Senior Seminar: <b>MMG 299</b>	_____ (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 Molecular Genetics \_\_\_\_\_ (3 credits)

**9 credits from these MMG course electives:**

MMG 201 Molecular Cloning Lab \_\_\_\_\_ (3 credits)

MMG 203 Mammalian Cell &amp; 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 231 Programming for Bioinformatics \_\_\_\_\_ (3 credits)

MMG 232 Methods in Bioinformatics \_\_\_\_\_ (3 credits)

MMG 233 Genetics &amp; Genomics \_\_\_\_\_ (3 credits)

MMG 240 Macromol.Struct. Proteins &amp; 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 &amp; 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 the course instructor and the student's MMG advisor

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

MMG 233                      Genetics &amp; Genomics                      \_\_\_\_\_ (3 credits)

**9** credits from these MMG course electives:

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 Molecular Genetics	_____ (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 231	Programming for Bioinformatics	_____ (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 the course instructor and the student's MMG advisor

## MMG Advising Form 2015-2016

### 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](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 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.

#### 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: **18/19** total credits

MMG 101	Microbiology & Infectious Disease	_____	(4 credits)
MMG 104	Intro. to Recombinant DNA Tech.	_____	(2 credits)
BCOR 101	Genetics	_____	(3 credits)
BCOR 103/MMG196C	Molecular Cell Biology	_____	(4/3 credits)

#### **6** credits of upper-level **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 231	Programming for 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)

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

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

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 212	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 231	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