Microbiology and Molecular Genetics
Advising Form 2019-2020

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, ENGS 002, or HCOL 085 for first-year 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, 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, ENGS 002, 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** and **CALS085** 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/

Major Requirements: (60 total credits)	**Semester & Year completed**
First-Year Colloquium: **MMG 001**	_____ (1 credit)
Unseen Worlds – Microbes and You: **MMG 002 (SU)**	_____ (3 credit)
Exploring Biology: **BCOR 11 & 12** or **BCOR 21**	_____ (8/4 credits)
Calculus: **MATH 19 & 20** or **21 & 22**	_____ (6/8 credits)
General Chemistry: **CHEM 31 & 32**	_____ (8 credits)
Organic Chemistry: **CHEM 141 & 142** or **143 & 144**	_____ (8 credits)
Microbiology & Infectious Disease: **MMG 101**	_____ (4 credits)
Introduction to Recombinant DNA Technology: **MMG 104**	_____ (3 credits)
Introduction to Biomedical Research Methods: **MMG 106**	_____ (3 credits)
Genetics: **BCOR 101**	_____ (3 credits)
Molecular Cell Biology: **BCOR 103** or **MMG196**	_____ (4/3 credits)
Biochemistry: **MMG 205** or **MMG 206** or **BIOC 201** or **BIOC 275**	_____ (3 credits)
Statistics: **STAT 141** or **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 – 21 credits

2 of these 3 courses:

MMG 211	Prokaryotic Molecular Genetics	____	(3 credits)
MMG 222	Advanced Medical Microbiology	____	(4 credits)
MMG 230	Advanced Studies in Emerging Infectious Diseases (D2,SU)	____	(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 223	Immunology	____	(3 credits)
MMG 225	Eukaryotic Virology	____	(3 credits)
MMG 227	Cancer and Genetic Diseases	____	(3 credits)
MMG 229	Bioterrorism and Infectious Agents	____	(3 credits)
MMG 232	Methods in Bioinformatics	____	(3 credits)
MMG 233	Genetics & Genomics	____	(3 credits)
MMG 235	Bioterrorism	____	(3 credits)
MMG 240	Macromolecular Structures of Proteins & Nucleic Acids	____	(3 credits)
MMG 320*	Cellular Microbiology	____	(4 credits)
MMG 352*	Protein:Nucleic Acid Interactions	____	(3 credits)

6 credits from above courses or 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)
BHSC 242	Immunology	____	(3 credits)
BHSC 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 – 21 credits

2 of these 3 courses:

MMG 201	Molecular Cloning Lab	____ (3 credits)
MMG 227	Cancer and Genetic Diseases	____ (3 credits)
MMG 233	Genetics & Genomics	____ (3 credits)

9 credits from these MMG courses:

MMG 203	Mammalian Cell & Molecular Biology Lab	____ (4 credits)
MMG 207	Biochemistry Laboratory	____ (2 credits)
MMG 220	Environmental Microbiology	____ (3 credits)
MMG 222	Advanced Medical Microbiology	____ (4 credits)
MMG 223	Immunology	____ (3 credits)
MMG 225	Eukaryotic Virology	____ (3 credits)
MMG 229	Bioterrorism and Infectious Agents	____ (3 credits)
MMG 230	Advanced Studies in Emerging Infectious Diseases (D2,SU)	____ (3 credits)
MMG 232	Methods in Bioinformatics	____ (3 credits)
MMG 233	Genetics & Genomics	____ (3 credits)
MMG 235	Bioterrorism	____ (3 credits)
MMG 240	Macromolecular Structures of Proteins & Nucleic Acids	____ (3 credits)
MMG 320*	Cellular Microbiology	____ (4 credits)
MMG 352*	Protein:Nucleic Acid Interactions	____ (3 credits)

6 credits from above courses or 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)
BHSC 242	Immunology	____ (3 credits)
BHSC 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 (SU)	Unseen Worlds – Microbes and You	Every Fall
MMG 101	Microbiology and Infectious Disease	Every Fall
MMG 104	Introduction to Recombinant DNA Technology	Every Spring
MMG 106	Introduction to Biomedical Research Methods	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 Molecular Genetics	Every Fall
MMG 220	Environmental Microbiology	Spring, Even Years
MMG 222	Advanced Medical Microbiology	Spring, Even Years
MMG 223	Immunology	Spring, Odd Years
MMG 225	Eukaryotic Virology	Fall, Even Years
MMG 227	Cancer and Genetic Diseases	Every Spring
MMG 230 (D2,SU)	Advanced Studies in Emerging Infectious Diseases	Fall, Odd Years
MMG 232	Methods in Bioinformatics	Every Spring
MMG 233	Genetics and Genomics	Every Fall
MMG 235	Bioterrorism	Spring, Odd Yr.
MMG 240	Macromolecular Structures of 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 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 **18** additional credits beyond the **21** credits required for a single major. Only **1** course may be double-counted.

Required: ***4*** of these 6 courses
MMG 201 Molecular Cloning Lab
MMG 211 Prokaryotic Molecular Genetics
MMG 222 Advanced Medical Microbiology
MMG 227 Cancer and Genetic Diseases
MMG 230 Advanced Studies in Emerging Infectious Diseases (D2,SU)
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)
or		
BCOR 103/MMG 196C	Molecular Cell Biology	_____ (4/3 credits)

9 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		SPRING	
FIRST YEAR			
BCOR 11	4 credits	BCOR 12	4 credits
CHEM 31	4 credits	CHEM 32	4 credits
MATH 19 or 21	3 (4) credits	MATH 20 or 22	3 (4) credits
MMG 001	1 credits	CALS 002	3 credits
MMG 002 (SU)	3 credit	Elective (D1)	3 credits
SECOND YEAR			
CHEM 141 or 143	4 credits	CHEM 142 or 144	4 credits
MMG 101	4 credits	BCOR103/MMG196C	4 credits
BCOR 101	3 credits	MMG 104	2 credits
ENGS 002	3 credits	MMG 106	3 credits
		CALS 183	3 credits
THIRD YEAR			
BIOC 201	3 credits	MMG 235	3 credits
MMG 201 or 225	3 credits	MMG 220`	4 credits
Elective (Soc. Sci.)	3 credits	MMG 198	3(var) credits
STAT 141/200	3 credits	Elective (D2)	3 credits
Elective (Fine Arts)	3 credits	Elective (Soc. Sci.)	3 credits
FOURTH YEAR			
MMG 211	3 credits	MMG 222	4 credits
PHYS 11 or 51 /21	5 credits (Pre-Med; Pre-Grad)	PHYS 12 or 42 /22	5 credits
MMG 230	3 credits	MMG 198/298	3(var) credits
Elective (Fine Arts)	3 credits	MMG223	3 credits
MMG 197/297	3(var) credits	MMG299	1 credit

If one is interested in pursuing a **clinically oriented career**, consider the following electives: **MMG 230**, **MMG 222, and MLS 255** are absolutely essential. Also, **MMG 197/297 and 198/298, MMG 203**, **MMG223/MLRS242**, **MMG 225,** and **MMG 201** are strongly suggested.

If one is interested in pursuing an **applied microbiology career**, consider the following electives: **MMG 201** and **NFS 203** are absolutely essential. Also, **MMG 203**, **MMG 220, MMG 222, MLS 255**, **MMG223/MLRS242**, and **MMG 235** are strongly suggested.

If one is interested in pursuing a **general microbiology experience**, consider the following electives: **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		SPRING	
FIRST YEAR			
BCOR 11	4 credits	BCOR 12	4 credits
CHEM 31	4 credits	CHEM 32	4 credits
MATH 19 or 21	3 (4) credits	MATH 20 or 22	3 (4) credits
MMG 001	1 credits	CALS 002	3 credits
MMG 002 (SU)	3 credit	Elective (D1)	3 credits
SECOND YEAR			
CHEM 141 or 143	4 credits	CHEM 142 or 144	4 credits
MMG 101	4 credits	BCOR103/MMG196C	4 credits
BCOR 101	3 credits	MMG 104	2 credits
ENGS 001	3 credits	MMG 106	3 credits
		CALS 183	3 credits
THIRD YEAR			
MMG 205	3 credits	MMG 206	3 credits
MMG 201 or 225	3 credits	MMG 198	3(var) credits
Elective (Soc. Sci.)	3 credits	MMG 232	3 credits
STAT 141/200	3 credits	Elective (D2)	3 credits
Elective (Fine Arts)	3 credits	Elective (Soc. Sci.)	3 credits
FOURTH YEAR			
PHYS 11 or 31 /21	5 credits (Pre-Med; Pre-Grad)	PHYS 12 or 42 /22	5 credits
MMG 197/297	3(var) credits	MMG 198/298	3(var) credits
MMG 233	3 credits	MMG 203	4 credits
MMG 201 or 225	3 credits	Elective (Fine Arts)	3 credits
		MMG 299	1 credit