MOLECULAR MICROBIOLOGY AND IMMUNOLOGY MAJOR
(22 October 2013)

A. University Core Curriculum (39-40 credits).
   - **English** (3 credits: ENG 102)
   - **Mathematics** (4 credits: MATH 181)
   - **Natural Sciences** (8 credits: CHEM 121A and 121L, 122A and 122L; or CHEM 201, 202)
   - **Social Sciences** (3 credits)
   - **Fine Arts** (3 credits)
   - **Core Humanities** (9 credits: CH201, CH202, and CH203)
   - **Diversity** (3 credits)
   - **Capstone Courses** (General capstone, 3-4 credits; suggestions: BIOL 415 or CHS 461; PLUS required MICR 483, Capstone, 3 credits)

B. Required Foundational Sciences Courses (43-44 credits)
   - BCH 400: Introductory Biochemistry, 4 credits
   - BCH 405: Molecular Biology, 3 credits
   - BCH 406: Molecular Biology Laboratory, 3 credits
   - BIOL 190: Introduction to Cell and Molecular Biology, 3 credits
   - BIOL 191: Introduction to Organismal Biology, 3 credits
   - BIOL 192: Principles of Biological Investigations (laboratory), 2 credits
   - BIOL 300: Genetics, 3 credits
   - BIOL 315R: Cell Biology, 3 credits
   - CHEM 341: Organic Chemistry I, 3 credits
   - CHEM 342: Organic Chemistry II, 3 credits
   - CHEM 345: Organic Chemistry Laboratory, 2 credits
   - PHYS 151R: General Physics with Lab, 4 credits
   - PHYS 152R: General Physics with Lab, 4 credits
   - STAT 152 or 352 (3 credits) or APST 270 (4 credits)

C. Required MMI Core Courses (22 credits)
   - MICR 276A: Introduction to Microbiology, 3 credits
   - MICR 276L: Introduction to Microbiology Laboratory, 2 credits
   - MICR 300: Medical Microbiology and Immunology (lecture with lab), 4 credits
   - MICR 350: Microbial Genomics and Genetics, 4 credits
   - MICR 425: Human Virology, 3 credits
   - MICR 453: Immunology, 3 credits
   - MICR 470: Microbial Pathogenesis, 3 credits
   - MICR 483: Infectious Diseases, 3 credits (Capstone Course, also listed and credits counted under **A. University Core Curriculum**.)

D. Electives (14-16 credits)
   See list of possible electives on the following pages.

**TOTAL CREDITS = 120**
# PROPOSED MOLECULAR MICROBIOLOGY AND IMMUNOLOGY MAJOR
## EXAMPLE FOUR-YEAR PLAN

### YEAR 1

<table>
<thead>
<tr>
<th>FALL SEMESTER (1)</th>
<th>SPRING SEMESTER (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>ENG 101 (3)</em></td>
<td><em>ENG 102 (3)</em></td>
</tr>
<tr>
<td><em>CHEM 121 (4)</em></td>
<td><em>CHEM 122 (4)</em></td>
</tr>
<tr>
<td>MATH 127R (3)</td>
<td><em>MATH 181 (4)</em></td>
</tr>
<tr>
<td><em>Core Fine Arts (3)</em></td>
<td>^BIOL, 190 (3)*</td>
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<tr>
<td><em>Core Diversity (3)</em></td>
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<tr>
<td><strong>Semester Credits: 16</strong></td>
<td><strong>Semester Credits: 14</strong></td>
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### YEAR 2

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<tr>
<th>FALL SEMESTER (3)</th>
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<tbody>
<tr>
<td><em>CH 201 (3)</em></td>
<td>^PHYS 152R (4)*</td>
</tr>
<tr>
<td><em>CH 202 (3)</em></td>
<td>^CHEM 341 (3)*</td>
</tr>
<tr>
<td>^PHYS 151R (4)</td>
<td>^BIOL 300 (3)*</td>
</tr>
<tr>
<td>^BIOL, 191 (3)</td>
<td>^MICR 276 (3)*</td>
</tr>
<tr>
<td>^BIOL 192 (2)</td>
<td>^MICR 267L (2)*</td>
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<tr>
<td><strong>Semester Credits: 15</strong></td>
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### YEAR 3

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<th>FALL SEMESTER (5)</th>
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<tbody>
<tr>
<td>^CH 203 (3)*</td>
<td>^STAT 152 (3)*</td>
</tr>
<tr>
<td>#MICR 300 (4)</td>
<td>^BCH 405 (3)*</td>
</tr>
<tr>
<td>^BOL 315R (3)</td>
<td>^BCH 406 (3)*</td>
</tr>
<tr>
<td>^BCH 400 (4)</td>
<td>^MICR 350 (4)*</td>
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<tr>
<td><strong>Semester Credits: 14</strong></td>
<td><strong>Semester Credits: 16</strong></td>
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### YEAR 4

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<tr>
<th>FALL SEMESTER (7)</th>
<th>SPRING SEMESTER (8)</th>
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</thead>
<tbody>
<tr>
<td>^CHEM 342 (3)</td>
<td><em>Core Social Sciences (3)</em></td>
</tr>
<tr>
<td>^CHEM 345 (2)</td>
<td><em>Core Capstone (3-4)</em></td>
</tr>
<tr>
<td>#MICR 453 (3)</td>
<td>^#MICR 483, Capstone (3)*</td>
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<tr>
<td>#MICR 470 (3)</td>
<td>MMI Elective (3)*</td>
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<tr>
<td>MMI Elective (3)</td>
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<tr>
<td><strong>Semester Credits: 15</strong></td>
<td><strong>Semester Credits: 15</strong></td>
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* A. UNR Core Curriculum course
* B. Required Foundational Science Courses
* C. Required MMI Core Courses
D. Electives
SUGGESTED ELECTIVES FOR MMI MAJOR

MICR 476: CANCER IMMUNOBIOLOGY
MICR 487: PROBLEMS IN INFECTION AND IMMUNITY

BCH 121: CURRENT ISSUES - BIOCHEMISTRY & MOLECULAR BIOLOGY
BCH 303: BIOCHEMICAL ANALYSIS
BCH 403: BIOCHEMISTRY LABORATORY
BCH 410: PLANT PHYSIOLOGY
BCH 413: MOLECULAR BIOPHYSICS
BCH 417: METABOLIC REGULATION

BIOL 223: HUMAN ANATOMY AND PHYSIOLOGY I
BIOL 224: HUMAN ANATOMY AND PHYSIOLOGY II
BIOL 251: GENERAL MICROBIOLOGY
BIOL 316: COMPARATIVE ANIMAL PHYSIOLOGY
BIOL 368: PARASITOLOGY
BIOL 395: LABORATORY IN GENETICS AND CELL BIOLOGY
BIOL 404: POPULATION GENETICS
BIOL 415: EVOLUTION
BIOL 429: BIOLOGICAL DIVERSITY
BIOL 434R: MAMMALOGY
BIOL 450: SPECIAL TOPICS
BIOL 454: GENOMIC CONFLICT, EPIGENETICS & HUMAN DISEASE
BIOL 456: MOLECULAR BASIS OF EPIGENETICS
BIOL 466: DEVELOPMENTAL BIOLOGY
BIOL 475: NEUROBIOLOGY
BIOL 477: GENES, BRAIN, AND BEHAVIOR
BIOL 482R: CELL BIOLOGY OF DISEASE
BIOL 490: BIOGEOGRAPHY

CHEM 347: LABORATORY TECHNIQUES OF ORGANIC CHEMISTRY I
CHEM 348: LABORATORY TECHNIQUES OF ORGANIC CHEMISTRY II
CHEM 392: SPECIAL TOPICS IN CHEMISTRY
CHEM 421: PHYSICAL CHEMISTRY I
CHEM 422: PHYSICAL CHEMISTRY II
CHEM 423: PHYSICAL CHEMISTRY LABORATORY
CHEM 425: BIOPHYSICAL CHEMISTRY
CHEM 431: ADVANCED INORGANIC CHEMISTRY
CHEM 432: INORGANIC CHEMISTRY LABORATORY
CHEM 435R: CHEMICAL SYNTHESIS
CHEM 442: ADVANCED ORGANIC CHEMISTRY
CHEM 443R: ORGANIC SPECTROSCOPY AND STRUCTURE
CHEM 444: ORGANIC STRUCTURE DETERMINATION LABORATORY
CHEM 449: POLYMER CHEMISTRY
CHEM 450: ADVANCED PHYSICAL CHEMISTRY
CHEM 451: ELEMENTARY PHYSICAL CHEMISTRY - MACROMOLECULES
CHEM 455: INSTRUMENTAL ANALYSIS

CEE 453: ENVIRONMENTAL MICROBIOLOGY

CHS 200: INTRODUCTION TO PUBLIC HEALTH BIOLOGY
CHS 230: INTRODUCTION TO ENVIRONMENTAL HEALTH
CHS 340: POLICY ISSUES IN HEALTH AND SOCIETY
CHS 381: INTRODUCTION TO HEALTH DATA ANALYSIS
CHS 345R: ETHICS AND PROFESSIONALISM IN PUBLIC HEALTH
CHS 450: THE HISTORY, SCIENCE, AND POLITICS OF VACCINES
CHS 461: THE WORLD’S HEALTH (General Capstone)

GEOL 330: INTRODUCTION TO GEOCHEMISTRY
GEOL 462: MICROPALEONTOLOGY

MATH 127R: PRECALCULUS II
MATH 130: ANALYTIC GEOMETRY
MATH 131: QUANTITATIVE REASONING
MATH 182: CALCULUS II
MATH 253: MATRIX ALGEBRA
MATH 283R: CALCULUS III
MATH 285: DIFFERENTIAL EQUATIONS
MATH 299: DIRECTED STUDY
MATH 301: INTRODUCTION TO PROOFS: LOGIC, SETS & FUNCTIONS
MATH 307: SYMBOLIC LOGIC
MATH 310: INTRODUCTION TO ANALYSIS I
MATH 311: INTRODUCTION TO ANALYSIS II
MATH 320R: MATHEMATICS OF INTEREST
MATH 330: LINEAR ALGEBRA
MATH 331: GROUPS, RINGS AND FIELDS
MATH 352: PROBABILITY AND STATISTICS
MATH 373: THEORY OF POSITIVE INTEGERS
MATH 381: METHODS OF DISCRETE MATHEMATICS

NRES 322: SOILS

PHYS 180: PHYSICS FOR SCIENTISTS AND ENGINEERS I
PHYS 180L: PHYSICS FOR SCIENTISTS & ENGINEERS LABORATORY I
PHYS 181: PHYSICS FOR SCIENTISTS AND ENGINEERS II
PHYS 181L: PHYSICS FOR SCIENTISTS & ENGINEERS LABORATORY II
PHYS 182: PHYSICS FOR SCIENTISTS AND ENGINEERS III
PHYS 182L: PHYSICS FOR SCIENTISTS & ENGINEERS LABORATORY III
PHYS 293: DIRECTED STUDY
PHYS 301: MATHEMATICAL METHODS FOR PHYSICS
PHYS 323: INTERMEDIATE LABORATORY WITH SHOP EXPERIENCE