### CELLULAR AND MOLECULAR BIOLOGY (CMB) PREREQUISITES

**RG 3504(BA) / 3503(BS) / 5984(BSC)**

**Effective FA08/1710 (09/02/2008)**

**Academic Subplans NE BIOMEDE**

#### RQ 4581  Prerequisite for Biology Department

**Effective FA08/1710 (09/02/2008)**

| LN 0010 | BIOLOGY 171, 172 or 174, 173 |
| LN 0020 | BIOLOGY 162 or 163 |
| LN 0030 | BIOLOGY 195 & 173 |
| LN 0040 | MCDB 400 limit: 1 course, Min Unit/Crs = 3.0, Used by BS Core for CMB |
| LN 0050 | MCDB 400 limit: 1 course, Min Unit/Crs = 3.0, Used by AB Core for CMB |
| LN 0060 | MCDB 400 limit: 1 course, Min Unit/Crs = 3.0, Used by BSC Core for CMB |
| LN 0070 | MCDB 400 limit: 1 course, Min Unit/Crs = 3.0, Used by BS Major for CMB:Biomede |
| LN 0080 | MCDB 400 limit: 1 course, Min Unit/Crs = 3.0, Used by AB Major for CMB:Biomede |
| LN 0090 | MCDB 400 limit: 1 course, Min Unit/Crs = 3.0, Used by BSC Major for CMB:Biomede |

**Effective FA07/1660 (09/04/2007)**

| LN 0010 | BIOLOGY 171, 172, and 173 |
| LN 0020 | BIOLOGY 195 and 173 |
| LN 0030 | BIOLOGY 162 or 163 |

#### RQ 1871  Chemistry and Math Prerequisites for Biology

**Effective FA99/1260 (09/08/1999)**

| LN 0010 | CHEM 210, 211, 215 and 216 |
| LN 0020 | One course from MATH 115, 185, 120 or 295 and one course from MATH 116, 186, 121, 156, or 296 |

**Effective FA97/1060 (09/03/1997)**

| LN 0010 | CHEM 210, 211, 215 and 216 |
| LN 0020 | One course from MATH 115 or 185 and one course from MATH 116 or 186 |

#### RQ 1872  Physics Prerequisites for Biology (RQ 1872)

**Effective FA08/1710 (09/02/2008)**

| LN 0010 | Two courses from PHYSICS Lectures |
| LN 0020 | Two courses from PHYSICS Labs |

**Effective FA07/1660 (09/04/2007)**

| LN 0010 | Two courses from PHYSICS 125, 126, 135, 140, 235, or 240 |
| LN 0020 | Two courses from PHYSICS 127, 128, 141, or 241 |

**Effective FA97/1060 (09/03/1997)**

| LN 0010 | Two courses from PHYSICS 125, 126, 140, or 240 |
| LN 0020 | Two courses from PHYSICS 127, 128, 141, or 241 |

**Effective FA07/1660 (09/04/2007)**

#### RQ 3334  MCDB Limits

**Effective FA07/1660 (09/04/2007)**

| LN 0010 | Three units of MCDB 400 |
| LN 0020 | Do not allow any 100, 200 or 300 level independent Study. |

**Effective FA97/1060 (09/03/1997)**

| LN 0010 | Three units of MCDB 400 |
| LN 0015 | Do not allow any 100, 200 or 300 level independent Study. |
| LN 0020 | BIOLOGY 162 |
| LN 0030 | CHEM 210, 211, 215, and 216 |
| LN 0040 | MATH 115 and 116 |
| LN 0050 | PHYSICS 140, 141, 240, and 241 or PHYSICS 125, 127, 126, and 128 |

#### RQ 3241  Courses in this requirement are disallowed from all requirements, including GPA, for Biology, General Biology and Biology Minor programs.
Effective 01/01/1901
LN 0010 Courses excluded from all Biology, Gen Biol and Minor requirements.

RQ 4581 Prerequisite for Biology Department
Effective FA07/1660 (09/04/2007)
LN 0010 BIOLOGY 171, 172, and 173
LN 0020 BIOLOGY 195 and 173
LN 0030 BIOLOGY 162 or 163

RQ 1871 Chemistry and Math Prerequisites for Biology
Effective FA99/1260 (09/08/1999)
LN 0010 CHEM 210, 211, 215 and 216
LN 0020 One course from MATH 115, 185, 120 or 295 and one course from MATH 116, 186, 121, 156, or 296

Effective FA97/1060 (09/03/1997)
LN 0010 CHEM 210, 211, 215 and 216
LN 0020 One course from MATH 115 or 185 and one course from MATH 116 or 186

RQ 1872 Physics Prerequisites for Biology (RQ 1872)
Effective FA07/1660 (09/04/2007)
LN 0010 Two courses from PHYSICS 125, 126, 135, 140, 235, or 240
LN 0020 Two courses from PHYSICS 127, 128, 141, or 241

Effective FA97/1060 (09/03/1997)
LN 0010 Two courses from PHYSICS 125, 126, 140, or 240
LN 0020 Two courses from PHYSICS 127, 128, 141, or 241

RG 3506(BA) / 3505(BS) / 5985(BSC) CELLULAR AND MOLECULAR BIOLOGY (CMB) MAJOR CORE
(ACADEMIC SUBPLANS NE BIOMEDE)
Effective FA97/1060 (09/03/1997)

RQ 3336 Core for CMB (ACADEMIC SUBPLANS NE BIOMEDE)
Effective FA08/1710 (09/02/2008)
LN 0010 Genetics: BIOLOGY 305
LN 0020 Biochemistry: Choose from MCDB 310, BIOLCHEM 415, or CHEM 351
LN 0030 CHEM 451 and 452
LN 0040 Molecular Biology: MCDB 427
LN 0050 Cellular Biology: MCDB 428

Effective FA97/1060 (09/03/1997) (ACADEMIC SUBPLANS NE MICROBIOL)
LN 0010 BIOLOGY 305
LN 0020 Option one - BIOLOGY/MCDB 310
LN 0030 Option two - CHEM 451 and 452
LN 0040 Option three - BIOLCHEM 415

RQ 3626 Advanced CMB Laboratory Courses - Group I (ACADEMIC SUBPLANS NE BIOMEDE)
Effective FA08/1710 (09/02/2008)
LN 0010 Two MCDB Advanced Lab courses

Effective FA97/1060 (09/03/1997)
LN 0020 Two MCDB Advanced Lab courses

RQ 3346 Advanced CMB Courses – Group II (ACADEMIC SUBPLANS NE BIOMEDE)
Effective FA08/1710 (09/02/2008)
LN 0010 Choose two courses from an approved course list. A third (or fourth) Advanced CMB lab course may meet this requirement.

Effective FA97/1060 (09/03/1997)
LN 0010 Choose two courses from an approved course list. A third (or fourth) Advanced CMB lab course may meet this requirement.

RQ 3345 Biology/Chemistry Elective for CMB - Group III (ACADEMIC SUBPLANS NE BIOMEDE)
Effective FA08/1710 (09/02/2008)
LN 0010 Option one - One course from the approved list, or any advanced CMB course.
Option one - One course from the approved list, or any advanced CMB course.

Option two - CHEM 241 and 242

Option three - CHEM 241 and 242

Option four - CHEM 451 and 452

Option five - One cognate course from an approved course list, or with Advisor approval

Option six - One course in MATH or STATS, one course with MATH 116 as a prerequisite, STATS 400, or BIOSTAT 503 with Advisor approval ONLY.

Option one - One 200, 300 or 400 level BIOLOGY, EEB or MCDB course except for courses specified in the Bulletin

Option two - CHEM 230 or 260

Option three - CHEM 241 and 242

Option four - CHEM 451 and 452

Option five - One course that has CHEM 260 as a prerequisite

Minimum 32 units in the major

Major GPA is calculated on: ALL mandatory prerequisites; ALL courses elected from BIOLOGY, EEB, and MCDB; plus all other courses used to fulfill major requirements.

Area Distribution Requirement: Only the exact amount of required units is used in Distribution. Additional units of course work will be split off and used elsewhere in the audit.

Additional Area Distribution Requirement, 3 units in each of 3 of the following 5 areas: Humanities, Natural Science, Social Science, Mathematical & Symbolic Analysis and Creative Expression. Up to 9 units may be Interdisciplinary.
| LN 0030 | 3 additional units of Social Sciences |
| LN 0040 | 3 units of Mathematical and Symbolic Analysis |
| LN 0050 | 3 units of Creative Expression |
| LN 0060 | 3 units of Interdisciplinary |
| LN 0070 | 3 additional units of Interdisciplinary |
| LN 0080 | 3 additional units of Interdisciplinary |

Effective FA97/1060 (09/03/1997)

| LN 0010 | 3 additional units of Humanities |
| LN 0020 | 3 additional units of Natural Sciences |
| LN 0030 | 3 additional units of Social Sciences |
| LN 0040 | 3 units of Mathematical and Symbolic Analysis |
| LN 0050 | 3 units of Creative Expression |

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**Campus:** UMICH  
**RG = Requirement Group**

**Career:** ULSA  
**RQ = Requirement**

**Program:** “blank”  
**LN = Line**

**Plan:** 1220ABLSA / 1220BSLSA/1220BSCLSA

**SubPlan:** BIOMEDE

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**RG 11062(BA) / 11061(BS) / 11064(BSC)**  
**CMB:BME PROGRAM PREREQUISITES**

Effective FA08/1710 (09/02/2008)

**RQ 4581  Prerequisite for Biology Department**

Effective FA08/1710 (09/02/2008)

| LN 0010 | BIOLOGY 171, 172 or 174, 173 |
| LN 0020 | BIOLOGY 162 or 163 |
| LN 0030 | BIOLOGY 195 & 173 |
| LN 0040 | MCDB 400 limit: 1 course, Min Unit/Crs = 3.0, Used by BS Core for CMB |
| LN 0050 | MCDB 400 limit: 1 course, Min Unit/Crs = 3.0, Used by AB Core for CMB |
| LN 0060 | MCDB 400 limit: 1 course, Min Unit/Crs = 3.0, Used by BSC Core for CMB |
| LN 0070 | MCDB 400 limit: 1 course, Min Unit/Crs = 3.0, Used by BS Major for CMB:Biomede |
| LN 0080 | MCDB 400 limit: 1 course, Min Unit/Crs = 3.0, Used by AB Major for CMB:Biomede |
| LN 0090 | MCDB 400 limit: 1 course, Min Unit/Crs = 3.0, Used by BSC Major for CMB:Biomede |

Effective FA07/1660 (09/04/2007)

| LN 0010 | BIOLOGY 171, 172, and 173 |
| LN 0020 | BIOLOGY 195 and 173 |
| LN 0030 | BIOLOGY 162 or 163 |

**RQ 1871  Chemistry and Math Prerequisites for Biology**

Effective FA99/1260 (09/08/1999)

| LN 0010 | CHEM 210, 211, 215 and 216 |
| LN 0020 | One course from MATH 115, 185, 120 or 295 and one course from MATH 116, 186, 121, 156, or 296 |

Effective FA97/1060 (09/03/1997)

| LN 0010 | CHEM 210, 211, 215 and 216 |
| LN 0020 | One course from MATH 115 or 185 and one course from MATH 116 or 186 |

**RQ 1872  Physics Prerequisites for Biology**

Effective FA08/1710 (09/02/2008)

| LN 0010 | Two courses from PHYSICS Lectures |
| LN 0020 | Two courses from PHYSICS Labs |

Effective FA07/1660 (09/04/2007)

| LN 0010 | Two courses from PHYSICS 125, 126, 135, 140, 235, or 240 |
| LN 0020 | Two courses from PHYSICS 127, 128, 141, or 241 |

Effective FA97/1060 (09/03/1997)

| LN 0010 | Two courses from PHYSICS 125, 126, 140, or 240 |
| LN 0020 | Two courses from PHYSICS 127, 128, 141, or 241 |

**RQ 7171  Engineering Prerequisite**

Effective FA03/1460 (09/02/2003)

| LN 0010 | ENGR 101 or EECS 183 |
RG 10845(BA) / 10830(BS) / 10847(BSC) CMB: BME PROGRAM UNDERGRADUATE MAJOR
Effective Date 09/02/2003

RQ 7099 Core Courses
Effective Date 09/02/2003
LN 0010 Genetics: BIOLOGY 305
LN 0020 Biochemistry: MCDB 310, CHEM 351, or BIOLCHEM 415 OR
LN 0030 Biochemistry: CHEM/BIOCHEM 451 and CHEM/BIOCHEM 452
LN 0040 Molecular Biology: MCDB 427
LN 0050 Cellular Biology: MCDB 428 or BIOMEDE 418
LN 0060 Genetics Lab: MCDB 306
LN 0070 CMB Laboratory: MCDB 429

RQ 7100 Engineering Courses
Effective Date 09/02/2003
LN 0010 Biomedical Engineering: BIOMEDE 221, 321, and 331
LN 0020 BIOMEDE 419

RQ 7101 Advanced CMB
Effective Date 09/02/2003
LN 0010 Advanced CMB: Select one course from the approved list

RQ 7103 Biology Elective
Effective Date 09/02/2003
LN 0010 Chose one course in consultation with, and approved by, the program advisors

RQ 7104 Cognates
Effective Date 09/02/2003
LN 0010 STATS 400, 401 (taken Fall 2011 or later), 412 or 425
LN 0020 MATH 215 and 216

RG 10848(BA) / 10831(BS) / 10848(BSC) CMB: BIOMEDICAL ENGINEERING MAJOR TOTAL UNITS, GPA
Effective Date 09/02/2003 (ACADEMIC SUBPLANS NE HONORS)

RQ 7105 CMB: Biomedical Engineering Major Total Units, GPA
Effective Date 09/02/2003
LN 0010 Minimum 55 units in the major
LN 0020 Major GPA is calculated on: ALL mandatory prerequisites; ALL cognates; ALL courses elected from BIOLOGY, EEB, and MCDB; plus all other courses used to fulfill Major requirements.

RG 10832(BA) / 10837(BS) / 10849(BSC) AREA DISTRIBUTION - CMB:BIOMEDICAL ENGINEERING: FOR MULTIPLE MAJORS, IF AN AREA DISTRIBUTION HAS BEEN FULFILLED FOR ONE MAJOR, DISREGARD THE ANALYSIS FOR ANY OTHERS. CONTACT LSA ACADEMIC ADVISING WITH QUESTIONS
Effective Date 09/02/2003 (ACADEMIC SUBPLANS NE HONORS)

RQ 3349 Area Distribution Requirement: Only the exact amount of required units is used in Distribution. Additional units of course work will be split off and used elsewhere in the audit.
Effective FA05/1560 (09/06/2005)
LN 0010 7 units in Humanities
LN 0020 7 units in Natural Sciences
LN 0030 7 units in Social Sciences
Effective FA97/1060 (09/03/1997)
LN 0010 7 units in Humanities
LN 0020 7 units in Natural Sciences
LN 0030 7 units in Social Sciences

RQ 3350 Additional Area Distribution Requirement, 3 units in each of 3 of the following 5
**CELLULAR AND MOLECULAR BIOLOGY**  
**HONORS Plan Requirements**

<table>
<thead>
<tr>
<th>Campus:</th>
<th>UMICH</th>
<th>RG = Requirement Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Career:</td>
<td>ULSA</td>
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<tr>
<td>Plan:</td>
<td>1220ABLSA / 1220BSLSA</td>
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<tr>
<td>SubPlan</td>
<td>HONORS</td>
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</tbody>
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**RG 3510(BA) / 3509(BS) CMB HONORS REQUIREMENTS**  
ACADEMIC SUBPLANS NE BIOMEDE  

Effective FA97/1060 (09/03/1997)

**RQ 3547 CMB Departmental Honors requirements**  

Effective FA07/1660 (09/04/2007)

<table>
<thead>
<tr>
<th>LN 0020</th>
<th>Two courses of Independent Research for Honors.</th>
</tr>
</thead>
<tbody>
<tr>
<td>LN 0025</td>
<td>Minimum 32 units in the major</td>
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<tr>
<td>LN 0027</td>
<td>MCDB 400 limit: 1 course (Min Unit/Crs = 3.0)</td>
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<tr>
<td>LN 0030</td>
<td>Major GPA is calculated on: ALL mandatory prerequisites; ALL courses elected from BIOLOGY, EEB, and MCDB; plus all other courses used to fulfill major requirements. Minimum 3.4 GPA in the major</td>
</tr>
<tr>
<td>LN 0040</td>
<td>Minimum Cum GPA must equal 3.4</td>
</tr>
</tbody>
</table>

Effective FA97/1060 (09/03/1997)

<table>
<thead>
<tr>
<th>LN 0010</th>
<th>BIOLOGY 201</th>
</tr>
</thead>
<tbody>
<tr>
<td>LN 0020</td>
<td>Two courses of Independent Research for Honors.</td>
</tr>
</tbody>
</table>
| LN 0030 | Major GPA is calculated on: ALL mandatory prerequisites; ALL courses elected from BIOLOGY, EEB, and MCDB; plus all other courses used to fulfill major requirements. Minimum 3.3 GPA in the major  
Minimum Cum GPA must equal 3.4 |

**RG 3514(BA) / 3513(BS) AREA DISTRIBUTION REQUIREMENT**  
ACADEMIC SUBPLANS NE BIOMEDE  

Effective FA97/1060 (09/03/1997)
**RQ 3349**  
Area Distribution Requirement: Only the exact amount of required units is used in Distribution. Additional units of course work will be split off and used elsewhere in the audit.

**Effective FA05/1560 (09/06/2005)**
- LN 0010 7 units in Humanities
- LN 0020 7 units in Natural Sciences
- LN 0030 7 units in Social Sciences

**Effective FA97/1060 (09/03/1997)**
- LN 0010 7 units in Humanities
- LN 0020 7 units in Natural Sciences
- LN 0030 7 units in Social Sciences

**RQ 3350**  
Additional Area Distribution Requirement, 3 units in each of 3 of the following 5 areas: Humanities, Natural Science, Social Science, Mathematical & Symbolic Analysis and Creative Expression. Up to 9 units may be Interdisciplinary.

**Effective FA05/1560 (09/06/2005)**
- LN 0010 3 additional units of Humanities
- LN 0020 3 additional units of Natural Sciences
- LN 0030 3 additional units of Social Sciences
- LN 0040 3 units of Mathematical and Symbolic Analysis
- LN 0050 3 units of Creative Expression
- LN 0060 3 units of Interdisciplinary
- LN 0070 3 additional units of Interdisciplinary
- LN 0080 3 additional units of Interdisciplinary

**Effective FA02/1410 (09/03/2002)**
- LN 0010 3 additional units of Humanities
- LN 0020 3 additional units of Natural Sciences
- LN 0030 3 additional units of Social Sciences
- LN 0040 3 units of Mathematical and Symbolic Analysis
- LN 0050 3 units of Creative Expression
- LN 0060 3 units of Interdisciplinary
- LN 0070 3 additional units of Interdisciplinary
- LN 0080 3 additional units of Interdisciplinary

**Effective FA97/1060 (09/03/1997)**
- LN 0010 3 additional units of Humanities
- LN 0020 3 additional units of Natural Sciences
- LN 0030 3 additional units of Social Sciences
- LN 0040 3 units of Mathematical and Symbolic Analysis
- LN 0050 3 units of Creative Expression
- LN 0060 3 units of Interdisciplinary
- LN 0070 3 additional units of Interdisciplinary
- LN 0080 3 additional units of Interdisciplinary

**Effective FA02/1410 (09/03/2002)**
- LN 0010 3 additional units of Humanities
- LN 0020 3 additional units of Natural Sciences
- LN 0030 3 additional units of Social Sciences
- LN 0040 3 units of Mathematical and Symbolic Analysis
- LN 0050 3 units of Creative Expression
- LN 0060 3 units of Interdisciplinary
- LN 0070 3 additional units of Interdisciplinary
- LN 0080 3 additional units of Interdisciplinary

**Effective FA97/1060 (09/03/1997)**
- LN 0010 3 additional units of Humanities
- LN 0020 3 additional units of Natural Sciences
- LN 0030 3 additional units of Social Sciences
- LN 0040 3 units of Mathematical and Symbolic Analysis
- LN 0050 3 units of Creative Expression