### B.S. IN MOLECULAR LIFE SCIENCES (Molecular and Structural Biology concentration) — DEGREE REQUIREMENT CHECK SHEET

For students who matriculated summer 2019 through spring 2020

<table>
<thead>
<tr>
<th>Credit hours:</th>
</tr>
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<tbody>
<tr>
<td>Currently enrolled in: ______ semester: ______________</td>
</tr>
<tr>
<td>Currently enrolled in: ______ semester: ______________</td>
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#### AFTER SUCCESSFUL COMPLETION OF CURRENT ENROLLMENT, YOU NEED THE FOLLOWING:

### IUB GENERAL EDUCATION REQUIREMENTS:

- **Foundations:**
  - English Composition
  - Mathematical Modeling (fulfilled by major)

- **Breadth of Inquiry:**
  - Arts & Humanities (A&H)—6 credits; need: ______
  - Social & Historical (S&H)—6 credits; need: ______
  - Natural & Mathematical (N&M)—(fulfilled by major)

- **World Languages & Cultures:**
  - World Language—4th semester proficiency
    - OR World Cultures—6 credits
    - OR Approved international experience

- GenEd residency complete: Yes  No  If no, you need: ______

### TOTAL HOURS REQUIREMENTS:

<table>
<thead>
<tr>
<th>Required</th>
<th>Complete</th>
<th>Needed</th>
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<tbody>
<tr>
<td>Major Hours (A)</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>College Elective Hours (B)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elective Outside Hours (C)*</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total College Hours (A+B)</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Total Credit Hours (A+B+C)</td>
<td>120</td>
<td></td>
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<tr>
<td>300/400-level Hours</td>
<td>36</td>
<td></td>
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<tr>
<td>IUB COLL Res. after 60 credits</td>
<td>36</td>
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*Maximum of 20 Elective Outside Hours (C) allowed

IPRP: Yes  No  If yes, needed credit hours may not be accurate.

Overall College GPA of 2.000 or higher is required.

### CASE REQUIREMENTS:

- Public Oral Communication (COLL-P 155)
- English Composition
- Mathematical Modeling (fulfilled by major)
- Critical Approaches to the Arts and Sciences—must be done at IUB
- CASE A&H—2 courses; will count 2 GenEd; need: ______
- CASE S&H—2 courses; will count 2 GenEd; need: ______
- CASE N&M—fulfilled by major
- Intensive Writing (IW)—must be done at IUB inside the College
- Foreign Language (FL)—3rd semester proficiency

### IUB GENERAL EDUCATION REQUIREMENTS:

- **Foundations:**
  - English Composition
  - Mathematical Modeling (fulfilled by major)

- **Breadth of Inquiry:**
  - Arts & Humanities (A&H)—6 credits; need: ______
  - Social & Historical (S&H)—6 credits; need: ______
  - Natural & Mathematical (N&M)—(fulfilled by major)

- **World Languages & Cultures:**
  - World Language—4th semester proficiency
    - OR World Cultures—6 credits
    - OR Approved international experience

### MOLECULAR LIFE SCIENCES MAJOR REQUIREMENTS:

- Major requirements must be completed with a C- or better.
- 46 major hours: _____ needed
- 18 major hours at 300/400 level: _____ needed
- 12 concentration hours: _____ needed
- Major GPA and concentration GPA ≥ 2.000. Major GPA: ______  Concentration GPA: ______

### BIOLOGY

- BIOL-1 112
- BIOL-2 111 (P: L 112 and CHEM-C 117)
- BIOL-1 323 OR BIOT-T 315 OR BIOL-X 325
- BIOL-1 312
- MLS-M 420
- MLS-M 430
- Lab: BIOT-T 425 (please see prerequisites)
- BIOL-1 388 or MLS-M 388
- MLS-M 410
- MLS-M 440 OR MLS-M 450

### CHEMISTRY

- CHEM-C 117 and CHEM-C 127
- CHEM-C 341
- CHEM-C 342
- CHEM-C 343
- CHEM-C 383 OR CHEM-C 483

### PHYSICS

- PHYS-P 201 OR PHYS-P 221
- PHYS-P 202 OR PHYS-P 222

### STATISTICS


### MATH

- MATH-M 120 OR MATH-M 211 OR MATH-M 212

Math, physics, and statistics requirements must be completed with a C- or better, but they do not count toward major GPA or major hours.
Molecular Life Sciences B.S. degree with concentration in Molecular and Structural Biology

Students pursuing the Concentration in Molecular and Structural Biology will develop a contemporary, mechanistic understanding of living systems. Students will build a strong foundation in cell biology, molecular biology, and biochemistry. They also apply molecular and structural approaches to understand protein metabolism, learn about nucleic acid metabolism and epigenetic regulation, and explore bioinformatic approaches to characterizing biomolecules.

The concentration requires at least 12 credit hours, including the requirements listed below.

**Protein Laboratory.** One (1) course from the Protein Laboratory list.
- BIOT-T 425 Lab in Macromolecular Production, Purification, & Characterization (3 cr.; P: CHEM-C 341 and one of BIOL-L 323 or BIOT-T 315) *(fall)*

**Bioinformatics.** One (1) course from the Bioinformatics list.
- BIOL-L 388 Digital Biology: A Survey of Topics in Bioinformatics and Genomics (3 cr.) *(spring)*
- MLS-M 388 Digital Biology: A Survey of Topics in Bioinformatics and Genomics (3 cr.) *(spring)*

**Protein Metabolism.** One (1) course from the Protein Metabolism list.
- MLS-M 410 Protein Metabolism (3 cr.)

**Electives.** One (1) course from the Electives list.
- MLS-M 440 Membranes and Signal Transduction (3 cr.)
- MLS-M 450 Molecular Mechanisms of Cancer (3 cr.)

**Notes**
- For this concentration, it is wise to take BIOL-L 312 Cell Biology (P: BIOL-L 211) relatively early.
- Except for the GPA requirement, a grade of C- or higher is required for a course to count toward a requirement in the concentration.
- A GPA of at least 2.000 for all courses taken in the concentration—including those where a grade lower than C- is earned—is required.
- Most courses have prerequisites. Always check the Bulletin and the Schedule of Classes for course information before taking a course.