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| **Catalog Year 2023-2024**B.S., Biochemistry | ***(For internal use only)***[ ]  *No change*[x]  *UCC proposal* |

A Major Academic Plan (MAP) is one way to complete a degree in a set number of semesters. The *example* below is an efficient strategy only. Actual plans for individual students will vary based on advisor recommendations and academic needs. Official Program Requirements including Major, General Education, Elective, and university requirements (see pg.2) are based on Catalog Year.

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| **Course Subject and Title** | **Cr.**  | **Min.** **Grade** | **\*GE,** **UU or UM** | **\*\*Sem. Offered** | **Prerequisite** | **Co Requisite** |
| Semester One |
| GE Objective 1: ENGL 1101 Writing and Rhetoric I | 3 | C- | GE | F, S, Su | Appropriate placement score |  |
| GE Objective 3: MATH 1170 Calculus I | 4 | C- | GE | F, S, Su | MATH 1144 or 1147 or appropriate test score |  |
| GE Objective 5: CHEM 1111 & 1111L Gen Chemistry I & Lab | 5 | C- | GE | F, S | MATH 1143 or 1147 or appropriate test score |  |
| GE Objective 5 : BIOL 1101 & 1101L General Biology I & Lab | 4 | C- | GE | F, S, Su | MATH 1108 or appropriate test score |  |
|  Total | 16 |  |  |  |  |  |
| Semester Two |
| GE Objective 1: ENGL 1102 Writing and Rhetoric II | 3 | C- | GE | F, S, Su | ENGL 1101 or equivalent |  |
| MATH 1175: Calculus II | 4 | C- |  | F, S, Su | MATH 1175 C- |  |
| CHEM 1112 & 1112L General Chemistry II & Lab | 4 | C- |  | F, S | CHEM 1111 & 1111L and MATH 1143 or MATH 1147 |  |
| BIOL 1102 & BIOL 1102 L General Biology II & Lab | 4 | C- |  | F, S | BIOL 1101 & Lab |  |
|  Total | 15 |  |  |  |  |  |
| Semester Three |
| BIOL 2233/L Principles of Microbiology & Lab\*\*\* | 4 |  |  |  | BIOL 1101, BIOL 1102, CHEM 1112 |  |
| PHYS 1111 & 1113 General Physics I & Lab\*\*\* | 4  | C- |  | F, S | MATH 1143 or 1147 or appropriate test score | MATH 1175 |
| CHEM 3301 & CHEM 3303 Organic Chemistry I & Lab | 4 | C- | UM | F, S | CHEM 1112 & 1112L or permission of instructor |  |
| GE Objective 2: COMM 1101 Principles of Speech | 3 | C- | GE | F, S, Su |  |  |
|  Total | 15 |  |  |  |  |  |
| Semester Four |  |  |  |  |  |  |
| BIOL 3358 Genetics | 3 | C- | UM | F, S | BIOL 2235 or BIOL 2206 |  |
| PHYS 1112 & PHYS 1114 General Physics II & Lab\*\*\* | 4 | C- |  | F | PHYS 1111 & PHYS 1113 |  |
| CHEM 3302 & CHEM 3304 Organic Chemistry II & Lab | 4 | C- |  | S | CHEM 3301 & CHEM 3303 |  |
| CHEM 2232 & CHEM 2234 Qualitative Analysis & Lab | 4 | C- |  | S | CHEM 1112 & Lab, MATH 1160 or 1170 | CHEM 2234 or permission |
|  Total | 15 |  |  |  |  |  |
| Semester Five |  |  |  |  |  |  |
| BIOL/CHEM 4445 Biochemistry I | 3 |  | UM | F | BIOL 1101 & CHEM 3302 |  |
| CHEM 3341 Topics in Physical Chemistry\*\*\* | 3 | C- | UM | F | CHEM 1112 & 1112 L, PHYS 1112 or 2211, MATH 1160 or 1175 |  |
| BIOL electives from approved list | 4 | C- |  | F, S | See catalog |  |
| CHEM elective from approved list | 4 | C- |  | F, S | See catalog |  |
| GE Objective 6: | 3 |  | GE | F, S, Su |  |  |
|  Total | 17 |  |  |  |  |  |
| Semester Six |  |  |  |  |  |  |
| BIOL/CHEM 4447 Biochemistry II | 3 | C- |  |  | BIOL /CHEM 4445 |  |
| CHEM 3342 Topics in Physical Chemistry\*\*\* | 3 | C- | UM | S | CHEM 3341 Topics in Physical Chemistry  |  |
| BIOL 4437/CHEM 4438 Experimental Biochemistry | 1 | C- | UM | S | BIOL 4432 or CHEM 4445 |  |
| BIOL electives from approved list | 4 | C- | UM | F,S | See catalog |  |
| GE Objective 4: | 3 |  | GE | F,S |  |  |
|  Total | 14 |  |  |  |  |  |
| Semester Seven |  |  |  |  |  |  |
| BIOL 4444 & BIOL 4444L Cell & Molecular Biology & Lab | 4 | C- | UM | F | BIOL 3358 & CHEM 3302 |  |
| CHEM electives from approved list | 4 | C- |  | F, S | See catalog |  |
| GE Objective 6 | 3 |  | GE | F, S, Su |  |  |
| GE Objective 7 or 8: | 3 |  | GE | F, S, Su |  |  |
|  Total | 14 |  |  |  |  |  |
| Semester Eight |  |  |  |  |  |  |
| BIOL/CHEM 4498 Seminar in Biochemistry | 1 | C- | UM | F, S | CHEM 4481, CHEM 4482, CHEM 4485, Senior standing or permission of instructor |
| BIOL or CHEM elective from approved list | 4 | C- |  | F, S | See catalog |  |
| Free electives | 3 |  |  |  |  |  |
| GE Objective 9:  | 3 |  | GE |  |  |  |
| GE Objective 4: | 3 |  | GE | F, S, Su |  |  |
|  Total | 14 |  |  |  |  |  |
| \*GE=General Education Objective, UU=Upper Division University, UM= Upper Division Major\*\*See Course Schedule section of Course Policies page in the e-catalog (or input F, S, Su, etc.)  |

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| B.S., Biochemistry page 2 |
| **2023-2024 Major Requirements** | **CR** | **GENERAL EDUCATION OBJECTIVES****Satisfy Objectives 1,2,3,4,5,6 (7 or 8) and 9** | **36 cr. min** |
| **MAJOR REQUIREMENTS** | **77** | 1. Written English (6 cr. min) ENGL 1101 | 3 |
| **CORE Requirements** | **45** |  ENGL 1102 | 3 |
| BIOL 1101 & 1101L General Biology I & Lab (Counted in GE Objective 5) | 2. Oral Communication (3 cr. min) COMM 1101 | 3 |
| BIOL 1102 & BIOL 1102 L General Biology II & Lab | 4 | 3. Mathematics (3 cr. min) MATH 1170 | 4 |
| BIOL 2233 & BIOL 2233L Principles of Microbiology & Lab\* | 4 | 4. Humanities, Fine Arts, Foreign Lang. **(2 courses; 2 categories; 6 cr. min)** |
| BIOL 3358 Genetics | 3 |  |  |
| BIOL 4437/CHEM 4438 Experimental Biochemistry | 1 |  |  |
| BIOL 4444 & BIOL 4444L Cell & Molecular Biology & Lab | 4 | 5. Natural Sciences **(2 lectures-different course prefixes, 1 lab; 7 cr. min)** |
| BIOL/CHEM 4445 Biochemistry I | 3 | BIOL 1101 & 1101L General Biology I & Lab | 4 |
| BIOL/CHEM 4447 Biochemistry II | 3 | CHEM 1111 & 1111L General Chemistry I & Lab  | 5 |
| BIOL/CHEM 4498 Seminar in Biochemistry | 1 |  |  |
| CHEM 1111/L General Chemistry I & Lab (Counted in GE Objective 5) | 6. Behavioral and Social Science **(2 courses-different prefixes; 6 cr. min)** |
| CHEM 1112/L General Chemistry II & Lab | 4 |  |  |
| CHEM 2232 & CHEM 2234 Qualitative Analysis & Lab | 4 |  |  |
| CHEM 3301 & CHEM 3303 Organic Chemistry I & Lab | 4 | One Course from EITHER Objective 7 OR 8 **(1 course; 3 cr. min)** |
| CHEM 3302 & CHEM 3304 Organic Chemistry II & Lab | 4 | 7. Critical Thinking |  |  |
| CHEM 3341 Topics in Physical Chemistry\* | 3 | 8. Information Literacy  |
| CHEM 3342 Topics in Physical Chemistry\*  | 3 | 9. Cultural Diversity **(1 course; 3 cr. min)** |
| **BIOL/CHEM Approved Electives** | **20** |  |  |
| Approved BIOL Electives (See list of Upper Division courses in catalog) | 8 | General Education Elective to reach 36 cr. min. **(if necessary)** |
| Approved CHEM Electives (see list in catalog) | 8 |   |  |
| Approved BIOL, CHEM, MATH, or PSCI Electives (see catalog) | 4 |  |  |
| **MATH requirements** | **12** |  Total GE | 40 |
| MATH 1170 Calculus (Counted in GE Objective 3) | Undergraduate Catalog and GE Objectives by [Catalog Year](https://www.isu.edu/advising/academic-support/general-education/)  *http://coursecat.isu.edu/undergraduate/programs/* |
| MATH 1175: Calculus II | 4 |
| PHYS 1111 & 1113 General Physics I & Lab\* | 4 |  |  |
| PHYS 1112 & PHYS 1114 General Physics II & Lab\* | 4 | **MAP Credit Summary** | **CR** |
|  |  | Major  | 77 |
|  |  | General Education  | 40 |
|  |  | Upper Division Free Electives to reach 36 credits | 0 |
|  |  | Free Electives to reach 120 credits | 3 |
|  |  |  TOTAL | 120 |
|  |  |  |
|  |  | **Graduation Requirement Minimum Credit Checklist** | **Confirmed** |
|  |  | Minimum 36 cr. General Education Objectives (15 cr. AAS) | x |
|  |  | Minimum 15 cr. Upper Division in Major (0 cr. Associate) | x |
|  |  | Minimum 36 cr. Upper Division Overall (0 cr. Associate) |  | x |
|  |  | Minimum of 120 cr. Total (60 cr. Associate) |  | x |
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|  |  | ***MAP Completion Status (for internal use only)*** |
| **Advising Notes** |  | *Date* |
| **All major courses must be passed with a C- or better.** | *Department:*  |  |
| \*\*\*Alternative choices: | *OAA or COT:* |  |
| -BIOL 2206 and 2207 can be taken instead of BIOL 2233/L | *Registrar:*  |  |
| -CHEM 3351 and 3352 can be taken instead of CHEM 3341 and 3342 | **Complete College American Momentum Year****Math and English course in first year-Specific GE MATH course identified****9 credits in the Major area in first year****15 credits each semester (or 30 in academic year)****Milestone courses** |
| -PHYS 2211,2212, 2213, and 2214 may be taken instead of PHYS 1111, 1112, 1113, 1114 |
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 Form Revised 9.10.2019