RAMAPO COLLEGE OF NEW JERSEY

School of Theoretical and Applied Science

Biochemistry

Recommended Four-Year Plan (Fall 2020)

The recommended four-year plan is designed to provide a blueprint for students to complete their degrees within four years. Students must meet with their Major Advisor to develop a more individualized plan to complete their degree. This plan assumes that no developmental courses are required. If developmental courses are needed, students may have additional requirements to fulfill which are not listed in the plan and may extend degree completion.
NOTE: This recommended Four-Year Plan is applicable to students admitted into the major during the 2020-2021 academic year.

First Year					
Fall Semester	**HRS**	✓	**Spring Semester**	**HRS**	✓
BIOL 111 & BIOL 111L - Fundamentals of Biology I Lec & Lab **WI**	4+1		BIOL 113 & BIOL 113L - Fundamentals of Biology II Lecture & Lab	4+1	
CHEM 116 & CHEM 116L - General Chemistry I Lecture & Lab[1]	4+1		CHEM 117 & CHEM 117L - General Chemistry II Lecture & Lab	4+1	
Gen Ed: INTD 101 - First Year Seminar	4		Gen Ed: MATH 121 - Calculus I	4	
Gen Ed: CRWT 102 - Critical Reading and Writing II	4		Gen Ed: Historical Perspectives	4	
			Career Pathways: SCIN 001 – Career Pathways Module 1	Degree Rqmt.	
Total:	18		**Total:**	18	

Second Year					
Fall Semester	**HRS**	✓	**Spring Semester**	**HRS**	✓
CHEM 211 & CHEM 211L - Organic Chemistry I Lec & Lab	4+1		CHEM 213 & CHEM 213L - Organic Chemistry II Lecture & Lab	4+1	
MATH 122 - Calculus II	4		PHYS 117 - Physics II w/ Calculus & PHYS 119L - Introductory Physics II Lab	4+1	
PHYS 116 - Physics I w/ Calculus & PHYS 118L - Introductory Physics I Lab	4+1		Gen Ed: AIID 201 - Studies in the Arts & Humanities	4	
Gen Ed: SOSC 110 - Social Science Inquiry	4		Career Pathways: SCIN 003 – Career Pathways Module 3	Degree Rqmt.	
Career Pathways: SCIN 002 – Career Pathways Module 2	Degree Rqmt.				
Total:	18		**Total:**	14	

Third Year					
Fall Semester	**HRS**	✓	**Spring Semester**	**HRS**	✓
CHEM 324 & CHEM 324L - Quantitative Chemical Analysis Lecture & Lab	4+1		CHEM 350 - Physical Chemistry I	4	
CHEM 425 - Biochemistry**	4		CHEM 446 - Biochemistry II **C, WI**	4	
BIOL 332 & BIOL 332L** - Genetics Lecture & Lab	4+1.5		Gen Ed: Culture & Creativity, Systems Sustainability & Society, or Values & Ethics	4	
Elective: TAS-Research Honors Course **RE #**	1		Elective: TAS-Research Honors Course **RE #**	1	
Total:	15.5		**Total:**	13	

Fourth Year					
Fall Semester	**HRS**	✓	**Spring Semester**	**HRS**	✓

CHEM 430 - Experimental Biochemistry Lab	2		BIOL 407 & BIOL 407L****** - Cell and Molecular Biology Lecture & Lab **WI**	4+1.5	
CHEM 350L - Physical Chemistry I Lab **WI**	1.5		Elective Courses	4	
Elective Course **RE**	4		Elective: TAS-Research Honors Course **RE #**	1	
Elective: TAS-Research Honors Course **RE #**	1		Electives for ACS Certification#	5	
Gen Ed: Global Awareness	4				
Gen Ed: Culture & Creativity, Systems Sustainability & Society, or Values & Ethics	4				
Total:	16.5		**Total:**	15.5	

Total Credits Required: 128 credits
GPA Required: overall GPA 2.0 and major GPA 2.0

**Offered in both fall and spring semesters

[1]Also satisfies Gen-Ed: Scientific Reasoning Category
[2]Also satisfies Gen-Ed: Quantitative Reasoning Category

For biochemistry major students, there are two different options to follow to be certified by the American Chemistry Society (ACS), (this is not required to graduate)

- Option 1: Complete Advanced Inorganic Chemistry Lecture (CHEM 451), Advanced Inorganic Chemistry Lab (CHEM 451L) and at least one semester of TAS Research Honors as electives
- Option 2: Complete Advanced Inorganic Chemistry Lecture (CHEM 451), Advanced Inorganic Chemistry Lab (CHEM 451L), Instrumental Analysis Lecture (CHEM 427) and Instrumental Analysis Lab (CHEM 427L) as electives

RE Although no additional electives are required to graduate, the Biochemistry Program strongly recommends taking optional recommended electives (see list of the recommended elective courses from biochemistry major requirements at www.ramapo.edu/catalog)

Biochemistry Program strongly recommends taking TAS Research Honors courses (SRSH 301, 302, 401 and 402) during the 3rd and 4th year for hands-on research experience. Students who complete all of TAS Research courses (SRSH 301, 302, 401, and 402) will graduate with TAS Research Honors Distinction.

C Biochemistry II (CHEM 446) capstone course is designed to draw from and build on content and skills learned during a student's progression through the major with a significant writing component. In undertaking this course, students will demonstrate: a thorough understanding of the relevant biochemistry material, an ability to apply problem-solving strategies, oral and written communication and presentation skills, an ability to comprehend and critically evaluate scientific literature. Senior presentation for biochemistry major will be one of the requirements for this course. Requires prerequisite CHEM 425

WI: Writing Intensive – 3 courses required in the major