

Molecular Biology, BS



University of Wyoming, 2016-17

Freshman Fall Semester				Hrs	Min	Grade	Notes
USP First-Year Seminar				3		C	FY
CHEM	1020	General Chemistry I *		4		C	PN
LIFE	1010	General Biology **		4		C	PN
MATH	2200	Calculus I ***		4			Q; can substitute STAT 2050 (Fundamentals of Statistics) if MATH 2200 credit is already completed.
Credit hours subtotal:				15			

Freshman Spring Semester				Hrs	Min	Grade	Notes
USP Communication 1				3		C	C1
CHEM	1030	General Chemistry II		4			
MOLB	2021	General Microbiology		4		C	Cross listed with MICR 2021.
STAT	2050	Fundamentals of Statistics		4			
Credit hours subtotal:				15			

Sophomore Fall Semester				Hrs	Min	Grade	Notes
USP Communication 2				3		C	C2
USP Human Culture				3			H
USP US & Wyoming Constitutions				3			V
CHEM	2420	Organic Chemistry I		4		C	
MOLB	3000	Introduction to Molecular Biology ****		3		C	
Credit hours subtotal:				16			

Sophomore Spring Semester				Hrs	Min	Grade	Notes
USP Human Culture				3			H
CHEM	2440	Organic Chemistry II		4			
MOLB	4600	Biochemistry 1: Biomolecules ****		3		C	
Electives				6			
Credit hours subtotal:				16			

This is a guide for course work in the major; actual course sequence may vary by student. Please refer to the online student degree evaluation, and consult with an academic advisor. • Not all courses are offered every semester and some electives may have prerequisites. Students should review the course descriptions in the *University Catalog* and consult with their academic advisor to plan accordingly.

University of Wyoming requirements:

Students must have a minimum cumulative GPA of 2.0 to graduate. • Students must complete 42 hours of upper division (3000-level or above) coursework, 30 of which must be from the University of Wyoming. • Courses must be taken for a letter grade unless offered only for S/U. • University Studies Program (USP) Human Culture (H) and Physical & Natural World (PN) courses must be taken outside of the major subject, but can be cross-listed with the major.

Molecular Biology Program Notes:

This course sequence demonstrates how a student could complete a degree in molecular biology in four years. It does not include specified credits for undergraduate research, summer courses, or study abroad experiences. Some students opt to complete their undergraduate courses in more than four years in order to take full advantage of these educational opportunities. • A student should be aware that all courses (except MOLB 4010 and MOLB 4051) are offered only one semester each year. • In consultation with an academic advisor, students should select elective courses to develop an individualized program of study meeting educational and career goals. Lists of appropriate courses are available in various interest areas, including biochemistry, cell and molecular genetics, computational molecular biology, microbiology, and preprofessional health sciences.

* Requires MATH ACT ≥ 23 , MATH SAT ≥ 600 , Math Placement Exam ≥ 3 , or concurrent enrollment in MATH 1400, 1405, or 1450. (University standard)

** Requires MATH ACT ≥ 21 , MATH SAT ≥ 600 , Math Placement Exam ≥ 2 , or $\geq C$ in MATH 0921. (University standard)

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Junior Fall Semester			Hrs	Min Grade	Notes
LIFE	3050	Genetics	4		
MOLB	4485	Computers in Biology ****	1		
MOLB	4610	Biochem 2: Bioenergetics & Metabolism ****	3	C	
PHYS	1110	General Physics I	4		
		Elective	3		
Credit hours subtotal:			15		

Junior Spring Semester			Hrs	Min Grade	Notes
MOLB	4320	Investigations in Molecular Biology ****	4	C	C3
MOLB	4615	Biochemistry 3: Molecular Mechanisms ****	3		
PHYS	1120	General Physics II	4		
		Spring Advanced MOLB Core Course OR MOLB Elective *****	3		
		Elective	3		
Credit hours subtotal:			17		

Senior Fall Semester			Hrs	Min Grade	Notes
MOLB	4050	Student Seminar ****	1		Offered S/U only.
		Fall Advanced MOLB Core Course OR MOLB Elective *****	3		
		MOLB Electives *****	4		
		Electives	5		
Credit hours subtotal:			13		

Senior Spring Semester			Hrs	Min Grade	Notes
MOLB	4051	Departmental Seminar ****	1		Offered S/U only; can substitute MOLB 4052 (Summer Seminar), also offered S/U only.
		Spring Advanced MOLB Core Course OR MOLB Elective *****	3		
		Upper Division Electives	6		
		Electives	3		
Credit hours subtotal:			13		

TOTAL CREDIT HOURS: 120

Molecular Biology Program Notes con't:

*** Requires MATH ACT ≥ 27 , MATH SAT ≥ 600 , Math Placement Exam ≥ 5 , or $\geq C$ in MATH 1405 or 1450. (University standard)

**** **Molecular Biology Core Courses** (22 hours).

***** **Spring Semester MOLB Electives or Advanced MOLB Core Courses** (see notes on page 3): Choose from the following. NOTE: MOLB 4440 and 4450 may be applied to the Advanced MOLB Core or the MOLB Elective requirements, but not to both.

MOLB 4010	Laboratory Research in MOLB (max 3 hrs)	MOLB 4440	Microbial Genetics (3 hrs)
MOLB 4100	Clinical Biochemistry (3 hrs)	MOLB 4450	Cell & Developmental Genetics (3 hrs)

***** **Fall Semester MOLB Electives or Advanced MOLB Core Courses** (see notes on page 3): Choose from the following. NOTE: MOLB 4670 may be applied to the Advanced MOLB Core or the MOLB Elective requirements, but not to both.

MOLB 4010	Laboratory Research in MOLB (max 3 hrs)	MOLB 4460	Microbial Physiology & Metabolism (3 hrs)
MOLB 4260	Quantitative Microscopy (1 hr)	MOLB 4670	Advanced Molecular Cell Biology (3 hrs)
MOLB 4400	Immunology (4 hrs)		

Molecular Biology Program Notes con't on page 3.

Molecular Biology, BS



University of Wyoming, 2016-17

Molecular Biology Program Notes con't:

• **Advanced MOLB Core Course** (3 hours): For this requirement, students must take either MOLB 4440 (Microbial Genetics), MOLB 4450 (Cell & Developmental Genetics), or MOLB 4670 (Advanced Molecular Cell Biology).

• **Molecular Biology Elective Requirements** (9 hours): Courses from the following list that were not used to fulfill the MOLB Advanced Core requirement (see above) may be applied to the MOLB Elective requirement; a maximum of 3 credits of MOLB 4010 may be counted toward the MOLB Elective requirement.

MOLB 4010	Laboratory Research in MOLB (max 3 hrs)	MOLB 4460	Microbial Physiology & Metabolism (3 hrs)
MOLB 4100	Clinical Biochemistry (3 hrs)	MOLB 4495	Bioinformatics (3 hrs)
MOLB 4260	Quantitative Microscopy (1 hr)	MOLB 4540	Microbial Diversity & Ecology (4 hrs)
MOLB 4400	Immunology (4 hrs)	MOLB 4670	Advanced Molecular Cell Biology (3 hrs)
MOLB 4440	Microbial Genetics (3 hrs)	MOLB 5650	Protein Structure & Function (3 hrs)
MOLB 4450	Cell & Developmental Genetics (3 hrs)		