

Bachelor of Science in Life Sciences Program Curriculum

The Bachelor of Science in Life Sciences offers two tracks for students to choose from: *Biological Sciences & Nanotechnology*, and *Environmental Sciences & Sustainability*. The first two years are common for all tracks, and in the 3rd year students start taking courses that are specific to the track of their choice. Students also have access to a variety of advanced elective courses to choose from including cancer biology, forensic science, medicinal chemistry, bioinformatics, and special topics. The Life Sciences Program requires a total of 134 credit hours for completing the program. This includes general education requirements & elective courses (23 credits), college requirement courses (25 credits), program requirement courses (56 credits), track requirement courses (18 credits), program electives (12 credits), and summer internship (0 credits). Student who meets requirement conditions may take one or more graduate courses to fulfill program graduation requirements (maximum of nine credit-hours).

	Course Code	Course Title	Credit Hours (CRHs)			Pre-Requisite Courses	Co-Requisite Courses
			Total	Lect.	Lab		
Gen. Edu. Requirements (12 Credit Hours)	ARB 101	Arabic Language I	2	2	0		
	ENG 101	Freshmen English I	3	3	0		
	ENG ***	English Elective	3	3	0	ENG 101	
	ISL 101	Islamic Studies I	2	2	0		
	***	Islamic Elective	2	2	0		
Free Electives	Total Credit Hours = 8 * Any courses offered at Alfaisal * Transferred courses offered by other institutions (pre-approvals by CoS and SA are required)						
Hum. & Soc. Sci. Electives (1 course, 3 Credit Hours)	ANT 101	Anthropology	3	3	0		
	HIS 101	Islamic Civilization & Mediaeval Europe	3	3	0		
	PSY 101	Introduction to Psychology	3	3	0		
	SOC 101	Introduction to Sociology	3	3	0		
	*Any other Humanity & Social Sciences courses (FRE 101, GER 101, SPN 101, etc.)						
Science Core Courses (25 Credit Hours)	BIO 101	General Biology I	4	3	1		BIO 101L
	BIO 112	General Biology II	4	3	1	BIO 101	BIO 112L
	CHM 101	General Chemistry I	4	3	1		CHM 101L
	CHM 112	General Chemistry II	4	3	1	CHM 101/ or CHM 102	CHM 112L
	CSC 101	Introduction to Computer Science	3	3	0		
	MAT 105	Calculus for Biomedical Sciences I	3	3	0		
	MAT 116	Calculus for Biomedical Sciences II	3	3	0	MAT 105	

	Course Code	Course Title	Credit Hours (CRHs)			Pre-Requisite Courses	Co-Requisite Courses
			Total	Lect.	Lab		
Life Sciences Core Courses (56 Credit Hours)	BIO 223	Microbiology	4	3	1	BIO 112 CHM 112	BIO 223L
	BIO 224	Human Physio. & Anat.	4	3	1	BIO 112	BIO 224L
	BIO 346	Biochemistry I	4	3	1	BIO 224 CHM 212 PHU 216 STA 211	BIO 346L
	BIO 315	Genetics	3	3	0	BIO 223	
	BIO 440	Biotechnology	3	3	0	BIO 346 ENV 205	
	CHM 211	Organic Chemistry I	4	3	1	CHM 112	CHM 211L
	CHM 212	Organic Chemistry II	4	3	1	CHM 211	CHM 212L
	CHM 310	Instrumental Analysis	4	3	1	CHM 212 PHU 216 MAT 116	CHM 310L
	ENV 205	Environ. Sci. & Sustainability	3	3	0	CHM 112	
	LSR 302	Research Methodology	3	3	0	ENG 112/ ENG 113	
	LSR 390	Life Sci. Summer Internship	0	0	0	LSR 302	
	LSR 421	Life Sci. Research Project I	3	0	3	LSR 302	
	LSR 422	Life Sci. Research Project II	3	0	3	LSR 421	
	LSR 423	Life Sci. Research Seminar	3	3	0	LSR 421	
	PHU 205	Mechanics & Waves for Life Sciences	4	3	1		PHU 205L
	PHU 216	Electromagnetism & Optics for Life Sciences	4	3	1	PHU 205	PHU 216L
	STA 211	Probability & Statistics	3	3	0	MAT 116	
BSN Track (18 Credit Hours)	Biological Sciences & Nanotechnology (BSN) Track						
	BIO 345	Molecular Biology I	4	3	1	BIO 223	BIO 345L
	BIO 357	Molecular Biology II	4	3	1	BIO 345	BIO 357L
	BIO 358	Biochemistry II	4	3	1	BIO 346	BIO 358L
	BIO 439	Clinical Laboratory Science	3	3	0	BIO 224	
	BSN 430	Nanomaterials & Nanotechnology	3	3	0	CHM 310	
ESS Track (18 Credit Hours)	Environmental Sciences & Sustainability (ESS) Track						
	BIO 325	Conservation Biology	3	3	0	BIO 223	

	Course Code	Course Title	Credit Hours (CRHs)			Pre-Requisite Courses	Co-Requisite Courses
			Total	Lect.	Lab		
	ENV 305	Environmental Health	3	3	0	BIO 223	
	ENV 330	Energy & Sustainability	3	3	0	ENV 205	
	ENV 410	Environmental Monitoring	3	3	0	CHM 310	
	ENV 420	Waste Management	3	3	0	ENV 205	
	ENV 425	Environ. Policy & Economics	3	3	0	ENV 205	
Program Electives (4 Courses, 12 Credit Hours)	CHM 213	Analytical Chemistry	3	3	0	CHM 112	
	CHM 320	Physical Chemistry	3	3	0	CHM 212	
	CHM 331	Medicinal Chemistry	3	3	0	CHM 212	
	CHM 332	Environmental Chemistry	3	3	0	CH M 211	
	ENV 310	Environ. Toxicology	3	3	0	ENV 205	
	ENV 315	Earth Systems	3	3	0	ENV 205	
	SCI 310	Forensic Science	3	3	0	ENG 112/ ENG 113	
	SCI 322	Cancer Biology	3	3	0	BIO 224	
	SCI 323	Signal Transduction	3	3	0	BIO 224	
	SCI 325	Bioinformatics & Computational Genomics	3	3	0	BIO 224 STA 211	
	SCI 326	Virology	3	3	0	BIO 223	
	LST 421	Life Sci. Special Topics I	3	3	0	BIO 346	
	LST 422	Life Sci. Special Topics II	3	3	0	BIO 346	
	* Student may take courses from other tracks or a graduate course with approval.						

Study Plan

Study Plan: Biological Sciences & Nanotechnology						
	Fall (19 CRHs)			Spring (19 CRHs)		
1 st Year	Course Code	Course Title	CRHs	Course Code	Course Title	CRHs
	BIO 101	General Biology I	(3+1)	BIO 112	General Biology II	(3+1)
	CHM 101	General Chemistry I	(3+1)	CHM 112	General Chemistry II	(3+1)
	CSC 101	Introduction to Computer Science	(3+0)	***	Humanity Course Elective	(3+0)
	MAT 105	Calculus for Biomedical Sciences I	(3+0)	MAT 116	Calculus for Biomedical Sciences II	(3+0)
	ENG 101	Freshmen English I	(3+0)	ENG ***	English Elective	(3+0)
	ISL 101	Islamic Studies I	(2+0)	***	Islamic Elective	(2+0)
	Fall (17 CRHs)			Spring (20 CRHs)		
2 nd Year	Course Code	Course Title	CRHs	Course Code	Course Title	CRHs
	BIO 223	Microbiology	(3+1)	BIO 224	Human Physiology & Anatomy	(3+1)
	CHM 211	Organic Chemistry I	(3+1)	CHM 212	Organic Chemistry II	(3+1)
	PHU 205	Mech. & Waves for Life Science	(3+1)	PHU 216	Electro. & Optics for Life Science	(3+1)
	STA 211	Probability & Statistics	(3+0)	ENV 205	Environmental Science & Sustainability	(3+0)
	ARB 101	Arabic Language I	(2+0)	***	Free Elective	(2+0)
				***	Free Elective	(3+0)
	Fall (18 CRHs)			Spring (17 CRHs)		
3 rd Year	Course Code	Course Title	CRHs	Course Code	Course Title	CRHs
	BIO 346	Biochemistry I	(3+1)	BIO 358	Biochemistry II	(3+1)
	CHM 310	Instrumental Analysis	(3+1)	LSR 302	Research Methodology	(3+0)
	BIO 345	Molecular Biology I	(3+1)	BIO 357	Molecular Biology II	(3+1)
	BIO 315	Genetics	(3+0)	***	Advanced Sci. Elective II	(3+0)
	***	Advanced Sci. Elective I	(3+0)	***	Free Elective	(3+0)
	LSR 390	Life Sciences Summer Internship (0 CRHs)				
	Fall (12 CRHs)			Spring (12 CRHs)		
4 th Year	Course Code	Course Title	CRHs	Course Code	Course Title	CRHs
	BIO 439	Clinical Laboratory Science	(3+0)	***	Advanced Sci. Elective III	(3+0)
	BSN 430	Nanomaterials & Nanotechnology	(3+0)	***	Advanced Sci. Elective IV	(3+0)
	LSR 421	Life Science Research Project I	(0+3)	LSR 422	Life Science Research Project II	(0+3)
	BIO 440	Biotechnology	(3+0)	LSR 423	Integrative Life Science Research Seminar	(3+0)

*** Multiple courses to choose from (see program curriculum for the list of courses).

Study Plan: Environmental Sciences & Sustainability						
	Fall (19 CRHs)			Spring (19 CRHs)		
1 st Year	Course Code	Course Title	CRHs	Course Code	Course Title	CRHs
	BIO 101	General Biology I	(3+1)	BIO 112	General Biology II	(3+1)
	CHM 101	General Chemistry I	(3+1)	CHM 112	General Chemistry II	(3+1)
	CSC 101	Introduction to Computer Science	(3+0)	***	Humanity Course Elective	(3+0)
	MAT 105	Calculus for Biomedical Sciences I	(3+0)	MAT 116	Calculus for Biomedical Sciences II	(3+0)
	ENG 101	Freshmen English I	(3+0)	ENG ***	English Elective	(3+0)
	ISL 101	Islamic Studies I	(2+0)	***	Islamic Elective	(2+0)
	Fall (17 CRHs)			Spring (20 CRHs)		
2 nd Year	Course Code	Course Title	CRHs	Course Code	Course Title	CRHs
	BIO 223	Microbiology	(3+1)	BIO 224	Human Physiology & Anatomy	(3+1)
	CHM 211	Organic Chemistry I	(3+1)	CHM 212	Organic Chemistry II	(3+1)
	PHU 205	Mech. & Waves for Life Science	(3+1)	PHU 216	Electro. & Optics for Life Science	(3+1)
	STA 211	Probability & Statistics	(3+0)	ENV 205	Environmental Science & Sustainability	(3+0)
	ARB 101	Arabic Language I	(2+0)	***	Free Elective	(2+0)
				***	Free Elective	(3+0)
	Fall (17 CRHs)			Spring (18 CRHs)		
3 rd Year	Course Code	Course Title	CRHs	Course Code	Course Title	CRHs
	BIO 346	Biochemistry I	(3+1)	BIO 325	Conservation Biology	(3+0)
	CHM 310	Instrumental Analysis	(3+1)	LSR 302	Research Methodology	(3+0)
	ENV 305	Environmental Health	(3+0)	ENV 330	Energy & Sustainability	(3+0)
	BIO 315	Genetics	(3+0)	ENV 410	Environmental Monitoring	(3+0)
	***	Advanced Sci. Elective I	(3+0)	***	Advanced Sci. Elective II	(3+0)
				***	Free Elective	(3+0)
	LSR 390	Life Sciences Summer Internship (0 CRHs)				
	Fall (12 CRHs)			Spring (12 CRHs)		
4 th Year	Course Code	Course Title	CRHs	Course Code	Course Title	CRHs
	ENV 420	Waste Management	(3+0)	***	Advanced Sci. Elective III	(3+0)
	ENV 425	Environ. Policy & Economics	(3+0)	***	Advanced Sci. Elective IV	(3+0)
	LSR 421	Life Science Research Project I	(0+3)	LSR 422	Life Science Research Project II	(0+3)
	BIO 440	Biotechnology	(3+0)	LSR 423	Integrative Life Science Research Seminar	(3+0)

*** Multiple courses to choose from (see program curriculum for the list of courses).