Bachelor of Science in Bioresources and Agricultural Engineering

2024-2025

Major Sheet

1. General Program Presentation

Graduating with a Bachelor of Science in Bioresources and Agricultural Engineering (BAE) necessitates the successful completion of a total of 132 credit hours (CH). These credit hours are distributed across different requirements, encompassing courses that are essential as well as those that can be chosen as elective courses. The table below shows how 132 credit hours are distributed across requirements:

Table 1: BAE credit hours distribution.

Requirements	Credit hours (CH)
General Education Requirements	36
College Requirements	43
Program Requirements	53 (Including 9 CH electives)
Total Credit Hours	132

2. General Education (36 Credits)

Students here are required to complete 36 credit hours distributed over five sections as follows:

2.1. Communication (9 Credits)

Table 2.1: Compulsory courses.

Course Code	Course Title	Credit hours	Contact hours	Pre-requisite	Co-requisite
ENL101	English for Academic Studies	3	3	IEP099 or Equivalent	DPS095*
ENL102	English Composition	3	3	ENL101 DPS095	
ENL201	Writing and Research	3	3	ENL102	

*Preparatory Program; Digital and Professional Skills (DPS095).

2.2. Innovation and Creativity (6 Credits)

Table 2.2.1: Compulsory course.

Course Code	Course Title	Credit hours	Contact hours	Pre-requisite	Co-requisite
GEN150	Professionalism and Ethics	3	3		

Table 2.2.2: Elective courses, students should select one course from the following list.

Course Code	Course Title	Credit hours	Contact hours	Pre-requisite	Co-requisite
GEN131	Creativity and Problem Solving	3	3		
BUS101	Entrepreneurship Essentials	3	3		
ENI110	Intro. to Innovation and Creativity	3	3		

ENI140	Design Thinking	3	3
ENI150	Innovation in Business Models	3	3
ENI160	Innovation and Globalization	3	3

2.3. Global Citizen (6 Credits)

Table 2.3.1: Compulsory course.

Course Code	Course Title	Credit hours	Contact hours	Pre-requisite	Co-requisite
INF120	Computers and Information Systems	3	3	DPS095	

Table 2.3.2: Elective courses, students should select one course from the following list.

Course Code	Course Title	Credit hours	Contact hours	Pre-requisite	Co-requisite
GEN201	Globalization and Sustainability	3	3		
GEN202	Global Citizenship in the Digital Age	3	3		
BUS201	Global Economics and Trade	3	3		

2.4. Art and Humanities (9 Credits)

Table 2.4.1: Compulsory course.

Course Code	Course Title	Credit hours	Contact hours	Pre-requisite	Co-requisite
HST101	Islamic Culture and Values	3	3		

Table 2.4.2: Elective courses, group I, students should select one course from the following list.

Course Code	Course Title	Credit hours	Contact hours	Pre-requisite	Co-requisite
HST102	Kuwait History	3	3		
ARB101	Arabic Communication Skills	3	3		
ART101	Art Appreciation	3	3		
ART102	Intro. to Media and Communication	3	3		

Table 2.4.3: Elective courses, group II, students should select one course from the following list.

Course Code	Course Title	Credit hours	Contact hours	Pre-requisite	Co-requisite
PHL101	Introduction to Philosophy	3	3		
LAW101	Law and Society	3	3		
PSY101	Introduction to Psychology	3	3		
SOC101	Introduction to Sociology	3	3		

BUS300	Career Planning	3	3		

2.5. Math and Science (6 Credits)

Table 2.5: Compulsory courses.

Course Code	Course Title	Credit hours	Contact hours	Pre-requisite	Co-requisite
MAT101	Calculus I	3	3	IMP099* or Equivalent	
PHY101	Physics I	3	3		MAT101

*Preparatory Program; Precalculus (IMP099).

3. College Requirements (43 Credits)

Table 3.1: Compulsory courses for Math and Science (21 Credits).

Course Code	Course Title	Credit hours	Contact hours	Pre-requisite	Co-requisite
PHY105	Physics Lab I	1	3		PHY101
MAT102	Calculus II	3	3	MAT101	
MAT201	Calculus III	3	3	MAT102	
PHY102	Physics II	3	3	PHY101 MAT101	
PHY107	Physics II Lab	1	3	PHY105	PHY102
CHM101	Chemistry I	3	3	IMP099 or Equivalent	
CHM105	Chemistry I Lab	1	3		CHM101
MAT202	Linear Algebra	3	3	MAT101	
MAT240	Differential Equations	3	3	MAT102	

Table 3.2: Compulsory courses for Engineering (22 Credits).

Course Code	Course Title	Credit hours	Contact hours	Pre-requisite	Co-requisite
ENG205	Electrical and Electronic Circuits	3	3	PHY102 MAT102	
ENG206	Electrical and Electronic Circuits Lab	1	3	ENG205 PHY107	
ENG207	Programming	3	3	MAT202	
ENG208	Introduction to Energy and Sustainability	3	3	PHY102 CHM105	
ENG209	Statics and Strength of Materials	3	3	PHY102 CHM101	
ENG304	Engineering Probability & Statistics	3	3	MAT102	
ENG308	Numerical Methods	3	3	MAT202	

				MAT240	
ENG309	Engineering Project Management and Economics	3	3	ENG207 ENG208	

4. Program Requirements (53 Credits)

Table 4.1: Compulsory courses (44 Credits).

Course Code	Course Title	Credit hours	Contact hours	Pre-requisite	Co-requisite
BIO101	Biology	3	3	IMP099 or Equivalent	
BAE101	Introduction to Bioresources and Agriculture Engineering	3	3	BIO101	BAE102
BAE102	Introduction to Bioresources and Agriculture Engineering Lab	1	3		BAE101
ESE211	Industrial Electronics	3	3	ENG205	
BAE230	Mechanical Systems in Agriculture I	3	3	ENG209	BAE231
BAE231	Mechanical Systems in Agriculture I Lab	1	3		BAE230
BAE310	Remote Sensing Data and Methods	3	3	MAT201	
BAE320	Agricultural Structures Planning	3	3	PHY102 CHM101	
BAE330	Mechanical Systems in Agriculture II	3	3	BAE230	BAE331
BAE331	Mechanical Systems in Agriculture II Lab	1	3		BAE330
BAE340	Microbiology and Food Safety	3	3	CHM101 BIO101	BAE341
BAE341	Microbiology and Food Safety Lab	1	3		BAE340
BAE360	Bioresource Engineering	3	3	BAE101 ENG208	
BAE430	Mechanical Systems in Agriculture III	3	3	BAE330	
BAE450	Agricultural Robotics and Automation	3	3	ENG205	BAE451
BAE451	Agricultural Robotics and Automation Lab	1	3		BAE450
BAE490	Capstone Design 1	3	3	Pass 96 CH	
BAE491	Capstone Design 2	3	3	BAE490	

Table 4.2: Elective courses, students should select three courses (9 Credits) from the following list.

Course Code	Course Title	Credit hours	Contact hours	Pre-requisite	Co-requisite
BAE401	Lean Six Sigma	3	3	BAE101	
BAE402	Controlled Environment Systems	3	3	BAE360	
BAE423	Integrated Engineered Solutions in the Food-Water-Energy Nexus	3	3	BAE340	
BAE427	Ecological Systems Engineering Design	3	3	BAE320	
BAE455	Bioconversion	3	3	BAE320 BAE330	
BAE461	Aquaponics Engineering	3	3	BAE360	
BAE463	Biosystems Analysis and Design	3	3	BAE360	
BAE468	Controlled Environment Engineering	3	3	BAE360	
BAE471	Food Processing Plant Sanitation	3	3	BAE340	
BAE473	Food safety	3	3	BAE340	
BAE475	Geomatics	3	3	BAE310	
BAE480	Internship	3	3	Program Approval	
BAE495	Special Topics in Bioresources	3	3	Program Approval	
BAE496	Special Topics in Agricultural Engineering	3	3	Program Approval	

- **Students may take up to 3 credits of program electives from another college at the 300 level or above to replace one of their program electives, provided they obtain the approval of both the program and the college.**