University of Mosul

جامعة الموصل

First Cycle – Bachelor's degree (B.Sc.) – Agricultural Machines and Equipment Science

بكالوريوس علوم زراعة - علوم المكائن والآلات الزراعية

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1. Mission & Vision Statement

Vision Statement

Developing agricultural education aligned with global standards, cultivating professionals who lead technological transformation and sustainability in the field of agricultural machinery and equipment.

Mission Statement

Providing comprehensive academic programs that integrate theoretical knowledge with practical skills in agricultural machinery and equipment, while promoting scientific research and industrial partnerships. The department is committed to graduating technically and managerially competent professionals capable of meeting the challenges of modern agriculture, contributing to sustainable development, and serving society with integrity, humanistic values, and professional ethics.

2. Program Specification

Programmer code:	BSc-AME. SC.	**ECTS**	240
Duration:	4 levels, 8 Semesters	**Method of Attendance:**	Full Time

Write something like:

The **Department of Agricultural Machines and Equipment** is an academic specialization that focuses on the study of agricultural machinery, including its design, management, and maintenance. This field aims to develop scientific knowledge and technical skills related to agricultural machinery and its diverse applications—environmental, economic, and social.

It typically covers a wide range of topics, such as:

- **Design of Agricultural Machinery**: Understanding design principles to ensure machine effectiveness and efficiency.
- **Maintenance and Repair**: Learning techniques to maintain equipment and ensure optimal operation.
- **Sustainable Development**: Utilizing agricultural machinery in ways that contribute to environmental protection.

- ❖ **Production Technologies**: Implementing modern technologies, such as automation, to enhance productivity.
- ❖ **Resource Management**: Ensuring the efficient use of natural resources in agriculture.

In **Level 1**, students are introduced to the fundamentals of agricultural sciences in general, and to Agricultural Machines and Equipment sciences in particular. The curriculum is designed to support progression within the global agricultural and forestry program group. Core topics specific to the program are introduced in **Level 2**, laying the foundation for research-led modules in **Levels 3 and 4**. As a result, graduates are trained to understand how research informs education, aligning with the mission statements of both the university and the college.

In **Levels 2, 3, and 4**, students have the flexibility to choose more than half of their module credits. They are encouraged to select a diverse range of modules that reflect their specialization and include complementary scientific disciplines. This ensures that graduates acquire a broad knowledge base and can pursue a variety of interests within the field of Agricultural Machines and Equipment. Module selection is done in consultation with personal academic tutors.

The concept of research is introduced early and reinforced throughout the program via practical training. This is integrated into lecture modules or delivered through dedicated practical sessions, research seminars, and specialized tutorials. In **Level 4**, all students complete an independent research project. This may be a library-based or data analysis project, or a field or laboratory-based project, each carrying a specific number of academic credits.

Academic tutorials in **Levels 1 and 2** are conducted with the same academic tutor, who also serves as the students' personal tutor, providing continuity and consistent guidance. These tutorials include workshops on essential academic skills—such as library use and presentation skills—followed by assessed activities like essays and presentations, allowing students to apply these skills in a subject-specific context.

Opportunities for international study years and industrial placements are also available. Individual needs are discussed with the relevant tutor and accommodated whenever possible.

3. Program Objectives

- **Technical Development:**
  Provide the students with skills in designing, operating, and maintaining agricultural machinery using state-of-the-art smart agricultural technologies.
- **Sustainability Enhancement:**
  Integrate concepts of sustainable agriculture and energy efficiency into the academic curriculum.
- **Labor Market Adaptability:**
  Prepare graduates to effectively function in interdisciplinary environments that encompass agricultural engineering and technology.
- **Innovation and Research:**
  Promote applied research in areas such as agricultural process automation and renewable energy.
- **International Collaboration:**
  Support student and academic exchange programs with European and global universities through joint agreements aimed at enhancing academic and cognitive skills.

4. Student Learning Outcome

The academic program in the Department of Agricultural Machinery and Equipment is dedicated to developing qualified human resources and strengthening scientific competencies toward earning a bachelor's degree in this field. The department emphasizes the integration of theoretical instruction and practical application whenever possible, aiming to bridge the gap between academic knowledge and real-world practices. To this end, the department offers well-equipped laboratories and training fields that enable students to refine their technical skills and gain hands-on experience. Special focus is given to fieldwork and mandatory summer training programs to ensure that graduates are well-prepared for the demands of the agricultural machinery sector. By the end of the program, the student is expected to be able to:

No.	Learning Outcome Code	Learning Outcomes
1	LO#1, B1	Applies engineering principles to design a system using modern methods, or to develop a component, device, or product that meets specific requirements in agricultural engineering, while considering practical limitations and real-world conditions — in other words, by evaluating all available options and the current state of the field.
2	LO#1, B2	Applies modern tools and techniques necessary for analyzing complex engineering problems in agricultural machinery applications and related engineering technologies, while effectively utilizing technological information.
3	LO#2, D1	Communicates effectively within multidisciplinary teams; demonstrates the ability to work independently and as part of a team with colleagues in a foreign language at a basic level.
4	LO#2, D2	Demonstrates how to write effective reports in the field, write comprehensible documents, prepare effective presentations, and deliver clear written and oral instructions.
5	LO#3, C1	Implements the steps of designing and conducting experiments, carrying out field studies, collecting and analyzing data to examine complex problems or research issues related to the specialization in agricultural machinery engineering.
6	LO#4, A1	Uses mathematics, science, agricultural machinery engineering, and engineering technologies to solve complex engineering problems; acquires the ability to apply theoretical and practical knowledge in these fields to engineering challenges.
7	LO#4, A2	Identifies business practices related to the field, such as project management, risk management, and change management; is aware of entrepreneurship and innovation; and gains knowledge about sustainable development.
8	LO#4, A3	Recognizes the impacts of engineering practices on health, environment, and safety in global and social dimensions, and is aware of the legal consequences of engineering solutions.
9	LO#5, B3	Masters the skills necessary for working independently in areas related to mathematics in the field, and for acting as a consultant, auditor, or expert.
10	LO#6, E1	Understands the importance of following events and developments on the social and global agenda, monitors these developments, prepares and produces projects, and proposes solutions.
11	LO#6, E2	Takes responsibility for acting in accordance with ethical principles and professional standards applicable to engineering practices.

Outcome 1
Graduates will be able to apply engineering principles, modern tools, and techniques to design systems, components, devices, or products that meet specific needs in the field of agricultural engineering. This includes considering realistic constraints and conditions, effectively analyzing and solving complex engineering problems, and applying modern technological information in line with advancements in agricultural machinery engineering.
Outcome 2
Graduates will be able to communicate effectively within multidisciplinary teams, work independently when needed, and interact using a foreign language at a beginner level. They will also be able to prepare clear and effective reports and presentations, explain written and oral instructions, and apply them accurately in professional contexts.
Outcome 3
Laboratory and Field Studies
Graduates will be able to carry out the steps of experimental design and execution, conduct field studies, and collect, analyze, and interpret data in order to investigate complex problems or research issues specific to agricultural machinery engineering and technology.
Outcome 4
Scientific Knowledge
Graduates will be able to use mathematics, science, agricultural machinery engineering, and engineering technologies to solve complex engineering problems and apply both theoretical and practical knowledge effectively. They will also be familiar with business practices such as project, risk, and change management, and develop awareness of entrepreneurship, innovation, and sustainable development. Additionally, they will understand the impact of engineering practices on health, environment, and safety within global and social contexts, and be aware of the legal consequences of engineering solutions.
Outcome 5
Data Analyses
Graduates will master the skills required to work independently in areas related to mathematics within their agricultural field, and to serve as consultants, auditors, or experts.
Outcome 6
Critical Thinking
Graduates will recognize the importance of continuous learning and adopt lifelong learning practices. They will stay up to date with scientific, technological, and societal developments both locally and globally, contribute to project development, and provide innovative and effective solutions. Additionally, they will act responsibly and in accordance with ethical principles and professional standards in agricultural engineering practices

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Credits, Grading and GPA

Credits

University of Mosul is following the Bologna Process with the European Credit Transfer System (ECTS) credit system. The total degree program number of ECTS is 240, 30 ECTS per semester. 1 ECTS is equivalent to 25 hrs. student workload, including structured and unstructured workload.

Grading

Before the evaluation, the results are divided into two subgroups: pass and fail. Therefore, the results are independent of the students who failed a course. The grading system is defined as follows:

GRADING SCHEME مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب - قيد المعالجة	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				

Number Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Calculation of the Cumulative Grade Point Average (CGPA)

1. The CGPA is calculated by the summation of each module score multiplied by its ECTS, all are divided by the program total ECTS.

   CGPA of a 4-year B.Sc. degree:

   CGPA = [(1st ᵐodule score x ECTS) + (2nd ᵐodule score x ECTS) + ……] / 240

5. Curriculum/Modules

Semester 1 | 30 ECTS | 1 ECTS = 25 hrs.

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
UOM1031-AM	COMPUTER	47	28	3.00	B	
UOM1040-AM	DEMOCRACY and HUMAN RIGHTS	32	18	2.00	B	
UOM1021-AM	ENGLISH LANGUAGE	32	18	2.00	B	
MAT1010-AM	MATHEMATICS	63	112	7.00	S	
ACE1020-AM	AGRICULTURE CAREER ETHICS	62	63	5.00	S	
END1030-AM	ENGINEERING DRAWING	63	87	6.00	S	
AET1040-AM	AGRICULTRAL ENGINEERING TECHNIQUES TRANSFER	63	62	5.00	C	

Semester 2 | 30 ECTS | 1 ECTS = 25 hrs.

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
UOM1011-AM	ARABIC LANGUAGE	32	18	2.00	B	
BSS1050-AM	BIOSAFETY and SECURITY	47	28	3.00	S	ACE1020-AM
AGS1060-AM	AGRICULTURAL STATISTICS	78	47	5.00	C	
BIO1070-AM	BIODIVERSITY	63	62	5.00	C	
AGI1080-AM	AGRICULTURAL INFORMATICS	63	62	5.00	C	
SUD1090-AM	SUSTANIBLE DEVELOPMENT	62	63	5.00	C	
AMT1100-AM	AGRICULTURAL MARKETING TECHNIQUES	32	93	5.00	C	

Semester 3 | 30 ECTS | 1 ECTS = 25 hrs.

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
UOM1012-AM	ARABIC LANGUAGE2 2	32	18	2.00	B	UOM1011-AM
UOM2050-AM	CRIMES of the BAATH REGIME in IRAQ	32	18	2.00	B	
IPM2110-AM	INTEGRATED PEST MANAGEMENT	63	62	5.00	C	BSS1050-AM
GME3530-AM	GENRAL MECHANICS ENGINERING	63	87	6.00	B	
DAE2160-AM	DESIGN AND ANALYSIS of EXPERIMENTS	63	62	5.00	C	AGS1060-AM
APT2140-AM	AGRICULTURAL PRODUCTION TECHNOLOGIES	63	62	5.00	C	
FTP2150-AM	FOOD TECHNOLOGIES and HEALTH AGRICULTRAL PRODUCTS	63	62	5.00	C	BSS1050-AM

Semester 4 | 30 ECTS | 1 ECTS = 25 hrs.

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
UOM2022-AM	ENGLISH LANGUAGE2	32	18	2.00	B	UOM1021-AM
UOM2032-AM	COMPUTER SKILLS2	47	28	3.00	B	UOM1031-AM
APT2130-AM	AGRICULTURAL PRODUCTION MECHANIZATION TECHNIQUES	63	62	5.00	C	
IED3500-AM	INDUSTRIAL ENGINERING DROWING	48	77	5.00	C	END1030-AM
PEI2180-AM	BENEFICIAL INSECTS	63	62	5.00	C	
SWS2190-AM	SOIL and WATER SUITBILITY	63	87	6.00	C	APT2130-AM
AWE2210-AM	AGRICULTURAL WASTE TREATMENT ENGINEERING	63	37	4.00	C	APT2140-AM

Semester 5 | 30 ECTS | 1 ECTS = 25 hrs.

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
DPF2170-AM	DESIGN and PLANNING of AGRICULTURAL FACILITIES	63	62	5.00	C	END1030-AM
TIE3510-AM	TILLAGE EQUIPMENTS	63	12	3.00	B	SWS2190-AM
PMM3520-AM	PRICIPLES of METALLURGY	63	37	4.00	B	
AEM2120-AM	AGRICULTRAL ENGINEERING PROJECT MANAGEMENT	78	72	6.00	C	
THE3540-AM	THERMODYNAMICS	63	37	4.00	C	MAT1010-AM
SFE3550-AM	SOWING and FERTILIZER EQUIPMENTS	63	37	4.00	C	APT2130-AM
AGT3560-AM	AGRICULTURAL TRACTORS	63	37	4.00	C	

Semester 6 | 30 ECTS | 1 ECTS = 25 hrs.

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
IDE3570-AM	IRRIGATION and DRAINAGE ENGINEERING	48	52	4.00	C	SWS2190-AM
FLM3580-AM	FLUID MECHANICS	63	62	5.00	C	GME3530-AM
MCC3590-AM	MEASURE and CONTROL	63	62	5.00	C	MAT1010-AM
EMT3600-AM	EQUIBMENT and MACHINERY DESIGN THEORIES	63	62	5.00	C	APT2130-AM
ICE3610-AM	INTERNAL COMBUSTION ENGINE	63	62	5.00	C	MAT1010-AM
TPM3620-AM	TRACTOR PERFORMANCE MECHANICS	63	62	5.00	C	AGT3560-AM
SEM3260-AM	SEMINARS	17	8	1.00	C	GME3530-AM

Semester 7 | 30 ECTS | 1 ECTS = 25 hrs.

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
APM4330-AM	ANIMAL PRODUCTION MECHANIZATION	63	12	3.00	C	APT2140-AM
HME4630-AM	HEAVY MACHINES and EQUIPMENT	63	62	5.00	C	ICE3610-AM
HST4640-AM	HYDRAULIC SYSTEMS TECHNOLOGY	63	62	5.00	C	FLM3580-AM
AMA4650-AM	AGRICULTURAL MECHANIZATION and AUTOMATION	63	62	5.00	C	APT2130-AM
MRT4660-AM	MAINTENANCE and REPAIR AGRICULTURAL TRACTORS	63	62	5.00	C	AGT3560-AM
REE4670-AM	RENEWABLE ENERGY	63	62	5.00	C	SUD1090-AM
AEP4291-AM	AGRICULTRUAL ENGINEERING PROJECT1	47	3	2.00	C	

Semester 8 | 30 ECTS | 1 ECTS = 25 hrs.

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
PRA4680-AM	PRECISION AGRICULTURE	63	12	3.00	C	AMA4650-AM
IDS4690-AM	IRRIGATION and DRAINGE EQUIPMENTS and SYSTEMS	63	62	5.00	C	GME3530-AM
HAT4600-AM	HARVESTING TECHNOLOGY	63	62	5.00	C	APT2140-AM
HPT4610-AM	HARVESTING and POST-HARVASTING TECHNOLOGY	63	62	5.00	C	APT2140-AM
Emm4620-AM	Economics and management of agricultural machinery	63	62	5.00	C	APT2130-AM
PPE4630-AM	PLANT PROTECTION EQUIPMENT	63	62	5.00	C	IPM2110-AM
AEP4292-AM	AGRICULTRUAL ENGINEERING PROJECT2	47	3	2.00	C	

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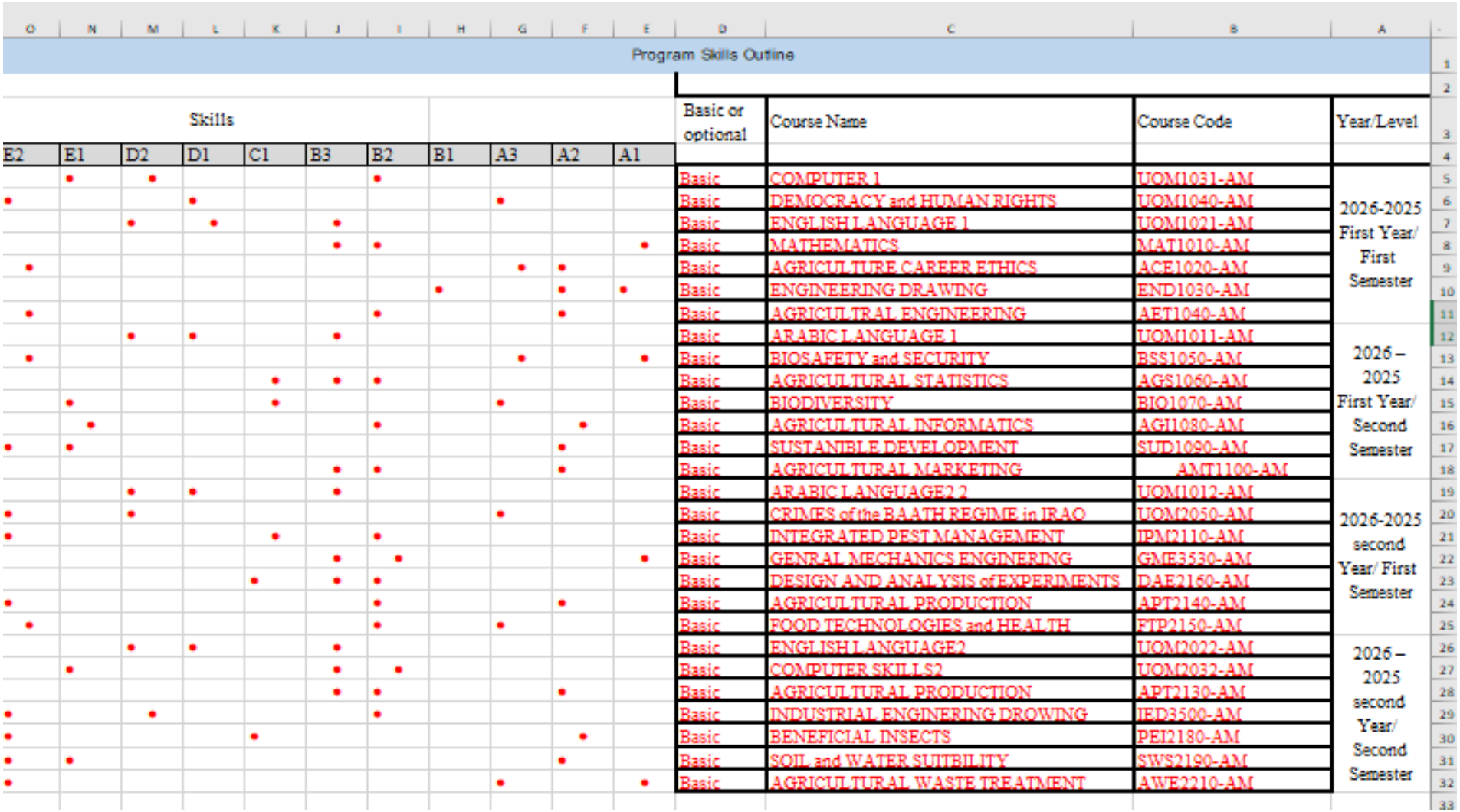

Program Skills Outline

Skills											Basic or optional	Course Name	Course Code	Year/Level
E2	E1	D2	D1	C1	B3	B2	B1	A3	A2	A1				
	•	•				•					Basic	COMPUTER 1	UOM1031-AM	2026-2025 First Year/ First Semester
•			•					•			Basic	DEMOCRACY and HUMAN RIGHTS	UOM1040-AM	
		•	•		•						Basic	ENGLISH LANGUAGE 1	UOM1021-AM	
					•	•				•	Basic	MATHEMATICS	MAT1010-AM	
•								•	•		Basic	AGRICULTURE CAREER ETHICS	ACE1020-AM	
							•		•	•	Basic	ENGINEERING DRAWING	END1030-AM	
•						•			•		Basic	AGRICULTRAL ENGINEERING	AET1040-AM	
		•	•		•						Basic	ARABIC LANGUAGE 1	UOM1011-AM	2026 – 2025 First Year/ Second Semester
•								•		•	Basic	BIOSAFETY and SECURITY	BSS1050-AM	
				•	•	•					Basic	AGRICULTURAL STATISTICS	AGS1060-AM	
	•			•				•			Basic	BIODIVERSITY	BIO1070-AM	
	•					•			•		Basic	AGRICULTURAL INFORMATICS	AGI1080-AM	
•	•								•		Basic	SUSTANIBLE DEVELOPMENT	SUD1090-AM	
					•	•			•		Basic	AGRICULTURAL MARKETING	AMT1100-AM	
		•	•		•						Basic	ARABIC LANGUAGE2 2	UOM1012-AM	2026-2025 second Year/ First Semester
•		•						•			Basic	CRIMES of the BAATH REGIME in IRAQ	UOM2050-AM	
•				•		•					Basic	INTEGRATED PEST MANAGEMENT	IPM2110-AM	
					•	•				•	Basic	GENRAL MECHANICS ENGINERING	GME3530-AM	
				•	•	•					Basic	DESIGN AND ANALYSIS of EXPERIMENTS	DAE2160-AM	
•						•			•		Basic	AGRICULTURAL PRODUCTION	APT2140-AM	
•						•		•			Basic	FOOD TECHNOLOGIES and HEALTH	FTP2150-AM	
		•	•		•						Basic	ENGLISH LANGUAGE2	UOM2022-AM	2026 – 2025 second Year/ Second Semester
	•				•	•					Basic	COMPUTER SKILLS2	UOM2032-AM	
					•	•			•		Basic	AGRICULTURAL PRODUCTION	APT2130-AM	
•		•				•					Basic	INDUSTRIAL ENGINERING DROWING	IED3500-AM	
•				•					•		Basic	BENEFICIAL INSECTS	PEI2180-AM	
•	•								•		Basic	SOIL and WATER SUITBILITY	SWS2190-AM	
•								•		•	Basic	AGRICULTURAL WASTE TREATMENT	AWE2210-AM	

- **Please tick the boxes corresponding to the individual program learning outcomes under evaluation**