Department of Agricultural Engineering and Modern Technologies

The Department of Agricultural Engineering and Modern Technologies was established in 1990 as a division within the Department of Soil and Water Resources and Agricultural Mechanization. With the necessary factors in place for the establishment of a fully independent department of agricultural engineering, including the growth in the number of teaching staff in the Department of Soil, Water, and Agricultural Mechanization, the Sana'a University Council made a decision to transform the Agricultural Mechanization Division into an independent department known as the Department of Agricultural Engineering. The university council approved the department's academic plan, which included 17 core courses in addition to the requirement courses for the faculty. As the faculty and departmental programs continued to develop, the department became known as the "Department of Agricultural Engineering and Modern Technologies". The department offers two programs: the Agricultural Engineering and Modern Technologies Program and the Irrigation Systems Engineering and Technology Program.

The department has a teaching staff of highly qualified and experienced academics who possess exceptional competencies and scientific qualifications from various academic institutions. Our teaching staff members specialize in different fields of agricultural engineering and modern technologies, including power and machinery engineering, irrigation systems engineering, agricultural facilities engineering, food processing engineering, and renewable energy engineering.

The department houses several laboratories and engineering workshops equipped with various tools and equipment that support the implementation of the program's educational, service, and advisory plans. These facilities include: • Physics and Meteorology Laboratory • Agricultural Machinery Laboratory • Agricultural Power Laboratory • Agricultural Processing Laboratory • Carpentry Workshop • Surveying Laboratory.

In addition to these laboratories and workshops, the department also possesses a variety of agricultural machinery, tractors, and irrigation networks that support the practical aspects of implementing the program's learning outcomes. These facilities play a crucial role in preparing students with the diverse skills they need to compete in the labor market and secure excellent positions in their specialized field.

Potential Career Opportunities for Graduates of the Department:

Graduates of the Department of Agricultural Engineering and Modern Technologies can:

1. Work as academics in the faculty and pursue postgraduate studies in this field.
2. Work for government and private companies and institutions related to agricultural production engineering.
3. Work in the fields of surveying agricultural land, planning agricultural buildings, constructing dams and water barriers, and designing irrigation networks.
4. Work in the field of installing and maintaining water pumps in general and solar energy pumps in particular.
5. Work on large productive farms in the field of agricultural production engineering.
6. Work for agricultural research institutions.
7. Work for local and international organizations concerned with the agricultural sector.
8. Work for consulting firms specializing in the agricultural sector.

Faculty members and technicians in the department

In addition to their teaching responsibilities, our esteemed teaching staff also extends their expertise to provide consulting services to both the public and private sectors. This enables the department to offer essential scientific guidance and advice to a wide range of stakeholders. The department currently has 10 faculty members, including 4 professors (one of whom is retired), 3 associate professors, and 3 assistant professors. We also have an assistant teaching staff, three of whom have been granted scholarships to pursue higher studies abroad. Our department also employs 6 technicians, one of whom has been granted a scholarship to pursue higher studies abroad.

Department Vision:

Striving to become a local, regional, and international academic and research reference in the field of agricultural production engineering, based on modern technologies, while seeking solutions to the problems within this field.

Department Mission:

To become a distinguished and leading local and regional institution in terms of scientific and educational competence, as well as scientific research, contributing to serving the community, and providing solutions to agricultural engineering problems.

Department Aims:

1. Preparing highly qualified cadres in agricultural engineering and modern technologies at the undergraduate, master's, and doctoral levels.
2. Contributing to the development of national agricultural production by providing training, extension, and research services while achieving sustainable development, food security, and environmental protection.
3. Organizing workshops, seminars, and scientific conferences related to the challenges and issues of agricultural engineering and modern technologies in Yemen.
4. Contributing to the dissemination of knowledge about agricultural engineering and modern technologies inside and outside the faculty through authoring and translating relevant books, references, and related articles.

Graduate Attributes:

The programs are characterized by preparing competent graduates who are scientifically qualified and equipped with the engineering and technical expertise that enable them to compete in the labor market and solve agricultural problems through planning, design, and achieving sustainable development.

Agricultural Engineering and Modern Technologies Program

Graduate Attributes of the Agricultural Engineering and Modern Technologies Program

The graduate of the Agricultural Engineering and Modern Technologies Department will be capable of:

1- Designing, operating, maintaining, and managing agricultural machinery and equipment used in agricultural production operations.

2- Designing, installing, and maintaining modern irrigation systems.
3- Designing agricultural structures in accordance with engineering and environmental standards.
4- Designing and installing renewable energy systems, with a focus on the agricultural sector.
5- Working as part of a team to solve agricultural engineering and modern technology problems and improve the performance of agricultural equipment, pumps, and machinery through scientific research.
6- Designing and managing greenhouses, introducing appropriate irrigation methods, and studying the environmental and thermal conditions within them.
7- Studying and employing the best practices for rainwater harvesting techniques.

Program Mission

Offering an outstanding academic program in the fields of agricultural machinery and power engineering, irrigation engineering, agricultural facilities and environmental control engineering, food and bio-processing engineering, and renewable energy engineering. The program will be enhanced with the skills and abilities that graduates need to compete in the labor market and conduct theoretical and applied scientific research in these fields to serve the community.

Program Aims:

1- Qualifying students scientifically and practically through specialized curricula and courses.
2- Conducting numerous theoretical and applied scientific research projects to address and solve agricultural problems and develop agricultural practices using modern techniques.
3- Providing consulting services to the public and private sectors.
4- Disseminating agricultural engineering knowledge and modern technologies to the community.
5- Developing and nurturing critical thinking through creating a creative environment.

Undergraduate Program Courses for Departments of the Faculty of Agriculture, Foods, and Environment - First and Second Levels

First Level Courses					
First Semester			Second Semester		
Course code	Course Title	Credit Hours	Course code	Course Title	Credit Hours
UR001	Arabic Language (1)	**2**	FR001	Physics & Meteorology	3
UR006	Islamic Culture	**3**	FR006	Principles of Statistics	2
FR111	General Chemistry	**3**	FR111	Organic Chemistry	3
FR112	General Botany	**3**	FR112	Principles of Agricultural Economics	2
FR113	Mathematics	**2**	FR113	General Zoology	3
FR114	Agriculture in Yemeni Environment	**1**	FR114	Principles of Ecology	2
UR007	National culture	**2**	UR002	Arabic Language (2)	2
FR115	Geology	**1**	UR008	Conflict with the Israeli enemy	2
	Total	17		Total	19

Undergraduate Program Courses for Departments of the Faculty of Agriculture, Foods, and Environment - First and Second Levels

Second Level Courses					
First Semester			Second Semester		
Course code	Course Title	Credit Hours	Course code	Course Title	Credit Hours
FR211	Soil Fundamentals	2	FR221	Principles of Food Science	2
FR112	General Microbiology	3	FR222	Principles of Crops Protection	2
FR113	Biochemistry	3	UR004	English Language (2)	2
FR114	Principles of Animal Production	2	FR127	Principles of Genetics	2
UR003	English Language (1)	2	FR223	Principles of Horticulture	2
FR114	Principles of Crops Production	2	FR224	Plant Physiology	2
FR215	Principles of Agricultural Engineering	2	FR225	Principles of Human Nutrition	2
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	Total	16		Total	17

Undergraduate Courses for the Agricultural Engineering and Modern Technology Program (ETA) – Department of Agricultural Engineering and Modern Technology

Third Level Courses					
First Semester			Second Semester		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ETA311	Thermodynamics and Heat Transfer	3	ETA321	Environmental Control and Engineering	3
ETA312	Applied Mathematics	3	ETA322	Renewable Energy Engineering	3
ETA313	Engineering Drawing	3	ETA323	Modern Agricultural Technology	3
ETA314	Engineering Mechanics	3	ETA324	Farm Power (1)	3
ETA315	Surveying and Land Leveling	3	ETA325	Farm Production Machines (1)	3
SOL313	Principles of Irrigation	3	ETA326	Hydraulics	3
FR315	Agricultural Extension and Rural Community	2	ETA327	Summer Training	1
	Total	20		Total	19

Fourth Level Courses					
First Semester			Second Semester		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
ETA411	Farm Production Machines (2)	3	ETA421	Food Processing Engineering	3
ETA412	Farm Power (2)	3	ETA422	Farm Power and Machinery Management	2
ETA413	Design and planning of Agricultural Facilities	3	ETA423	Dams and Wells Engineering	3
CRP318	General Crops Production	2	SOL424	Water Harvesting Technology	3
ETA414	Farm Workshops	2	ETA424	Machinery of Animal Production	2
SOL412	Land Reclamation and Improvement	3	ETA425	Design and Operation of Modern Irrigation Systems	3
ETA415	Operation and Maintenance of agricultural Machinery and Equipment	3	ETA426	Research Project	2
	Total	19		Tot	18