Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic Accreditation
Accreditation Department

Academic Program and Course Description Guide

Department of Highway and Airport Engineering

2023-2024

Academic Program Description Form

University Name: **Diyala University**

Faculty/Institute: **Engineering**

Scientific Department: **Highway and Airport Engineering**

Academic or Professional Program Name: **BSc in Highway and Airport Engineering**

Final Certificate Name: **BSc in Highways and Airport Engineering**

Academic System: **Curriculum System**

Description Preparation Date: 5 / 5 / 2024

File Completion Date: 5 / 5 / 2024

Signature:

Head of Depart. Name: **Dr. Yassir Nashaat**

Date: 5 / 5 / 2024

Signature:

Scientific Asso. Name: **Dr. Jabbar Q. Jabbar**

Date: 5 / 5 / 2024

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Depart.: Dr. Salah N. Farhan

Date: 5 / 5 / 2024

Signature:

جامعة ديالى
قسم
هندسة الطرق
والمطارات
كلية الهندسة

Approval of the Dean

Prof. Dr. Anees A. Khadom

5 / 5 / 2024

1. Program Vision

The academic staff of the highway and airport engineering department at the University of Diyala is looking forward to make the students come to understand the discipline of highway and airport engineering through a combination of course work, laboratory experiences, research, and fieldwork. The diversity in instructional methods leads to preparing high-level engineers that will support the urban movement and the tremendous growth witnessed by the transport sector in general, and roads and airports in particular**.**

2. Program Mission

The program of the highway and airport engineering department seeks to provide all his students with fundamental knowledge of highway, airports, railways, and all types of transportation engineering as well as a detailed understanding of a selected focus area within the transportation planning. The curriculum and advising have been designed to prepare graduates for their professional future, whether they choose to work in planning, design, or operation in any field of the highway and airport engineering.

3. Program Objectives

1. Providing educational programs necessary to provide students with the necessary expertise, skills and techniques for road and airport engineers.
2. Supporting the scientific movement by encouraging scientific research and publishing theoretical and applied research in a way that serves the growth movement in the transport sector and airports locally and regionally.
3. Cooperation and academic exchange by creating scientific partnerships with the corresponding departments in international universities and research institutes.
4. Seeking to develop road and airport engineering by keeping up with the qualitative leaps in this specialization through improving and refining the curricula and adding all the developments to deliver them to the student on a regular basis.
5. Investing in the academic expertise of the department in providing engineering consultancy in the specialization of roads and airports for the benefit of engineering consulting offices.
6. Commitment to consolidating the principles of ethics of the high engineering profession among students, in a way that contributes to creating a conscious engineering generation with lofty professional principles.

4. Program Accreditation

Application for program accreditation has been submitted.

5. Other external influences

Government funding

6. Program Structure

Program Structure	No. of Courses	Credit hours	Percentage	Reviews
Institution Requirements	**12**	**20**	**13.33**	
College Requirements	**11**	**23**	**15.33**	
Department Requirements	**46**	**107**	**71.34**	
Summer Training	**Yes**			
Other				

7. Program Description

Year\Level	Course Code	Course Name	Credit Hours	
			Theoretical	Practical
First Level	UCOM102	Computer Science	1	
	URIG104	Human Wrights	2	
	UENG101	English Language I	2	
	EMAT101	Mathematics I	3	
	EWOR105	Workshop Skills		2
	EPHY103	Physics	1	2
	HAED101	Engineering Mechanics I	3	
	HAED103	Engineering Geology	2	
	HAED104	Building Materials Properties	2	2
	HAED106	Transportation Engineering Principles	2	
	UFRE103	Freedom and Democracy	2	
	UCOM102	Computer Science	1	
	UARA100	Arabic Language	2	
	EMAT102	Mathematics II	3	
	EDRA104	Engineering Drawing	1	2
	ECHE106	Chemistry	2	
	HAED102	Engineering Mechanics II	3	
	HAED105	Highway Construction Materials	2	2
	HAED107	Principles of Highway Engineering	2	
	UENG201	English Language II	2	

Second Level	UCOM202	Computer Programming I	1	
	HAED 201	Strength of Materials I	2	
	HAED 203	Applied Mathematics I	2	
	HAED 205	Fluid Mechanics I	2	2
	HAED 208	Engineering Surveying	2	2
	HAED 210	Engineering drawing II	1	2
	HAED 212	Concrete Technology	2	2
	UCOM202	Computer Programming II		2
	ESTA201	Engineering Statistic	2	
	HAED 202	Strength of Materials II	3	
	HAED 204	Applied Mathematics II	3	
	HAED 206	Fluid Mechanics II	2	2
	HAED 207	Asphalt Technology	2	2
	HAED 209	Engineering Surveying II	2	2
Third Level	UENG301	English language III	2	
	EECO 301	Engineering Economic	2	
	HAED 301	Traffic Engineering I	2	2
	HAED 303	Soil Mechanics I	2	2
	HAED 305	Theory of Structures	2	
	HAED 308	Hydrology	2	
	HAED 309	Pavement Analysis	2	
	HAED 311	Airports Engineering I	2	
	EMAN302	Engineering Management	2	
	HAED 302	Traffic Engineering II	2	
	HAED 304	Soil Mechanics II	2	2
	HAED 306	Design of Reinforced Concrete	2	
	HAED 310	Pavement Design	2	
	HAED 312	Highway Drainage	2	
	HAED 313	Airports Engineering II	2	
	HAED 307	Numerical methods	2	
		Elective course	2	

Fourth Level	UENG404	English language IV	2	
	EPRO401	Engineering Graduation Project I		4
	HAED 401	Highway Geometric Design	2	
	HAED 403	Design of Steel Structures	2	
	HAED 404	Railway Engineering	2	
	HAED 405	Foundation Engineering I	2	
	HAED 408	Construction Estimation	2	
	HAED 411	Transportation Planning	2	
		Elective		
	UETH401	Ethics	2	
	EPRO402	Engineering Graduation Project II		4
	HAED 402	Highway Capacity Analysis	2	
	HAED 406	Foundation Engineering II	2	
	HAED 407	Highway safety	2	
	HAED 410	Highway Maintenance	2	
	HAED 409	Highway Construction & Specifications	2	
		Elective		
		Elective		
Elective	HAED 314	Bridge Design	2	
	HAED 315	Highway Engineering Economy	2	
	HAED 412	Soil Improvements	2	
	HAED 413	Sustainable highway	2	
	HAED 414	Traffic software	1	2
	HAED 415	Pavement Management	2	
	HAED 416	Highway & Airport software's	1	2
	HAED 417	Airport Planning	2	

8. Expected learning outcomes of the program

Knowledge	
Learning Outcomes 1	Ability to identify, formulate and solve the related problems of highway and airport engineering by applying the principles of engineering, science and mathematics.

Learning Outcomes 2	Ability to apply the engineering design process to produce solutions that meet specific needs while taking into account transportation, traffic, safety, road, environmental, economic and other factors as appropriate to the specialty.
Learning Outcomes 3	Ability to develop and conduct appropriate experiments, analyze and interpret data, and use engineering judgment to draw conclusions.
Skills	
Learning Outcomes 4	Ability to communicate effectively with a wide range of audiences.
Learning Outcomes 5	The ability to identify the ongoing need to acquire new knowledge, choose appropriate learning strategies, and apply that knowledge.
Ethics	
Learning Outcomes 6	The ability to identify ethical and professional responsibilities in engineering situations and make right judgments, which must take into account the impact of engineering solutions in public, economic, environmental and societal contexts
Learning Outcomes 7	Ability to work effectively as a member or leader of a team that sets goals, plans tasks, meets deadlines, and creates an inclusive, collaborative environment.

9. Teaching and Learning Strategies

- Including various methods in the program curriculum, providing each method with (advantages and disadvantages).
- Including real issues and problems in the program curriculum, and motivating students to express their opinions and suggest solutions in the best way to address problems and challenges.
- Adopting a continuous improvement approach for all different events and activities to ensure the achievement of the mission and objectives approved by the college and quality standards.

10. Evaluation methods

- Daily and weekly exams
- Oral exams in the classroom
- Submission of the homework
- Submission of the scientific reports
- Monthly exams
- Final exam

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Req.\ Skills	No. of Staff	
	General	Special		Staff	Lecturer
Professor	Civil	Transportation		2	
Professor	Civil	Structure		2	
Assist. Professor	Civil	Transportation		1	
Assist. Professor	Civil	Structure		2	
Assist. Professor	Civil	Project Management		1	
Assist. Professor	Civil	Geotechnical		1	
Assist. Professor	Civil	Construction Materials		1	
Lecturer	Civil	Transportation		1	
Lecturer	Civil	Project Management		2	
Lecturer	Civil	Environmental		1	
Lecturer	Civil	Hydraulic Structure		1	
Assist. Lecturer	Civil	Project Management		1	
Assist. Lecturer	Surveying	Surveying		1	
Assist. Lecturer	Mechanic	Applied Mechanic		1	
Assist. Lecturer	Materials	Materials		1	
Assist. Lecturer	Civil	Geotechnical			1

Professional Development

Mentoring new faculty members

The process used to mentoring new, visiting, full-time and part-time faculty members at the institutional and departmental levels is to register them with senior faculty and hold meetings to develop their expertise.

Professional development of faculty members

The academic and professional development plan for faculty members includes teaching and learning strategies, assessment of learning outcomes, and professional development, through training courses and workshops.

12. Acceptance Criterion

According to the instructions of the Ministry of Higher Education and Scientific Research, students are accepted into the college according to their grades in the sixth class of middle school (Baccalaureate). The criteria for distributing students to the department are as follows:

- Student's desire.
- Total number of students in middle school.
- Department's capacity.

13. The most important sources of information about program

Website of the College of Engineering https://engineering.uodiyala.edu.iq/?page_id=40678

14. Program Development Plan

Keeping pace with developments in the field of highway and airport engineering and adopting the latest sources, references and scientific methods.

Program Skills Outline											
				Required program learning outcomes							
Year\Level	Course Code	Course Name	Basic\ Optional	Knowledge			Skills		Ethics		
				A1	A2	A3	B1	B2	C1	C2	
First Level	UCOM102	Computer Science	Basic	✓		✓		✓			
	URIG104	Human Wrights	Basic				✓		✓	✓	
	UENG101	English Language I	Basic				✓	✓		✓	
	EMAT101	Mathematics I	Basic	✓				✓			
	EWOR105	Workshop Skills	Basic			✓		✓		✓	
	EPHY103	Physics	Basic	✓		✓		✓			
	HAED101	Engineering Mechanics I	Basic	✓	✓		✓	✓	✓	✓	
	HAED103	Engineering Geology	Basic	✓	✓		✓	✓	✓		
	HAED104	Building Materials Properties	Basic	✓	✓	✓		✓	✓		
	HAED106	Transportation Engineering Principles	Basic	✓	✓	✓	✓	✓	✓	✓	
	UFRE103	Freedom and Democracy	Basic				✓		✓	✓	
	UCOM102	Computer Science	Basic	✓		✓		✓			
	UARA100	Arabic Language	Basic				✓		✓	✓	
	EMAT102	Mathematics II	Basic	✓				✓			
	EDRA104	Engineering Drawing	Basic			✓		✓		✓	
	ECHE106	Chemistry	Basic	✓		✓		✓			
	HAED102	Engineering Mechanics II	Basic	✓	✓		✓	✓	✓	✓	
	HAED105	Highway Construction Materials	Basic	✓	✓	✓		✓	✓	✓	

	HAED107	Principles of Highway Engineering	Basic	✓	✓	✓	✓	✓	✓	✓
Second Level	UENG201	English Language II	Basic				✓	✓		✓
	UCOM202	Computer Programming I	Basic	✓		✓		✓		
	HAED 201	Strength of Materials I	Basic	✓		✓		✓	✓	
	HAED 203	Applied Mathematics I	Basic	✓				✓		
	HAED 205	Fluid Mechanics I	Basic	✓		✓		✓	✓	
	HAED 208	Engineering Surveying	Basic	✓	✓	✓	✓	✓	✓	✓
	HAED 210	Engineering drawing II	Basic			✓		✓		✓
	HAED 212	Concrete Technology	Basic	✓	✓	✓		✓	✓	
	UCOM202	Computer Programming II	Basic	✓		✓		✓		✓
	ESTA201	Engineering Statistic	Basic	✓				✓		
	HAED 202	Strength of Materials II	Basic	✓		✓		✓	✓	
	HAED 204	Applied Mathematics II	Basic	✓				✓		
	HAED 206	Fluid Mechanics II	Basic	✓		✓		✓	✓	
	HAED 207	Asphalt Technology	Basic	✓	✓	✓		✓	✓	
	HAED 209	Engineering Surveying II	Basic	✓	✓	✓	✓	✓	✓	✓
Third Level	UENG301	English language III	Basic				✓	✓		✓
	EECO 301	Engineering Economic	Basic			✓		✓	✓	
	HAED 301	Traffic Engineering I	Basic	✓	✓	✓	✓	✓		✓
	HAED 303	Soil Mechanics I	Basic	✓	✓	✓		✓	✓	
	HAED 305	Theory of Structures	Basic	✓		✓		✓		✓

	HAED 308	Hydrology	Basic			✓	✓	✓	✓	
	HAED 309	Pavement Analysis	Basic	✓	✓	✓		✓	✓	
	HAED 311	Airports Engineering I	Basic	✓	✓	✓		✓	✓	
	EMAN302	Engineering Management	Basic			✓	✓		✓	✓
	HAED 302	Traffic Engineering II	Basic	✓	✓	✓	✓	✓		✓
	HAED 304	Soil Mechanics II	Basic	✓	✓	✓		✓	✓	
	HAED 306	Design of Reinforced Concrete	Basic	✓		✓		✓		✓
	HAED 310	Pavement Design	Basic	✓	✓	✓		✓	✓	
	HAED 312	Highway Drainage	Basic	✓	✓		✓		✓	✓
	HAED 313	Airports Engineering II	Basic	✓	✓	✓		✓	✓	
	HAED 307	Numerical methods	Basic	✓				✓		
	HAED 314	Bridge Design	Optional	✓	✓			✓	✓	✓
	HAED 315	Highway Engineering Economy	Optional		✓	✓		✓	✓	✓
Fourth Level	UENG404	English language IV	Basic				✓	✓		✓
	EPRO401	Engineering Graduation Project I	Basic	✓	✓	✓	✓	✓	✓	✓
	HAED 401	Highway Geometric Design	Basic	✓	✓	✓		✓	✓	
	HAED 403	Design of Steel Structures	Basic	✓	✓	✓		✓	✓	
	HAED 404	Railway Engineering	Basic			✓	✓		✓	✓
	HAED 405	Foundation Engineering I	Basic	✓	✓	✓	✓	✓		✓
	HAED 408	Construction Estimation	Basic	✓	✓	✓		✓	✓	
	HAED 411	Transportation Planning	Basic	✓		✓		✓		✓

	UETH401	Ethics	Basic				✓		✓	✓
	EPRO402	Engineering Graduation Project II	Basic	✓	✓	✓	✓	✓	✓	✓
	HAED 402	Highway Capacity Analysis	Basic	✓	✓	✓		✓	✓	
	HAED 406	Foundation Engineering II	Basic	✓	✓	✓	✓	✓	✓	✓
	HAED 407	Highway safety	Basic				✓	✓		✓
	HAED 410	Highway Maintenance	Basic			✓		✓	✓	
	HAED 409	Highway Construction & Specifications	Basic	✓	✓	✓	✓	✓		✓
	HAED 412	Soil Improvements	Optional	✓	✓	✓		✓	✓	
	HAED 413	Sustainable highway	Optional	✓		✓		✓		✓
	HAED 414	Traffic software	Optional			✓	✓	✓	✓	
	HAED 415	Pavement Management	Optional	✓	✓	✓		✓	✓	
	HAED 416	Highway & Airport software’s	Optional	✓	✓	✓		✓	✓	
	HAED 417	Airport Planning	Optional			✓	✓		✓	✓