MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Highway Materials**			**Module Delivery**	
Module Type	**Elective learning activity**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CIV029**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level		UGIV	**Semester of Delivery**		8
Administering Department		CV101	**College**	Civil Engineering College	
Module Leader	Dr. Talal H. Fadhil		**e-mail**	talalmudadi1@uoanabr.edu.iq	
Module Leader's Acad. Title		Assist Prof.	**Module Leader's Qualification**		Ph.D.
Module Tutor			**e-mail**	E-mail	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		01/06/2023	**Version Number**		1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. Understand the practical concepts of highway materials and their interaction with engineering properties of each highway structure layer. 2. Apply the knowledge of highway layer materials and how they are tested and constructed. 3. Also, students able to use the standard test method and specification to construct the road embankments and hot mix asphalt courses 4. Also, the students be able to do mix design of HMA according to Marshall and Superpave mix design methods.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Apply math and science principles in the design and analysis process. 2. Analyze and interpret field and laboratory data to obtain design properties for highway materials. 3. Design Job Mix formula including Marshall mix design method. 4. Develop semester-long interaction with students on homework and design submittals. 5. Consider public safety in design for every major highway structure type and the impacts of the structures on society and environment. 6. Conduct external research for design and creation of design tools. 7. Use mathematical assistants along with using current state of practice design concepts.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1 .Introduction (2 hrs.) 2 .Types of highway material (4 hrs.) 3 .Soil classifications (4 hrs.) 4 .Type of soil standard tests and their engineering properties. (6 hrs.) 5 .Aggregate material, sources, properties, their engineering properties, and blending of different types of aggregates by mathematical and graphical methods (12 hrs.) 6 .Asphalt cement sources, production, and engineering properties (4 hrs.) 7 .Rational Standard tests of asphalt cement (4 hrs.)

	8 .SuperPave Standard tests of asphalt cement (12 hrs.) 9 .Asphalt concrete mix design methods (8 hrs.) 10 .Type of asphalt plants (asphalt concrete mix production) (4 hrs.)

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	Highway materials course requires effective learning and teaching strategies to ensure students develop a strong understanding of highway material properties and their specifications. The range of strategies that can enhance the learning experience for students in highway material course. These strategies include lecture-based teaching, practical applications, problem-solving assignments, group work and discussions, technology integration, field trips and site visits, guest speakers, assessments and feedback, continuous learning, and encouraging self-directed learning. By incorporating these strategies, educators can create an engaging and comprehensive learning environment that equips students with the knowledge, skills, and critical thinking abilities necessary for success in the field of highway engineering and materials.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	37	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	4	5% (5)	3, 6,10,14	LO #1, 3,5, and 7
	Assignments	2	3% (3)	2, 12	LO # 4 and 7
	Projects / Lab.				
	Report	1	2% (2)	13	LO # 2,6 and 7
Summative assessment	**Midterm Exam**	2 hr	30% (30)	7	LO # 1-7
	Final Exam	3hr	60% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction
Week 2	Types of highway material
Week 3	Soil classifications
Week 4	Classification of soils, AASHTO and USCS
Week 5	Type of soil standard tests and their engineering properties.
Week 6	Aggregate material, sources, properties, their engineering properties
Week 7	Blending of different types of aggregates by mathematical and graphical methods
Week 8	Asphalt cement sources, production, and engineering properties
Week 9	Rational Standard tests of asphalt cement
Week 10	SuperPave Standard tests of asphalt cement
Week 11	Application of SuperPave chart
Week 12	Asphalt concrete mix design methods
Week 13	Marshall Mix Design method
Week 14	Type of asphalt plants (asphalt concrete mix production)

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1:
Week 2	Lab 2:
Week 3	Lab 3:
Week 4	Lab 4:
Week 5	Lab 5:
Week 6	Lab 6:
Week 7	Lab 7:

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	((Highway Engineering Pavements, Materials and Control of Quality)) By: Athanassios Nikolaides © 2015 by Taylor & Francis Group, LLC	Yes
Recommended Texts	Course supplements will be used to present extra information not covered in the textbook.	Yes
Websites	https://www.uoanbar.edu.iq/Bank-Section.php	

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: Marks 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.