



Jordan University of Science and Technology
Faculty of Engineering
Civil Engineering Department

CE444 Highway Laboratory
Summer Semester 2019-2020

Course Catalog
1 Credit Hours. 1 Credit hours (3 h lab). Tests on mineral aggregate such as sieve analysis, specific gravity, absorption and CBR; the test on asphalt binder such as penetration, specific gravity, viscosity, softening point, ductility and flash and fire point, and Tests on asphalt paving mixtures using Marshal test, Skid Resistance, Extraction Test and stripping test

Text Book	
Title	Mix Design Methods for Asphalt Concrete and Other Hot Mix Types, The AI Manual Series No. 2 (MS-2)
Author(s)	Asphalt Institute
Edition	6th Edition
Short Name	Ref 1
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref 2	Lab Manual	American Society for Testing and Materials (ASTM)	1st Edition	
Ref 3	Pavement Analysis and Design	Y. H. Huang	2nd Edition	

Instructor	
Name	Mohammad Alsheyab
Office Location	-
Office Hours	
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Class Schedule & Room
Section 1: Lecture Time: Sat, Thu : 14:30 - 17:30 Room: LAB

Prerequisites		
Line Number	Course Name	Prerequisite Type
234421	CE442 Pavement Materials & Design (1)	Pre./Con.

Tentative List of Topics Covered		
Weeks	Topic	References
Week 1	Introduction: Lab regulations, report technical writing, procedures, and policies	
Week 1	Aggregate testing: Test on specific gravity and absorption of coarse and fine aggregate.	
Week 2	Coarse and fine aggregate angularity, sand equivalent and flat and elongated particles.	
Week 3	Tests on penetration, softening points and ductility.	
Week 4	Fire and flash points, specific gravity and solubility of asphalt binder.	
Week 5	Test on rotational viscosity, rolling thin film oven and pressure aging vessel	
Week 6	Dynamic shear rheometer, Bending beam rheometer and direct tension tester.	
Week 7	Marshall method of mix design part I	
Week 8	Marshall method of mix design part II	
Week 9	Marshall method of mix design part III	
Week 10	Superpave mix design.	
Week 11	Extraction, stripping tests, Benkelman beam and British pendulum tests.	
Week 12	California Bearing Ratio test.	

Mapping of Course Outcomes to Program Student Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Be able to perform tests on aggregates. [1SLO1, 1SLO3, 1SLO6, 1SLO7]	25%	
Familiar with tests on asphalt binder. [1SLO1, 1SLO3, 1SLO6, 1SLO7]	25%	
Be able to design the asphalt concrete mix [1SLO1, 1SLO2, 1SLO3, 1SLO6, 1SLO7]	25%	
Be able to run sum of the field tests and evaluate the pavement performance [1SLO1, 1SLO3, 1SLO6, 1SLO7]	25%	

Relationship to Program Student Outcomes (Out of 100%)						
SLO1	SLO2	SLO3	SLO4	SLO5	SLO6	SLO7
23.75	5	23.75			23.75	23.75

Evaluation	
Assessment Tool	Weight
Final Exam	100%

Policy	
Attendance Policy	In accordance with the University Regulations, the students must attend all classes on the time of lectures. Failure to attend classes without prior approval for whatever reason is considered as part of the percentage missed. Attendance records are kept, and if a student is absent for more than 20% of the total contact hours without an excuse accepted by the faculty dean, he will fail.
Submission of Laboratory Reports:	Laboratory reports are due one week from the time of the experimental work of each corresponding test. No late reports will be accepted.
Exams:	There will be two exams during the semester: midterm exam and final exam. The exam will be scheduled later and announced in class. The final exam will be conducted at the end of the semester. Midterm exam will be typically written exam and cover what students have learned about test equipment, test procedures, test specifications and conditions, class notes and lectures, and all the analysis and calculation covered in the test methods. The final exam will be written exam as well and it will cover all tests conducted in the laboratory, class notes and lectures, laboratory reports and analysis.
Manners in the Laboratory:	Laboratory lectures will be informal to the extent that you are encouraged to ask questions and participate in any discussion at any time. However, side discussions between students during lectures will not be tolerated due to the fact that this kind of discussions distract other students. Good conduct of students is very important and include: attending all classes, being on-time, not doing other tasks, not responding to cellular phones (turning off cellular phones is alternatively recommended), respecting other students, ?etc. All these behaviors will provide a healthy and comfortable environment to all students. Although good manners in the laboratory do not affect your grade, providing a favorable impression during laboratory lectures and work may impact a pass/fail grade.

Date Printed: 2020-09-24