

COURSE PLAN

FIRST: BASIC INFORMATION

College

College : Karak University College
 Department : Department of Basic and Informatics Sciences

Course

Course Title : Maintenance and Rehabilitation of Facilities
 Course Code : 020112285
 Credit Hours : 3 (1 Theoretical, 2 Practical)
 Prerequisite : 020112182

Instructor

Name : Rozan Sameer ali alhunifat
 Office No. :-
 Tel (Ext) :-
 E-mail : rozan.sameer@bau.edu.jo
 Office Hours : -
 Class Times

Text Book

- Title: Muhammad Rjoub, "Rehabilitation of Reinforced Concrete Structures" Al-Hafez Publishers, 2nd Amman – Jordan, 2nd ed. 2015. (Arabic Language)

References

- تأهيل منشآت مباني – م.منى الفاعوري، مكتبة المجتمع العربي للنشر والتوزيع 2015

SECOND: PROFESSIONAL INFORMATION

COURSE DESCRIPTION

This course cover working knowledge about how to ensure that buildings and their associated services are in a safe condition and ensure that the condition of the building meets all statutory requirements. And it carry out the maintenance work necessary to maintain the value of the physical assets of the building stock and to carry out the work necessary to maintain the quality of the building.

COURSE OBJECTIVES

The objective of this course is to enable the student to do the following:

- Describe knowledge on the main degradation mechanisms of concrete structures.

- Explain how to perform condition assessment of deteriorated structures.
- Classify the various repair materials and repair/reinforcement techniques.
- Classify the various rehabilitation techniques.
- Describe safety requirements.

COURSE LEARNING OUTCOMES

Upon the completion of this course students will be able to:

- CLO1. Explain the differences between repairing and rehabilitation and the need for rehabilitation.
- CLO2. Explain the reasons and mechanisms of Concrete deterioration and steel corrosion.
- CLO3. Compare between different types of cracks and structural defects
- CLO4. Evaluate the structures strength of structures.
- CLO5. Classify the rehabilitation techniques and materials.
- CLO6. Apply rehabilitation equipment for diagnosis and evaluation of structural problems.
- CLO7. Classify types of service life.
- CLO8. Use the knowledge of demolition methods and techniques

COURSE SYLLABUS

Week	Topic	Topic details	LEARNING OUTCOMES	Proposed assignments
1	Introduction:	<ul style="list-style-type: none"> • Rehabilitation: Definitions • Basic concepts • Detailed examples of buildings that need rehabilitation 	CLO1	
2	Rehabilitation reasons	<ul style="list-style-type: none"> • Rehabilitation reasons, • Rehabilitation Methodology. 	CLO1	
3	Rehabilitation reasons	<ul style="list-style-type: none"> • Good quality concrete • Concrete components • Deterioration of concrete 	CLO2	
4	Rehabilitation reasons	<ul style="list-style-type: none"> • Preventive and curative measures for the problem of ASR • Preventive and corrective measures of concrete and steel 	CLO3	
5	Diagnosis of Structural defects	<ul style="list-style-type: none"> • Rehabilitation and inspection of facilities • Identify the types of cracks: <ul style="list-style-type: none"> a) Cracks occur before hardening b) Cracks that occur after hardening 	CLO3	
6	Diagnosis of Structural defects	<ul style="list-style-type: none"> • Inspection, Crack readings • Iron rusts and concrete crumbles • Classification of the degree of damage due to the presence of cracks 	CLO3	
7	Strength Evaluation	<ul style="list-style-type: none"> • Structural assessment steps • Load combination • Analytical method and load test 	CLO4	

Week	Topic	Topic details	LEARNING OUTCOMES	Proposed assignments
8		Mid-term Exam		
9	Evaluation of strength of existing structures	<ul style="list-style-type: none"> • General requirements for testing • Equipment for testing • The equipment used in the test • Test acceptance criteria • Report preparation. 	CLO4	
10	Rehabilitation Test	<ul style="list-style-type: none"> • Destructive testing • Non-destructive test 	CLO5	
11	Rehabilitation equipment and testing	<ul style="list-style-type: none"> • Schmidt hammer test • Ultrasound test <ol style="list-style-type: none"> a) Penetration resistance using a Windsor probe b) Shock echo level gauges 	CLO5	
12	Repairing and Rehabilitation Materials	<ul style="list-style-type: none"> • Classification of maintenance materials <ol style="list-style-type: none"> a) Conventional material b) Ferrocement c) Polymer concrete d) Prepacked or preplaced concrete e) Latex modified concrete f) Adhesives g) Grouts and injection h) Self compacted concrete • Cementitious materials 	CLO6	
13	Rehabilitation techniques.	<ul style="list-style-type: none"> • Maintenance techniques • Prepare surfaces for repair work • Concrete removal methods • Iron paint cover • Placement method • Strengthening and restoring techniques • Reinforcement using external reinforcement 	CLO6	
14	Service life prediction of structures	<ul style="list-style-type: none"> • Evaluation of RC Aging • Methods of estimating concrete service • Calculation Methods for Concrete Service Evaluation 	CLO7	
15	Demolition techniques.	<ul style="list-style-type: none"> • Demolition techniques. 	CLO8	
16		Final Exam		

COURSE LEARNING RESOURCES

Teaching will be achieved using available resources including Lectures, data show and materials uploaded to the e-learning system and term projects.

ONLINE RESOURCES

A lot of references and learning videos and codes are available on the internet. The student could refer to them for more information.

ASSESSMENT TOOLS

	ASSESSMENT TOOLS	%
	Projects and Quizzes	20
	Mid Exam	30
	Final Exam	50
	Total Marks	100

THIRD: COURSE RULES

ATTENDANCE RULES

Attendance and participation are extremely important, and the usual University rules will apply. Attendance will be recorded for each class. Absence of 10% will result in a first written warning. Absence of 15% of the course will result in a second warning. Absence of 20% or more will result in forfeiting the course and the student will not be permitted to attend the final examination. Should a student encounter any special circumstances (i.e. medical or personal), he/she is encouraged to discuss this with the instructor and written proof will be required to delete any absences from his/her attendance records.

GRADING SYSTEM

Example:

Grade	points
0-49	FAILED
50-100	PASSED

REMARKS

Use of Mobile Devices, Laptops, etc. During Class, unexpected noises and movement automatically divert and capture people's attention, which means you are affecting everyone's learning experience if your cell phone, laptop, etc. makes noise or is visually disturbing during class. For this reason, students are required to turn off their mobile devices and close their laptops during class.

Academic Integrity. Copying assignments, allowing assignments to be copied, will fail the assignment on the first offense. Cheat in tests, or copying assignments for the second time.

Cite all sources consulted to any extent (including material from the internet), whether or not assigned and whether or not quoted directly.

Project: Students will undertake a term project to study in detail one of the course topics. The project may involve a critical literature review or a case study. The students should consult at least five (5) references or journal articles. A written project report of 10 pages maximum will be submitted in nominated dates. Ten-minute presentation will be given to the rest of the class during the last two weeks of the semester.

Formats, Rules, Topics, submission and presentation dates are illustrated in project form.



COURSE COORDINATOR

Course Coordinator

Signature:

Date:

Department Head:

Signature:

Date: