

<p>Kingdom of Saudi Arabia Ministry of Higher Education Qassim University College of Engineering</p>		<p>المملكة العربية السعودية وزارة التعليم العالي جامعة القصيم كلية الهندسة</p>
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CE 653 Pavement Management Systems

College: Engineering

Department: Civil

First: Course Definition

1- Course Code : CE 653

2- Units: 3

3 – Semester

4 -Prerequisite

5- Co-requisite

6- Location (if not on main Campus):

Second: Course Objectives

- 1- To develop understanding of the concepts, theories of Pavement distresses and evaluation.
- 2- To develop understanding of the nondestructive testing.
- 3- To back calculate of layer moduli
- 4- To investigate the rehabilitation and pavement management concepts.

Third: Course Specifications

1- Topics to be covered		
Subject	No of Weeks	Units
Introduction	1	3
Pavement Condition Surveys	2	6
nondestructive testing	1	3
Roughness measurement	1	3

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Skid data collection	1	3
pavement performance models	2	6
pavement maintenance, rehabilitation	1	3
Network level pavement management	2	6
Pavement management applications	2	6
Implementation steps	1	3

2- Course components (Total hrs in the Semester): 42

Lecture	Exercise	Other
42	-	0

3- Intended Learning Outcomes of the Course (ILO's)

a. Knowledge

i) Description of the knowledge to be acquired:

- List the pavement Condition Surveys.
- Define the nondestructive testing methods.
- List the roughness measurement methods
- Describe the process used in skid data collection.
- Define pavement maintenance, rehabilitation process.

ii) Teaching strategies to be used to develop that knowledge

- Class lectures.
- Term projects.
- Students' presentations.
- Group discussion.
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iii) Methods of assessment of knowledge acquired

- Exams.
- Quizzes.
- Homework assignments.
- Term projects.

b- Cognitive (Intellectual) Skills

i) Cognitive skills to be developed

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- Identify the pavement Condition Surveys.
- Identify the nondestructive testing methods
- Classify the roughness measurement methods
- Examine pavement maintenance, rehabilitation process.
- Recognize Network level pavement management.

- ii) Teaching strategies to be used to develop these cognitive skills**
- Class lectures.
 - Case studies analysis.
 - Term projects.

- iii) Methods of assessment of students cognitive skills**
- Students' seminars and presentations.
 - Term projects.
 - Written reports.

c. Interpersonal Skills and Responsibility

- i) Description of the interpersonal skills and capacity to carry responsibility to be developed**
- Suggest alternative schemes for pavement condition surveys.
 - Suggest alternative schemes for non destructive testing
 - Evaluate the pavement performance models.
 - Evaluate the network level management.

- ii) Teaching strategies to be used to develop these skills**
- Class lectures.
 - Case studies analysis.
 - Term projects.

- iii) Methods of assessment of students interpersonal skills and capacity to carry responsibility**
- Students' seminars and presentations.
 - Term projects.
 - Written reports.

d. Communication, Information Technology and Numerical Skills

- i) Description of the skills to be developed in this domain**

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- Literature research.
- Problems modeling.
- Utilization of computer applications in analysis and design.

- ii) Teaching strategies to be used to develop these skills**
- Class lectures.
 - Case studies analysis.
 - Computer lab sessions.
 - Term projects.
- iii) Methods of assessment of students numerical and communication skills**
- Term project.
 - Written reports.
 - Students' seminars and presentations.

e. Psychomotor (if applicable) & Other Non-cognitive Skills

- i) Description of the psychomotor or other skills to be developed and the level of performance required**
- NA

- ii) Teaching strategies to be used to develop these skills-**
- NA

- iii) Methods of assessment of student's psychomotor skills**
- NA

4- Student Assessment Schedule

Serial	Assessment tool (test, group project, examination etc.)	Week due	Weight
1	Term Project – 1	3 rd	15 %
2	Mid Term Exam -1	7 th	15 %
3	Term Project – 2	10 th	15 %
4	Term Project – 3	13 th	15 %
5	Final Exam	16 th	40 %

5- Student Support

- Providing electronic library of textbooks and scientific periodicals.

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- Providing the necessary computer applications for the course.

6- Learning Resources

i) Essential Books (References)

- Jones, S. R. "Highways: Construction, Management, and Maintenance" (Transportation Infrastructure-Roads, Highways, Bridges, Airports and Mass Transit) Nova Science Pub Inc., 2010. ISBN-10: 1617288624, ISBN-13: 978-161728862.
- 1.Haas, R., W. R. Hudson, and J. P. Zaniewski (1994). Modern Pavement Management. Krieger Publishing Company. Malabar, Florida.
- Transportation Association of Canada (1997). Pavement Design and Management Guide. Transportation Association of Canada, Ottawa.

ii) Course Notes

- NA

iii) Recommended Books

- Shahin, M.Y. (1994). Pavement Management for Airports, Roads and Parking Lots. Chapman & Hall, New York.
- Hudson, W. R., R. Haas and W. Uddin, (1997). Infrastructure Management: Integrating Design, Construction, Maintenance, Rehabilitation, and Renovation. McGraw Hill. New York.
- The Portland Cement Association Pavement Design Manual.

iv) Electronic Books & Web Sites:

- Scientific journals and forums.
- Instructor’s instruction
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v) Periodicals

- Journal of Transportation Engineering
- Transportation Research Records
- International Journal of Pavement Research and Technology
- ASTM Journal of Testing and Evaluation
- Journal of Applied Science.

7- Course Evaluation and Improvement Processes

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i) Strategies for Obtaining Student Feedback on Effectiveness of Teaching

- Students' questioners.
- Students' evaluation of course and instructor.

ii) Other Strategies for Evaluation of Teaching by the Instructor or by the Department

- Public faculty seminars.
- Assessment by external evaluators of students achievements.
- Instructor (Course) Report

iii) Processes for Improvement of Teaching

- Assessment of students' work by external examiners.
- Analysis of students' evaluation of course and instructor.
- Seminars by industry professionals.

iv) Processes for verifying standards of student achievement (e.g. check marking by an independent faculty member of a sample of student work, periodic exchange and remarking of a sample of assignments with a faculty member in another institution)

- Assessment of students' work by external examiners.
- Analysis of students' evaluation of course and instructor.
- Seminars by industry professionals.
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v) Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

- Assessment and evaluation of the level of achieving the course outcomes through a continuous improvement process (part of a quality assurance system established by the university),
- Consequently, actions are to be taken to improve the course delivery when necessary.
- Review of the course objectives, outcomes and curriculum every 2 years.