Department of Civil Engineering  
Kansas State University  
CE 777 : PORTLAND CEMENT CONCRETE PAVEMENTS  

Hours 5:30 p.m. in Room Seaton 142

Instructor: Dr. Stefan Romanoschi  
Office: 2112 Fiedler Hall – KSU, Manhattan, KS 66506  
Office Hours: W 11:30-2:30 PM  
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CATALOG DESCRIPTION: CE 777 Portland Cement Concrete Pavements. (3). II.  

BRIEF DESCRIPTION: More than 500,000 miles of the nation’s roads and streets are Portland cement Concrete (PCC) pavements. These roads are essential to both the nation’s economy and it’s mobility. CE 777 is being offered to meet the needs of undergraduate students in civil engineering and the graduate students in the transportation/materials area. The course is designed to provide the students with knowledge related to the historical development, current practice and research in the area of concrete pavement design, construction, maintenance and rehabilitation. The class will consist of a three-hour lecture session per week. At least one field visit to a PCC pavement construction site and a PCC mix production plant will be organized. The class will be offered nationally through the Division of Continuing Education - KSU, under the Long-Distance Learning Program. The laboratory demonstrations will be included as a virtual laboratory.

TEXTBOOK: No text book is required for this class. Handouts will be provided to the students at the beginning of each lecture.

ADDITIONAL MATERIAL:
1. Notes form NHI Course No. 131033: Construction of PCC Pavements  
2. Notes form NHI Course No. 131062: PCCP Evaluation and Rehabilitation  
4. S. Kosmatha, B. Kerkhoff and W. Panarese. Design and Control of Concrete Mixtures, 14th Edition. Published by the Portland Cement Association (www.portcement.org)

EFFECTIVE DATE: Fall 2002
COURSE OBJECTIVES:  By the end of the course the students will be able to:

- Conduct rigorous analyses for selecting materials for the Portland Cement Concrete production;
- Design a Portland Cement Concrete mix;
- Understand the PCC production and placement processes;
- Make scientific observation and conduct analyses for identifying the deteriorations in a distressed rigid pavement, their causes, as well as the optimum remediation methods;
- Communicate in the form of written reports and oral presentations.

ASSESSMENT METHOD:  The final grade for this course will be determined using the following basis:

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<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
<th>Grade</th>
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<tbody>
<tr>
<td>Mid-Term Exam</td>
<td>25%</td>
<td>A : 90% - 100%</td>
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<tr>
<td>Comprehensive Final Exam</td>
<td>30%</td>
<td>B : 80% - 90%</td>
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<tr>
<td>Homework</td>
<td>5%</td>
<td>C : 70% - 80%</td>
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<tr>
<td>Term Paper</td>
<td>25%</td>
<td>D : 60% - 70%</td>
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<tr>
<td>Oral presentation</td>
<td>15%</td>
<td>F : &lt; 60%</td>
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<tr>
<td>Quizzes</td>
<td>5%</td>
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TOPICS:
3. Concrete plant operations: truck mixed concrete and central mixed concrete;
4. Slip-Form Paving Operation;
5. Fixed-Form Paving Operation;
6. Saw and seal operations;
7. Subgrade preparation;
8. Cement, lime and fly ash stabilized bases;
9. Drainage selection, design and construction;
10. Thickness design, joint design and shoulder characterization;
11. Continuous Reinforced Concrete Pavements;
12. Unbonded and Bonded Concrete Pavement Overlays: Design and Construction.
13. Whitetopping;
14. Ultra-Thin Whitetopping;
15. Concrete pavement restoration;
16. Life-cycle cost analysis;
17. Quality Assurance and Quality Control in Concrete Pavement Construction.
19. Traffic Management. Fast Track

RELATIONSHIP OF THE COURSE TO PROGRAM OBJECTIVE:
The following program objectives are emphasized in this course; civil engineering principles, methodologies of design, technical communication and teamwork.

CONTENT:  Engineering Science:  1.0 credits or 33%
           Engineering Design:  2.0 credits or 67%