Course Specifications of
Highways and Airports Engineering - C 562

University: Benha
Faculty: Benha Faculty of Engineering

Course specifications
Programme(s) on which the course is given: Utilities Engineering
Major or minor element of programmes: N.A.
Department offering the programme: Civil Engineering
Department offering the course: Civil Engineering
Academic year / Level: 5th year – 2nd term
Date of specification approval: / /2009

A- Basic Information
Title: Highways and Airports Engineering Planning
Code: C 562
Credit Hours: 4
Lecture: 3
Tutorial: 2
Practical: 2
Total: 7

B- Professional Information
1 - Overall aims of course:
By the end of the course the students will be able to:
- Understand the advanced design elements of highways and airports using both basic principles and modern technology.
- Understand the engineering tools of highways and airports design.

2- Intended learning outcomes of course (ILOs)
a- Knowledge and understanding:
   a.1 Design of different Highway intersections (at grade, rotary, and interchange).
   a.2 Rigid pavement stresses analysis and design.
   a.3 Flexible pavement maintenance.
   a.4 Airport geometric design.
   a.5 Airport structure design.
b- Intellectual skills

b.1 Geometric design concept and elements for rural and urban highways and airports.
b.2 Structure design methods of flexible and rigid pavement.

c- Professional and practical skills

c.1 To increase the ability to highway and airport design and pavement maintenance
c.2 Overcoming the problems of highway and airport design.

d- General and transferable skills

d.1 Developing the sensitivity of the students to highway and airport design.
d.2 Preparing our graduates to work effectively in modes ranging from independent study to multi-disciplinary teams.

3- Contents

<table>
<thead>
<tr>
<th>Topic</th>
<th>No. of Hours</th>
<th>Lecture</th>
<th>Tutorial/Practical</th>
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<tbody>
<tr>
<td>Design of at grade intersection- sight distance of at grade intersection.</td>
<td>7</td>
<td>3</td>
<td>4</td>
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<td>Rotary and interchange design.</td>
<td>14</td>
<td>6</td>
<td>8</td>
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<tr>
<td>Stresses in rigid pavement.</td>
<td>7</td>
<td>3</td>
<td>4</td>
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<tr>
<td>Design of rigid pavement.</td>
<td>7</td>
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<td>Asphalt mixing planet.</td>
<td>7</td>
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<td>Asphalt concrete layers construction.</td>
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<tr>
<td>Flexible pavement maintenance.</td>
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<tr>
<td>Airport site selection and classification – air craft characteristics related to airport design.</td>
<td>7</td>
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<td>Airport configuration.</td>
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<td>Airport obstruction clearance surfaces.</td>
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<td>Airport capacity.</td>
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<td>Geometric design of the airport (Runway, Taxing, and Apron).</td>
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<td>Structural design of airports.</td>
<td>7</td>
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<td>4</td>
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<tr>
<td>Airport lighting marking and signing – airport traffic control.</td>
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<td>4</td>
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<tr>
<td>Total</td>
<td>105</td>
<td>45</td>
<td>60</td>
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4– Teaching and learning methods
   4.1- Lectures.
   4.2- Problems solution.

5- Student assessment methods
   5.1 - Sheets to assess knowledge, understanding, and communications skills.
   5.2 - Quizzes to assess knowledge and understanding.
   5.3 - Mid-term exam to assess knowledge, understanding, and critical thinking skills.
   5.4 - Final-exam to assess knowledge, understanding, and critical thinking skills.

Assessment schedule
   Assignment 1  Weeks 2,3
   Assignment 2  Week 5,6
   Assignment 3  Week 7,8
   Assignment 4  Week 10,11
   Assignment 5  Week 12,13

Weighting of assessments
   Mid-term examination  10  %
   Final-term examination  60  %
   Assignments  10  %
   Meetings (oral)  20  %
   Total  100  %

Attendance is expected at all class meetings. Make-up exams will not be given except under extreme circumstances. Students are responsible for every homework assignment. Students are encouraged to form study groups for homework's and test preparation. Late homework's are not accepted.

6- List of references
   6.1- Course notes
       - Notes by the lecturers of the course.

6.2- Essential books (text books)
   1) Course Notes Badr-Eldin Atef Mosa, "Airport Planning and Design", Zagazig University
   2) Course Notes "Airport Planning and Design", Cairo University.
4) "Road Engineering for Development", Richard Robinson and Bent Thagesen.

6.3- Recommended books
- N.A.

6.4- Periodicals, Web sites, ... etc
2) Transportation Research Board TRB website.

7- Facilities required for teaching and learning
- Laptop, data show, and display screen.

Course coordinator: Assoc. Prof. Dr. Ahmed Mohamady Abd-Allah
Head of Department: Assoc. Prof. Dr. Ashraf Abou-Rayyan
Date: / / 2009