Course Specifications

Programme(s) on which the course is given: civil Engineering
Major or Minor element of programmes: Major
Department offering the programme: civil Engineering department
Department offering the course: civil Engineering department
Academic year / Level: third
Date of specification approval: 12/2007

A- Basic Information

Title: Soil Mechanics (1)  Code: C302
Credit Hours:
Lecture: 2
Tutorial: 2
Practicals: 2
Total: 4

B- Professional Information

1 – Overall Aims of Course
By the end of the course, the student should be familiar with:
   a- Introducing the civil engineering student to principles of geotechnical engineering
   b- Analyze and evaluate some types of geotechnical problems.

2 – Intended Learning Outcomes of Course (ILOs)
   a- Knowledge and Understanding:
   By the end of the course, the student should be familiar with:
       a1 - Define physical and engineering properties of soil and their related experiments. (a-1)
       a2 - Define soil classification systems (a-1)
       a3 - Define soil compaction principles and methods (a-1)
       a4 - Define soil permeability principles and seepage flow nets. (a-1)
       a5 - Define total and effective stress principle. (a-1)
       a6 - Define vertical stress distribution in soil. (a-1)

   b- Intellectual Skills
       b1 - Compare between different properties of soil, select appropriate experiment and analyze their results. (b-7)
       b2 - Classify the soil according to its properties with respect to some classification systems. (b-2)
       b3 - Analyze compaction curves and characterize appropriate compaction method. (b-2)
       b4 - Differentiate between appropriate permeability tests and analyze seepage flow nets. (b-7)
       b5 - Evaluate and analyses the distribution of stresses in soil under different types of vertical loads.
C - Professional and Practical Skills
  c1 - Characterize and evaluate the physical and engineering properties of soil.
  c2 - Classify the soil with respect to unified and Egyptian code classification systems.
  c3 - Characterize appropriate compaction method and evaluate compaction by lab. And field testing.
  c4 - Evaluate the seepage flow under different structures using flow nets.
  c5 - Evaluate the vertical stress increment in soil due to different applied loads which is necessary for settlement calculation.

d- General and Transferable Skills
  d1 - Characterize, analyze and solve some geotechnical engineering problems using software programs.
  d2 - Characterize, analyze and solve some geotechnical engineering problems using spread sheet applications.

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>1- Introduction to geotechnical engineering</td>
<td>2</td>
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<tr>
<td>2- Physical and Engineering properties of soil</td>
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<td>3- M.I.T. and unified soil classification systems</td>
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<td>4- Soil compaction</td>
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<tr>
<td>5- Soil permeability</td>
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<tr>
<td>6- Flow net and seepage flow</td>
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<tr>
<td>7- Total and effective stress principle</td>
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<td>8- Vertical stress distribution in soil</td>
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<td>6</td>
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4- Teaching and Learning Methods
  4.1- Lectures
  4.2- Work class

5- Student Assessment Methods
  5.1 Semester Work: to assess a1 to a6 & b1 to b5 & c1 to c5 & d1 to d2
  5.2 Written exams: to assess a1 to a6 & b1 to b5 & c1 to c5

Assessment Schedule
  Assessment 1 Semester Work                  Week 4 to 12
  Assessment 2 Final exam                     Week 14
Weighting of Assessments

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<th>Assessment</th>
<th>Weight</th>
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<td>Class exam</td>
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<td>Mid-Term Examination</td>
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<td>Final-term Examination</td>
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<td>Oral Examination</td>
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<td>Practical Examination</td>
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<td>Semester Work</td>
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<td>Other types of assessment</td>
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Any formative only assessments

6- List of References

6.1- Course book:

6.2- Required books (Text books)
   N.A

6.3- Recommended books,
   N.A.

6.4- Periodicals, web sites, etc.
   N.A.

7- Facilities Required for Teaching and Learning
   a) Computers
   b) Lectures halls
   c) Experimental facilities

Course Coordinator: Dr. Khaled Khater / Dr. Walid Hammad

Head of Department: Prof. Dr. Ayman Shahin

Date: / 12 / 2007