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 offering the course: Engineering Mathematic and Physic
Academic year / Level: first year
Date of specification approval: 12/2007

A- Basic Information

Title: Engineering Mathematics 2(a) Code: MTH101
Credit Hours: Lecture: 2
Tutorial: Practicals: 2 Total: 4

B- Professional Information

1 – Overall Aims of Course
By the end of the course, the student should me familiar with:
   a) Study the partial differentiation and its applications
   b) Study the multiple integrals and applications
   c) Study the line integrals and its applications
   d) Study the surface integrals and its applications
   e) Study infinite series and its applications

2 – Intended Learning Outcomes of Course (ILOs)
   a- Knowledge and Understanding:
   By the end of the course, the student should me familiar with:
      a1 - Define the first partial derivatives and higher order derivatives for a function of more than one independent variables.
      a2 - Define the green theorem and how to use.
   b- Intellectual Skills
      b1 - Get the derivatives for the implicit and composite function.
      b2 - Test the function for maximum, minimum and saddle points
      b3 - Obtain the double and triple integrals in any coordinates.
      B4 - Selecting the suitable method for the solution of problem.
      B5 - Test any infinite series for convergent, divergent, conditional and absolute convergent.
      b6 - Compute the interval of convergent for power series or functional series
   c- Professional and Practical Skills
      c1 - Find the normal to the surface.
      c2 - Obtain the area of a region in XY- plane and the volume of a region in a space.
Quality Assurance and Accreditation Project (QAAP) Course Specifications: Engineering Mathematics2(a)

University: Fayoum. Faculty: Engineering. Department: Civil Engineering.

C3 - Compute surface area of a solid in a space using surface integrals and know the green theorem and how to use.
C4 - Compute surface area of a solid in a space using surface integrals

d - General and Transferable Skills
d1 - Collect the material course from internet
d2 - Discuss with the instructor and also in a team

3- Contents

<table>
<thead>
<tr>
<th>Topic</th>
<th>No. of hours</th>
<th>Lecture</th>
<th>Practical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limits for function of two variables, continuity.</td>
<td>8</td>
<td>4</td>
<td>4</td>
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<tr>
<td>Partial derivatives</td>
<td>8</td>
<td>4</td>
<td>4</td>
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<tr>
<td>Directional derivative, the gradient, the divergence and the curl.</td>
<td>8</td>
<td>4</td>
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<tr>
<td>Extermum for function of two variable, conditional exerma.</td>
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<tr>
<td>Double integrals.</td>
<td>8</td>
<td>4</td>
<td>4</td>
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<tr>
<td>Line integral in plane.</td>
<td>8</td>
<td>4</td>
<td>4</td>
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</tbody>
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4– Teaching and Learning Methods

4.1-Lecture
4.2-activity in the class

5- Student Assessment Methods

5.1 Activity in the class: to assess (a1, a2, b1 to b6 c1 to c4 and d1, d2).
5.2 Written exams: to assess (a1, a2, b1 to b6 and c1 to c4).

Assessment Schedule

Assessment activity in the class Week 4 and 11.
Assessment 3Final exam Week 14.

Weighting of Assessments

<table>
<thead>
<tr>
<th>Assessment Activity</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class exam</td>
<td>% 0</td>
</tr>
<tr>
<td>Mid-Term Examination</td>
<td>% 0</td>
</tr>
<tr>
<td>Final-term Examination</td>
<td>% 70</td>
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<tr>
<td>Oral Examination</td>
<td>% 0</td>
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<tr>
<td>Practical Examination</td>
<td>% 0</td>
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<tr>
<td>Semester Work</td>
<td>% 30</td>
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<tr>
<td>Other types of assessment</td>
<td>% 0</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

Any formative only assessments

6- List of References

6.1- Course book:
N.A.

6.2- Written Lecture Notes.
Quality Assurance and Accreditation Project (QAAP)  
Course Specifications: Engineering Mathematics 2(a)

University: Fayoum.  Faculty: Engineering.  Department: Civil Engineering.


2- M.E. Sayed-Ahamed, Advanced Mathematics, Egypt. 2005

6-3- Recommended books,
N.A.
6.4-Periodicals, web sites, etc.
N.A.

7- Facilities Required for Teaching and Learning
a) Blackboard

Course Coordinator: Prof. Dr. Mohamed Eissa Sayed-Ahmed

Head of Department: Prof. Dr. Magdy T. Hanna

Date: / 12/2007