EASTERN ARIZONA COLLEGE

Calculus II
Course Design
2015-2016

Course Information
Division Mathematics
Course Number MAT 230 (SUN# MAT 2230)
Title Calculus II
Credits 4
Developed by Pedro Dabalsa
Lecture/Lab Ratio 3 Lecture/2 Lab
Transfer Status

<table>
<thead>
<tr>
<th>ASU</th>
<th>NAU</th>
<th>UA</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAT 271, Mathematics (MA) Note: Will fulfill MAT 266 requirement for Engineering Majors.</td>
<td>MAT 137</td>
<td>MATH 129</td>
</tr>
</tbody>
</table>

Activity Course No
CIP Code 27.0101
Assessment Mode Pre/Post Test (14 Questions/100 Points)
Semester Taught Fall and Spring
GE Category Mathematics
Separate Lab No
Awareness Course No
Intensive Writing Course No

Prerequisites
MAT 220 with a grade of "C" or higher

Educational Value
Students majoring in Mathematics, Physics, Chemistry, and Engineering.

Description
Continuation of MAT 220. Transcendental functions, techniques of integration, indeterminate forms, improper integrals, numerical methods, infinite series, conics, and polar coordinates.

Supplies
Scientific calculator; TI-83 or TI-84 recommended
Competencies and Performance Standards

1. Define the basic transcendental functions.
   Learning objectives
   What you will learn as you master the competency:
   a. Write out the definitions of the fundamental transcendental functions.

   Performance Standards
   Competence will be demonstrated:
   o on assigned activities
   o on written exams
   o on a two hour cumulative exam
   Criteria - Performance will be satisfactory when:
   o you can write out the definitions of the fundamental transcendental functions

2. Apply the natural log function to problems in growth and decay.
   Learning objectives
   What you will learn as you master the competency:
   a. Solve nontrivial problems in Mathematics, Science, and Engineering using the fundamental transcendental functions.

   Performance Standards
   Competence will be demonstrated:
   o on assigned activities
   o on written exams
   o on a two hour cumulative exam
   Criteria - Performance will be satisfactory when:
   o you can correctly solve problems of exponential growth and decay

3. Apply the basic techniques for the evaluation of nontrivial integrals.
   Learning objectives
   What you will learn as you master the competency:
   a. Evaluate proper nontrivial definite and indefinite integrals.

   Performance Standards
   Competence will be demonstrated:
   o on assigned activities
   o on written exams
   o on a two hour cumulative exam
   Criteria - Performance will be satisfactory when:
   o you can successfully evaluate selected types of nontrivial integral

4. Apply the basic and some advanced techniques for evaluating indeterminate forms and improper integrals.
   Learning objectives
   What you will learn as you master the competency:
   a. Use L'Hospital's rule and the variations thereupon to evaluate indeterminate forms.
Performance Standards

Competence will be demonstrated:
- on assigned activities
- on written exams
- on a two hour cumulative exam

Criteria - Performance will be satisfactory when:
- you can evaluate indeterminate forms and selected types of improper integral

5. Apply the basic numerical techniques of the integral calculus.

Learning objectives

What you will learn as you master the competency:

a. Use basic numerical techniques to evaluate integrals that can not be evaluated in closed form.

Performance Standards

Competence will be demonstrated:
- on assigned activities
- on written exams
- on a two hour cumulative exam

Criteria - Performance will be satisfactory when:
- you can evaluate selected types of integral numerically

Types of Instruction

Classroom presentation

Grading Information

Grading Rationale

Each instructor has the flexibility to develop evaluative procedures within the following parameters.

1. Written Exams must represent at least 60% of the final course grade.
2. Final Exam must represent at least 20% of the final course grade.
3. The Post Test is to be embedded in the final exam and must represent at least 10% of the final course grade.
4. Other Activities may represent at most 20% of the final course grade.

Grading Scale

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90% - 100%</td>
</tr>
<tr>
<td>B</td>
<td>80% - 89%</td>
</tr>
<tr>
<td>C</td>
<td>70% - 79%</td>
</tr>
<tr>
<td>D</td>
<td>60% - 69%</td>
</tr>
<tr>
<td>F</td>
<td>Below 60%</td>
</tr>
</tbody>
</table>