MATH 372: Quantitative Methods for Actuaries

Term 191  Clsroom 59-1017; 10-11am UT  Lab 5-101; 10-11am R  Office Hour 11am-12:30pm U

Instructor: Suliman Alhomidan
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Course Descriptions:

Credit: (3 – 0 – 3).

Note: Not to be taken for credit with Math 321 or CISE 301.

Prerequisite: MATH201 and either ICS 102 or ICS 103.


Grading Policy:
Assessment for this course is based on class activities (attendance, homework and quizzes), project, two major (written) exams and a comprehensive final (written) exam, as described in the following table:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Class Activities</td>
<td>5% (20 points)</td>
</tr>
<tr>
<td>Project</td>
<td>10% (40 points)</td>
</tr>
<tr>
<td>Lab</td>
<td>15% (60 points)</td>
</tr>
<tr>
<td>Major Exam I (Materials of Week 1 through Week 5) Date: Sunday, October 6, 2019 Time: TBA Location: TBA</td>
<td>20% (80 points)</td>
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<tr>
<td>Major Exam II (Materials of Week 6 through Week 10) Date: Tuesday, November 12, 2019 Time: TBA Location: TBA</td>
<td>20% (80 points)</td>
</tr>
<tr>
<td>Final Exam (Comprehensive) Date: December 1555, 2019 Time: 8:00—11:00 AM. Location: TBA.</td>
<td>30% (120 points)</td>
</tr>
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</table>
Exam Questions:

- The questions of the common exams are based on the examples and the exercises of the textbook.

Attendance:

- Attendance on time is very important. Mostly, attendance will be checked within the first five minutes of the class. Entering the class after that, is considered as one late, and every two times late equals to one absence. In accordance with the University rules, “a grade of DN in a course is given if the student's unexcused absences are more than 20% of the lecture and laboratories sessions scheduled for the course”. Therefore, students who accumulate 9, or more, unexcused absences will receive the DN grade.

**Academic Integrity:** All KFUPM policies regarding ethics and academic honesty apply to this course.

### Weekly Coverage of Course Material

<table>
<thead>
<tr>
<th>Week</th>
<th>Section</th>
<th>Topic</th>
</tr>
</thead>
</table>
| 1 Sep 1 – 5 | 1.2 | Round-off Errors  
Computer Arithmetic |
| 2 Sep 8 - 12 | 2.1  
2.2 | The Bisection Method  
Fixed- Point Iteration |
| 3 Sep 15 - 19 | 2.3  
3.1 | Newton's and Secant Methods  
Interpolation and the Lagrange Polynomial |
| 4 Sep 22 - 26 | 3.1 | Interpolation and the Lagrange Polynomial |
| 5 Sep 29 - Oct 3 | 3.3 | Divided Differences |
| 6 Oct 6 – 10 | 3.5 | Cubic Spline Interpolation |
| 7 Oct 13 – 17 | 4.1 | Numerical Differentiation |
| 8 Oct 20 – 24 | 4.3  
4.4 | Element of Numerical Integration  
Composite Numerical Integration |
| 9 Oct 27 – 31 | 5.1  
5.2 | The Elementary Theory of I.V.P.  
Euler' Methods |
| 10 Nov 3 – 7 | 5.2  
5.3 | Euler' Methods  
Runge-Kutta Methods |
| 11 Nov 10 – 14 | 6.1  
6.2 | Linear systems of Equation  
Pivoting Strategies |
| 12 Nov 17 – 21 | 8.1 | Discrete Least Squares Approximation |
| 13 Nov 24 – 28 | 11.3 | Finite-Difference Methods for Linear Problems |
| 14 Dec 1 – 5 | ** | Linear Programming  
Simlex Method |
| 15 Dec 8 – 12 | ** | Duality  
Quadratic Programming |

Thursday class will be in Lab Building 5- Room 101