Course number, title and credits; total time allocation

Course Letter/Number  MAT 133  Credits  4  Title

Introduction to Probability and Statistics

Lecture/Discussion  4  hrs/semester  Lab

Catalog Description and Pre- and Co-requisites (Same as taxonomy and catalog)

Introduction to experimental design, data representation, basic descriptive statistics, probability theorems, frequency distributions and functions, binomial and normal probability distributions and functions, probability density functions, hypothesis testing, statistical inference, Chi-square analysis, linear regression, correlation, and application of the above in making informed, data-driven decisions in real-world contexts. Both graphing calculators and computer-based statistical software (MS Excel) will be used. If the prerequisite is more than two years old, then the mathematics department recommends that the course placement exam be taken or the prerequisite be retaken to ensure the success of the student. **Prerequisite:** MAT 033 or MAT 131 or higher, with 2.0 minimum, within 2 years.

Knowledge, Skills and Abilities Students Acquire from this Course (Educational Objectives)

1. Perform a hypothesis test involving means and proportions.
2. Create, interpret, and apply graphical displays of data (histograms, bar charts, circle graphs, dot plots, and stem and leaf displays)
3. Compute, interpret, and apply descriptive numerical measures (mean, mode, median, range, variance, and standard deviation)
4. Compute and apply a linear regression line and Pearson product moment correlation coefficient and rank correlation coefficient.
5. Compute, interpret, and apply probabilities involving discrete, binomial, normal, and t-distributions.
6. Compute and apply confidence intervals for means and proportions.
7. Use appropriate technology (such as a graphing calculator) to enhance the understanding of previous objectives.
8. Knowledge and awareness of statistics in scientific issues and current events
9. Use MS Excel or other Statistical Software to support mathematical reasoning and problem solving.

Associate Degree Outcomes Addressed in this Course  (These must appear in course syllabus.)

- **ADO 3:** Demonstrate computational skills and mathematical reasoning
- **ADO 7:** Critical Thinking and Problem Solving

Units/topics of Instruction

See course description and educational objectives.

Instructional Techniques and Procedures

Although techniques vary from instructor to instructor, this course usually consists of mostly lecture and group work. There may also be some large group projects and classroom experiments to illustrate concepts.
**Instructional Use of Computer or Other Technology**

A graphing calculator is used extensively in this course. Also, the instructor may choose to incorporate the use of MS Excel or other statistical software packages in solving various application problems and projects. The instructor may choose to incorporate the use of MyMathLab in homework, quiz and test assignments.

**Instructional Materials and Costs to Students**

The instructional material for this course consists of the textbook and a graphing calculator. Due to the nature of the course, manipulatives will also be occasionally needed.

**Skills and abilities students should bring to the course**

<table>
<thead>
<tr>
<th>a limited amount of material</th>
<th>basic, pre-algebraic problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Able to read</td>
<td>✗ an average amount of material</td>
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<tr>
<td></td>
<td>✗ an above average amount of material</td>
</tr>
<tr>
<td>Able to compute</td>
<td>✗ simple algebraic problems</td>
</tr>
<tr>
<td></td>
<td>✗ higher order mathematical problems</td>
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<tr>
<td>relatively easy material</td>
<td>✗ short compositions</td>
</tr>
<tr>
<td>Able to read</td>
<td>✗ moderately difficult material</td>
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<td></td>
<td>✗ technical or sophisticated material</td>
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<tr>
<td>Able to write</td>
<td>✗ medium length compositions</td>
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<tr>
<td></td>
<td>✗ lengthy compositions</td>
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<tr>
<td>x keyboard skills/familiar with computer</td>
<td></td>
</tr>
<tr>
<td>Able to use technology</td>
<td>x computer application</td>
</tr>
<tr>
<td>x web navigation</td>
<td>Other necessary abilities</td>
</tr>
</tbody>
</table>

**The course is usually scheduled**

Day:  
- ✗ Fall  
- ✗ Winter  
- ✗ Spring

Evening:  
- ✗ Fall  
- ✗ Winter  
- No Spring

Prepared by ___________________________  Date ___________________________

Approved by Dept. ___________________________  Date ___________________________

Approved by Dean ___________________________  Date ___________________________

Approved by Curr. Comm. ___________________________  Date ___________________________

(Last names, please)  Form Revised 12/4/00