# MAT 105 Syllabus

**Semester:** Spring 2016
**Course title:** Introductory Probability and Statistics
**Course Web Page:** Moodle page for MAT 105
**Time/Place:** TTh 1:30-2:50PM in Van Gogh

**Instructor Contact:**
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Office: MW 10:30AM -11:30AM, TTh 12:00-1:00PM, and by appointment

**Course Description:**
This course presents fundamentals of probability and statistics without calculus. Topics include: data representation, population mean, variance, and standard deviation, finite probabilities, events, conditional and marginal probability, discrete random variables, binomial distribution, normal distribution, sampling distributions for mean and variance, estimation of means, confidence intervals, hypothesis testing, inference, and chi-square tests.

**Course Objectives and Learning Outcomes:**
By the end of the semester, students will be able to use basic probability to predict the likelihood of concrete events by modeling real world problems with discrete or continuous random variables; gain basic skills in computing probabilities while working with basic discrete and continuous distributions, such as the binomial, multinomial, Poisson and normal distributions; learn various methods to represent data, and describe data using quantities such as mean, variance and standard deviation; be able to use sampling theory to estimate statistical parameters and to test hypothesis, as well as to make valid statistical inferences.

Students will demonstrate their understanding of the material by completing weekly homework sets and quizzes, as well as participating in class discussion and group work.

**Textbooks:**
No textbook required. The course is based on lecture notes.

**Grading:**

| | |
|---|---|
| Midterm Exam | 20% |
| Final Exam | 30% |
| Homework | 20% |
| Quiz | 20% |
| In-class work | 10% |

Grades will be determined based on total course percentage. Percentage scores will determine letter grades according to the scale: (in the worst case)

A 93 − 100
A- 90 − 92.9
B+ 87 − 89.9
B 83 − 86.9
B- 80 − 82.9
C+ 77 − 79.9
C 73 − 76.9
C- 70 − 72.9
D 60 − 69.9
F < 60

**Exams:**
There will be a midterm exam given during regular class hours, tentatively scheduled for **February 16, 2016,** and a *comprehensive* final exam. There are NO make up exams unless you have a *compelling and well documented reason* for missing a test.

**Quizzes:**
Quizzes will be given periodically to test comprehension of lecture material. There are no make up quizzes, but I will drop your lowest quiz score.

**Homework assignments**:
Homework will be assigned and posted on the web page and collected weekly. You are responsible for checking the web page and noting the assignments and the due date. You may work on homework together, as well as consult the tutors and the instructor. However, the final work that you turn in must be your own work.

**In-class work:** Periodically, you will be asked to work in groups during class time. You will hand in your collective work at the end of class or, on occasion, at the beginning of next lecture. This work will be graded.

**Technology in the Classroom:**
The use of laptops, cell phones, smart phones, or other mobile communication devices is disruptive, and is therefore prohibited during class. There are exceptions for students with specific note-taking needs, who must notify the instructor at the beginning of the semester if they will use such devices.

**Last Day to Withdraw:**
In order to withdraw from a course it is not sufficient simply to stop attending class or to inform the instructor. In accordance with the policy, contact your advisor or the Registrar to begin the withdrawal process. The last day for withdrawal from this course is cited in the official catalog.

**Attendance Policy:**
In addition to the above grading policies, and the inherent consequences to the student's grade, which would result from missed classes, students will be penalized for unexcused absences in the following way. Missing 10% of the classes unexcused will result in a 10% reduction in course percentage grade. Missing more than 10% of the classes unexcused will accordingly result in a higher grading penalty.

**Academic Integrity Policy:**
Academic dishonesty in any form will not be tolerated in this course. Cheating, copying, plagiarizing, or any other form of academic dishonesty (including doing someone else's individual assignments) will result in, at the extreme minimum, a zero on the assignment in question, and could result in a failing grade in the course or even expulsion from DigiPen.

**Disabled Student Services:**
Students with physical, psychological or learning disabilities that affect their ability to perform major life activities associated with this class may be eligible for reasonable accommodations under the Americans with Disabilities Act. If you have a documented disability please contact the Disability Support Services office to arrange for accommodations for this class.

**Tentative Weekly Topics:**

| Week | Dates | Topics |
|---|---|---|
| 1 | Jan 4-8 | Course overview, introduction to probability |
| 2 | Jan 11-15 | Data representation, charts, diagrams |
| 3 | Jan 17-21 | Counting |
| 4 | Jan 25-29 | Sample space, events, axioms of probability |
| 5 | Feb 1-5 | Conditional probability, independence |
| 6 | Feb 8-12 | Random variables, Expectation, variance, standard deviation |
| 7 | Feb 16-19 | **Midterm exam on 2/16/16** |
| 8 | Feb 22-26 | Discrete random variables: binomial, geometric, Poisson |
| 9 | Feb 29 – Mar 4 | Normal distribution, binomial approx., Central Limit Theorem |
| 10 | Mar 7-11 | Law of large numbers, sampling theory |
| 11 | Mar 21-25 | Estimation, confidence intervals |
| 12 | Mar 28 - Apr 1 | Hypothesis testing |
| 13 | Apr 4-8 | Inference and chi-square tests |
| 14 | Apr 11-15 | Applications and review |
| 15 | Apr 18-22 | **Final exams** |

This schedule is subject to change. Please check the class web page for up to date information.