Math 101 Syllabus
Introduction to Contemporary Mathematics
Spring 2016

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Office Hours: Wed 12-2, Fri 11-1 – Neckers 469
           Mon 1-2, Thu 11-12 – Lib. 6th floor common area
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Open Computer Lab and Tutoring Hours:
   • Morris Library Tutoring
     Monday – Thursday 5-8 p.m.
   • COS Study Area Tutoring (no computers)
     Monday -Thursday 4-9 p.m.

Important Dates:

Last day to drop a full semester length course to be eligible
for a credit/refund: Jan. 31st

Last day for students to drop a course online using
SalukiNet (no refund): April 3rd

Final Exam: 5-7pm

COURSE NAME: Introduction to Contemporary Mathematics

CATALOG DESCRIPTION: Elementary mathematical principles as they relate to a variety of applications in
contemporary society. Exponential growth, probability, geometrical ideas and other concepts. This course does not
count towards the major in mathematics. Prerequisite: Mathematics 107 or 3 years of college preparatory high
school mathematics including geometry and Algebra II. Students must present satisfactory placement scores or
obtain the permission of the Department.

PREREQUISITES: 3 years of high school preparatory mathematics including geometry and Algebra II, AND
satisfactory placement score or permission of the Department.

REQUIRED COURSE MATERIALS:

Math 101 Course Notes: These are available only at local bookstores -the University Bookstore (in the Student
Center) or 710 for around $20. **All students must purchase these (no exceptions).**

Text: The course fee for this class was to provide you with access to My Labs Plus. All homework and quizzes
will be done in My Labs Plus. The e-book is also available in My Labs Plus (and can be printed). If you
prefer to have a physical textbook, you can order the Contemporary Mathematics Custom Edition for SIUC
at bookstores and may be able to find some online.

TECHNOLOGY:

Scientific Calculator ONLY:
I would highly recommend getting the **TI-30XIIS** (this calculator is under $15 and allows you to see what you are
typing on the screen). You CANNOT use a cell phone or a programmable (graphing) calculator. Calculators at
the exams will be monitored. You will be glad you purchased the TI-30XIIS!!
GRADING: There will be four tests, weekly quizzes, homework, and a comprehensive final. **There are no make-up tests,** though one test grade is dropped. The weights on the grades are as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tests</td>
<td>40%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>16%</td>
</tr>
<tr>
<td>Homework</td>
<td>15%</td>
</tr>
<tr>
<td>Cumulative HW</td>
<td>4%</td>
</tr>
<tr>
<td>Final</td>
<td>25%</td>
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**Tests:**
There will be 4 hourly exams. See the schedule under Course Home in My Labs Plus. The exams will be done in Lab. Only IP addresses on lab computers are allowed when taking quizzes and exams. See the sample questions at the back of the lecture note packet. There will be no make-up tests. However, your lowest test will be dropped.

**Online Homework Assignments:** The homework will be submitted online, into My Labs Plus. You will see the due date schedule under Course Home. You should be able to earn close to 100% on this homework. If you miss a question, you can create a new question to replace it by clicking “similar exercise” up to 3 times. You can submit homework assignments late up until the day of the exam which covers the homework. However a 20% late penalty will be applied. After the exam, a grade of “0” will be assigned.

**Quizzes:** Quizzes will be taken in recitation (your “lab” day). No notes or other materials can be used. Most quizzes will be submitted into My Labs Plus. There will be **no make up quizzes,** but I will drop your lowest quiz score. Quizzes must be done on lab computers (set up with specific IP address range). You will be allowed only a scientific calculator (no cell phones or graphing/programmable calculators).

**QUizzes CANNOT BE MADE UP. You must attend lab in order to take the quiz unless you have prearranged a time with your teaching assistant.**

**GOALS & OBJECTIVES:**

**Primary Goal:** Students will develop their analytic and critical thinking skills by learning how to apply elementary mathematics to the solution of practical problems arising from a great variety of phenomena in science and society.

**Secondary Goals:** Students will develop their communication skills by learning to correctly interpret the vast quantities of information that are typically expressed mathematically in today's society (for example, information that is expressed by tables, bar graphs or in the language of statistics and probability) and by learning to express information appropriately through tables, charts, bar graphs, etc. Students will develop an appreciation of how mathematics infuses virtually every area of everyday life from banking to barcodes to preserving natural resources to presidential elections to scheduling to quality control, etc.

**Objectives:**
By the end of the course, students should be able to:
- model various real-life problems in terms of elementary graph theory (e.g. as Euler circuit, traveling salesman, spanning tree, machine scheduling problems, etc.)
- apply various heuristic methods to solve these graph theoretic models;
- select a simple random sample without bias and recognize possible sources of bias in a sample;
- compute elementary probabilities;
- represent statistical information numerically and graphically using appropriate measures of center and spread;
- compute and interpret information based on a normal probability distribution;
- compute and interpret confidence intervals based on a normal probability distribution;
- understand how different voting systems work and how they can be influenced by insincere voting;
- encode and decode identification numbers such as ISBN numbers and bar codes.
Graph Models and Applications
ITCM Ch. 1 (Sections 1-5, 7) – Graph models, Euler circuits, Euler’s Theorem, Eulerizations

ITCM Ch. 2 (Sections 1-5, 8) – Hamiltonian circuits, traveling salesman problems and strategies for solutions. Counting Hamiltonian circuits in complete graphs. Brute-force, Nearest neighbor, and Cheapest-link Algorithms.

ITCM Ch. 3 (Sections 1-3) Minimum-Cost Spanning Trees and Kruskal’s algorithm.

Probability and Statistics
ITCM Ch. 4, (Sections 1-3, 5) Introduction to Probability: properties of probability, equally likely outcomes, mutually exclusive events, expected value.

ITCM Ch. 5 (Sections A-C) – Introduction to Statistics: Sampling methods, simple random samples, observational studies and experiments, statistical tables and graphs.

ITCM Ch. 6 (Sections A-D) – Characterizing data: Mean, median, mode, Symmetry and skewness of distributions, Quartiles and the 5-number summary, Standard deviation, Normal distributions, and z-scores. Statistical inference.

Transmitting Digital Data and Voting
ITCM Ch. 7 (Section 1-4) – Congruence and modular arithmetic, error-detecting and correcting codes, matrix codes, matrix codes that correct all single digit errors.

ITCM Ch. 8 (Sections 1-2) – Social choice: elections with 2 alternatives, elections with more than two alternatives, paradoxes, approval voting.

Consumer Mathematics
ITCM Ch. 9 (Section 1-5) – Percents, simple interest, compound interest models, effective annual yield, investment models, loans and amortization.

Emergency Procedures, Southern Illinois University Carbondale is committed to providing a safe and healthy environment for study and work. Because some health and safety circumstances are beyond our control, we ask that you become familiar with the SIUC Emergency Response Plan and Building Emergency Response Team (BERT) program. Emergency response information is available on posters in buildings on campus, available on BERT’s website at www.bert.siu.edu, Department of Safety’s website www.dps.siu.edu (disaster drop down) and in Emergency Response Guideline pamphlet. Know how to respond to each type of emergency.

Instructors will provide guidance and direction to students in the classroom in the event of an emergency affecting your location. It is important that you follow these instructions and stay with your instructor during an evacuation or sheltering emergency. The Building Emergency Response Team will provide assistance to your instructor in evacuating the building or sheltering within the facility.