MATH-M118 Syllabus

Course Information

Course Title: Finite Mathematics
Course Number: MATH-M118  Credit Hours: 3.0
IUK Section Number: #29275  Room: KO-072
Days and Time: TR 05:30 PM-06:45 PM  Semester: Fall 2018
Prerequisites: Placement recommendation based on ALEKS test score OR a grade of C – or better in MATH-M105 OR equivalent.
Course Description: Selected topics including: set theory, linear systems, matrices, probability, and linear programming, applications to problems from business and the social sciences.

Instructor Information

Contact: Dr. Chris Caruvana  chcaru@iu.edu  765-455-9338
Office Hours: MW 02:30PM-03:30PM  TR 04:00PM-05:00PM  Office: KO-081 D
Appointments: Please send a Canvas message to schedule an appointment.

Course Materials

1. Textbook available on Canvas (IU eText Initiative)
2. TI-83 or TI-84 graphing calculator. See calculator policy for details.
3. 3-ring binder (or similar) to organize homework, assignments, quizzes, tests, and notes for this course. Bring your binder to every class meeting.

Learning Outcomes

In this course:
This course fulfills the Quantitative Math Skills goal and its components, for degrees in the Arts and Sciences.
   • Translate a problem from words into mathematical symbols
   • Solve the problem
   • Draw valid conclusions from the result

This course fulfills Outcomes 1, 2, and 3 of the Campus General Education Quantitative Literacy requirement.
   • Outcome 1: Students will translate a verbal problem into mathematical symbols
     o Component 1: Students will represent mathematical information symbolically
     o Component 2: Students will represent mathematical information graphically
   • Outcome 2: Students will solve the mathematical problem that models the verbal problem
     o Component 1: Students will use algebraic methods to solve problems, using technology when appropriate
     o Component 2: Students will use graphically methods to solve problems, using technology when appropriate
   • Outcome 3: Students will use the solution of the mathematical problem to draw valid conclusions about the verbal problem
     o Component 1: Students will draw inferences from mathematical models
     o Component 2: Students will interpret empirical results

Grading

Graded Course Components

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage of Final Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation</td>
<td>2%</td>
</tr>
<tr>
<td>Canvas Quizzes</td>
<td>3%</td>
</tr>
<tr>
<td>In-Class Quizzes</td>
<td>5%</td>
</tr>
<tr>
<td>Assignments &amp; Projects</td>
<td>25%</td>
</tr>
<tr>
<td>In-Class Tests (3)</td>
<td>45%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>20%</td>
</tr>
</tbody>
</table>

Weighted Average  Letter Grade
90%-100% A (A+ if over 98.4%; A- if below 91.5%)
80%-89% B (B+ if over 88.4%; B- if below 81.5%)
70%-79% C (C+ if over 78.4%; C- if below 71.5%)
60%-69% D (D+ if over 68.4%; D- if below 61.5%)
below 60% F Nonattendance indicators: FN/FNN
Important Dates

Tests and Final Exam
In-class tests and the final will be in pencil and paper format. The final exam is comprehensive. Dates are subject to change with two weeks’ notice. Textbooks, notes, cell phones, and other electronics are prohibited during tests.

Test #1: Thursday, September 13
Test #2: Tuesday, October 23
Test #3: Tuesday, November 20
Final: Thursday, December 13 @ 05:30 PM – 07:30 PM

Holidays – No Class
9/3 Labor Day
10/15 – 10/16 Fall Break
11/21 – 11/25 Thanksgiving

Withdrawal Deadlines
October 23 for Purdue Technology students
November 25 for Indiana University students
Withdrawal forms will not be approved after the deadline above. It is the responsibility of the student to complete the withdrawal process by the deadline. Contact academic advising and financial aid for details.

To Succeed in this Course
You should expect to spend 6 hours/week outside of class for:
• studying the textbook examples and preparing for quizzes or tests
• completing homework and assignments

On-Campus Tutoring Resources
• Free Tutoring at the Math Commons: http://www.iuk.edu/sciences/math-commons/index.php
  9:00 AM – 8:00 PM on Monday – Thursday  9:00 AM – 2:00 PM on Friday
• Location: Math Lab (KO-054) and Math Commons (KO-050)
• Please remember to sign in. The Commons and Lab are open when classes are in session.
• One-on-one and online tutoring appointments are available. Visit the Commons to make an appointment.

Policies
Test Make-Up Policy for Mathematics Courses
• If you know that you cannot attend class when a test is scheduled, you should contact your instructor in writing (by email) at least two weeks in advance to make alternative arrangements for taking the test.
• If you miss a test with no advance notice for a valid reason (e.g. due to illness), you must contact your instructor within 24 hours of the test. At the instructor’s discretion, a make-up test may be offered. All make-up tests must be completed before the graded tests are returned to the rest of the class.
• If you miss a second test, you will be required to provide a documented reason for your absence in order to make-up the missed test. Without such documentation, your score for the missed test will be 0.
• If it is not possible to schedule a make-up test and you provide documentation, your grade for one missed test will be determined by your final exam grade.

Calculator Policy
• The TI-83 or TI-84 calculator will be used in this course.
• Please note that you will not be permitted to use the TI-89, TI-Nspire, or any CAS calculator.

Late Work Policy
• Late work is not accepted. See Low Scores Policy. If there is an extenuating circumstance with documentation (jury duty, surgery, hospitalization, etc.), that may be taken into consideration.
• If you know in advance that you will miss class due to a valid reason such as an IUK athletic event, KEY fieldtrip, or religious observance, all makeup work should be completed prior to the missed class date. It is the student’s responsibility to make arrangements well in advance to complete the work early.
Low Scores Policy
- To accommodate for situations preventing attendance, the lowest two quiz scores will be dropped.
- Your final exam grade may replace one test grade. This replacement will only occur if your final exam score is higher than your lowest test score.

Academic and Personal Conduct Policy
- Kindly refrain from using smartphones, laptops, and tablets during class. If you depend on technology for note-taking, please discuss that need with me.
- Please step into the hallway to take an urgent call or text message. If you anticipate this could occur, please sit near a door to minimize classroom disruption. Disruptive classroom behavior is not permitted.
- All quizzes, graded assignments, and in-class tests are to be your work alone.
- Use of computer algebra systems to generate or check answers on tests, quizzes, or homework is not permitted and is considered cheating. This includes using unapproved calculators and math help websites.

IU Kokomo Student Policies
- Student Handbook http://www.iuk.eduadvising/handbook/
- Code of Student Rights, Responsibilities, and Conduct http://studentcode.iu.edu/
- Emergency Procedures http://protect.iu.eduemergency/procedures

Required eTextbook Homework

Chapter 5: Sets and Counting
- Section 5.1, p194: #(1–13) odd, (15–21) all, (33–45) odd, 51, 53, (55–62) all
- Section 5.2, p200: #1, 3, 5, (9 – 21) odd, (27 – 41) odd, 45, 47, 49
- Section 5.3, p204: #1–10 all, (11 – 25) odd, (31 – 45) odd, (51 – 69) odd
- Section 5.4, p210: #1–47 odd, 51, 53, 55, 59, 61
- Section 5.5, p217: #1–21 odd, (22 – 27) all, (29 – 37) odd, 47, 48, 51, 57, 59
- Section 5.6, p224: #1, 3, 5, 7, (21 – 25) odd

Chapter 6: Probability
- Section 6.1, p248: #(1 – 9) odd, 10a [ans: ii, iii, vi], (11 – 23) odd, 27
- Section 6.2, p258: #7–15 odd, 19, 23, 25, (31 – 37) odd
- Section 6.3, p265: #(1 – 19) odd, (25 – 31) odd, 35, 37, 41
- Section 6.4, p274: #(1 – 19) odd, 21, 23, 27, 29, (33 – 39) odd, 49, 51, 53, 57
- Section 6.5, p283: #3, 5, 7, 9, 13, 15, 17, 19, 21, 25, 29, 31, 39, 40, 49
- Section 6.6, p290: #3, 5, 7, 9, 11, 12ab [ans: a. 98/143; b. 0.0025], 15, 17, 21

Chapter 7: Probability and Statistics
- Section 7.3, p323: #(1 – 19) odd, 23, 25, 27, (41 – 47) odd
- Section 7.4, p333: #1, 2 [ans: -0.15], 6 [ans: Both $2100]

Chapter 2: Matrices
- Section 2.1, p58: #(1 – 7) odd, 11, 13, 15, (23 – 31) odd, 39, 45, 49, 51
- Section 2.2, p66: #17, 19, 21, 25, 27, 33, 35, (45, 47) set up only
- Section 2.3, p78: #(1 – 55) odd
- Section 2.4, p90: #(1 – 5) odd, 11, 13, 19, 21
- Section 2.5, p95: #1, 3, 5, 9, 13, 15, 17

Chapter 8: Markov Chains
- Section 8.1, p377: #(1 – 15) odd, 19, 21, 23, 25, 29, 33
- Section 8.2, p388: #9, 11, 13, 15, 17, 19, 21, 23

Chapter 3: Linear Programming
- Section 3.1, p113: #7, 9, 11, 12, 13
- Section 3.2, p121: #(1 – 11) odd, (15 – 21) odd, (25 – 41) odd. For (33 – 41) odd, set up LLP only.
## Course Schedule: Due Dates

<table>
<thead>
<tr>
<th>Day</th>
<th>Date</th>
<th>Topic</th>
<th>HW &amp; CQ</th>
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</thead>
<tbody>
<tr>
<td>Tues.</td>
<td>8/21</td>
<td>5.1 Sets</td>
<td></td>
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<tr>
<td>Thurs.</td>
<td>8/23</td>
<td>5.2 Fundamental Principle of Counting</td>
<td></td>
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<tr>
<td>Tues.</td>
<td>8/28</td>
<td>5.3 Venn Diagrams and Counting</td>
<td></td>
</tr>
<tr>
<td>Thurs.</td>
<td>8/30</td>
<td>5.4 Multiplication Principle</td>
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<tr>
<td>Tues.</td>
<td>9/4</td>
<td>5.5 Permutations and Combinations</td>
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<tr>
<td>Thurs.</td>
<td>9/6</td>
<td>5.6 Further Counting Techniques</td>
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<tr>
<td>Tues.</td>
<td>9/11</td>
<td>Review</td>
<td></td>
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<tr>
<td>Thurs.</td>
<td>9/13</td>
<td><strong>Test 1 (5.1-5.6)</strong></td>
<td></td>
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<tr>
<td>Tues.</td>
<td>9/18</td>
<td>6.1 Experiments, Outcomes, Sample Spaces, &amp; Events</td>
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<tr>
<td>Thurs.</td>
<td>9/20</td>
<td>6.2 Assignment of Probabilities</td>
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<tr>
<td>Tues.</td>
<td>9/25</td>
<td>6.3 Calculating Probabilities of Events</td>
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<tr>
<td>Thurs.</td>
<td>9/27</td>
<td>6.4 Conditional Probability and Independence</td>
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<tr>
<td>Tues.</td>
<td>10/2</td>
<td>6.4, Continued</td>
<td>Quiz 4</td>
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<tr>
<td>Thurs.</td>
<td>10/4</td>
<td>6.5 Tree Diagrams; 6.6 Bayes’ Theorem</td>
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<tr>
<td>Tues.</td>
<td>10/9</td>
<td>6.5 &amp; 6.6, Continued</td>
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<tr>
<td>Thurs.</td>
<td>10/11</td>
<td>7.3 Binomial Trials; 7.4 Expected Value</td>
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<tr>
<td>Tues.</td>
<td>10/16</td>
<td>[No Class: Fall Break]</td>
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<tr>
<td>Thurs.</td>
<td>10/18</td>
<td>Review</td>
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<tr>
<td>Tues.</td>
<td>10/23</td>
<td><strong>Test 2 (6.1-6.6, 7.3-7.4)</strong></td>
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<tr>
<td>Thurs.</td>
<td>10/25</td>
<td>2.1 Systems of Linear Equations</td>
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<tr>
<td>Tues.</td>
<td>10/30</td>
<td>2.2 General Systems of Equations</td>
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<tr>
<td>Thurs.</td>
<td>11/1</td>
<td>2.3 Arithmetic Operations on Matrices Review</td>
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<tr>
<td>Tues.</td>
<td>11/6</td>
<td>2.4 Inverse of a Matrix; 2.5 Gauss-Jordan Method</td>
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<tr>
<td>Thurs.</td>
<td>11/8</td>
<td>8.1 Transition Matrix</td>
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<tr>
<td>Tues.</td>
<td>11/13</td>
<td>8.2 Regular Stochastic Matrices</td>
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<tr>
<td>Thurs.</td>
<td>11/15</td>
<td>Review</td>
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<tr>
<td>Tues.</td>
<td>11/20</td>
<td><strong>Test 3 (2.1-2.4, 8.1-8.2)</strong></td>
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<tr>
<td>Thurs.</td>
<td>11/22</td>
<td>[No Class: Thanksgiving]</td>
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<tr>
<td>Tues.</td>
<td>11/27</td>
<td>3.1 Linear Programming Problem</td>
<td>Assignment 7</td>
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<tr>
<td>Thurs.</td>
<td>11/29</td>
<td>3.2 Fundamental Theorem of Linear Programming</td>
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<tr>
<td>Tues.</td>
<td>12/4</td>
<td>Review</td>
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<tr>
<td>Thurs.</td>
<td>12/6</td>
<td>Review</td>
<td></td>
</tr>
<tr>
<td>Thurs.</td>
<td>12/13</td>
<td><strong>Final Exam (All)</strong></td>
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</tbody>
</table>

- HW = eText Homework; CQ = Canvas Quiz; Projects & Feedback are on Canvas
- Assignments are due at the beginning of class. If you are unable to attend class, you may email your completed assignment (scanned or photographed) to me before the beginning of class.
- You are expected to complete required textbook homework after lecture on each section. Homework should be completed prior to the next class meeting.
- **Bring your binder and graphing calculator to every class meeting.** Quizzes will be in-class. You may be permitted to use your homework binder (closed book) on some select quizzes. You will benefit from keeping homework organized and up-to-date!
- This schedule is tentative and subject to change.