Math 1332- T Section: An Introduction to Contemporary Mathematics/Developmental Mathematics

Fall 2017 Syllabus

Disclaimer
This syllabus is current and accurate as of its posting date, but will not be updated. For the most complete and up-to-date course information, contact the instructor.

Instructor Information
Mrs. Paula Koca
Office: MCS 220L       Fax: 325-942-2503
Phone: 325- 486-5437   Email: paula.koca@angelo.edu
Office Hours:

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
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</thead>
<tbody>
<tr>
<td>Monday</td>
<td>10am – 12:45pm, 1:15pm – 2pm</td>
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<tr>
<td>Tuesday</td>
<td>10:30 am – 12pm</td>
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<tr>
<td>Wednesday</td>
<td>10am – 1pm</td>
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<tr>
<td>Thursday</td>
<td>10:30 am – 12pm, 2:30-3pm</td>
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<td>Friday</td>
<td>By Appointment</td>
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What is a T - Section?
• A T - Section is college credit bearing course paired with supplemental instruction for those students who are not TSI complete.
• T - Sections allow students to take their college level mathematics class (with supplemental instruction) immediately rather than having to first spend a semester or two taking developmental mathematics courses prior to being allowed to take college level mathematics. This course design is ideal for students who have math deficiencies but, are willing to put forth the time and effort needed to complete the course satisfactorily.
• The course materials and lessons for the college level course and supplemental instruction will complement each other. In a way, each part of the T – Section reinforces and helps the other part.
• Learning communities are a great way to begin college life. We will heavily stress learning communities. You will work some problems in groups with each person in the group contributing their fair share to the effort. You will be asked at times to be peer tutors for others that are struggling. The nature of the material is such that (each topic is very different from other topics) each of you will find topics in which you excel and other topics in which you struggle. This is where peer tutoring will become very helpful!

Student Learning Outcomes
1. The students will demonstrate factual knowledge including the mathematical notation and terminology used in this course. Students will read, interpret, and use the vocabulary, symbolism, and basic definitions used in a selection from the following topics: voting theory, apportionment, the mathematics of money, probability, statistics, graph theory, and geometry.
2. The students will be able to describe generalizations of mathematics to real-world situations. Students will be able to describe, for example, the role played by mathematics in the theory of voting. The students will be able to describe connections between mathematical concepts and natural and societal phenomena.
3. The students will apply the course material along with techniques and procedures covered in this course to solve various problems and improve decision making. The students will apply such topics related to statistics and probability to improve decision making through a broader understanding of mathematics. They will learn to analyze problems using mathematical ideas and symbolism and learn to obtain the appropriate resources required to better deal with such problems.
4. The students will develop specific skills, competencies, and thought processes sufficient to support further study or work in this field or related fields. Students will develop new approaches and algorithms for solving problems related to networking, scheduling and paths.

5. The T-section will provide students with skills in a variety of mathematical topics needed to be successful in the credit bearing course Math 1332. Students will gain proficiency in arithmetic and algebraic topics necessary for success in the Contemporary Mathematics section of the course.

Relevant Exemplary Educational Objectives (EEOs)
(Source: Core Curriculum: Assumptions and Defining Characteristics, Rev. 1999)

EEO #1: To apply arithmetic, algebraic, geometric, higher-order thinking, and statistical methods to modeling and solving real-world situations.

EEO #5: To interpret mathematical models such as formulas, graphs, tables and schematics, and draw inferences from them.

EEO #6: To recognize the limitations of mathematical and statistical models.

EEO #7: To develop the view that mathematics is an evolving discipline, interrelated with human culture, and understand its connections to other disciplines.

Core Curriculum Student Learning Objectives
MATH 1332

- **Core Objective (Critical Thinking):** Gather, analyze, evaluate, and synthesize information relevant to a question or issue. (CT1)
  - Course Student Learning Objective: Students will collect, analyze, and evaluate the fundamental fairness criteria of a variety of voting methods.
  - Assessment: Assessment exam that demonstrates CT1.

- **Core Objective (Communication):** Develop, interpret, and express ideas through effective visual communication. (CS3)
  - Course Student Learning Objective: Students will create and interpret Hamiltonian and/or Eulerian graphs and draw conclusions about the associated networks.
  - Assessment: Assessment exam that demonstrates CS3.

- **Core Objective (Empirical and Qualitative Skills):** Manipulate and analyze numerical data and arrive at an informed conclusion. (EQS1)
  - Course Student Learning Objective: Students will use the facts, formulas, and techniques learned in this course to solve problems involving the mathematics of finance.
  - Assessment: Assessment exam that demonstrates EQS1.

Textbook: *Excursions in Modern Mathematics 9th ed.* by Peter Tannenbaum, Prentice Hall
Course Content

1. **Mathematics of Elections**: Basic Elements, Plurality, Borda Count, Plurality with Elimination, Pairwise Comparison
2. **Weighted Voting**: Introduction to Weighted Voting, The Banzhaf Power Index,
3. **Mathematics of Sharing**: Fair-Division Games, The Lone-Divider Method and/or The Lone Chooser Method, Sealed Bids
4. **Apportionment**: Various methods such as Hamilton’s and Jefferson’s Methods.
5. **Math of Getting Around**: Street Routing Problems, Graphs, Euler’s Theorems and Graphs
6. **The Traveling Salesman Problem**: What is the traveling salesman problem. Hamilton Paths and Circuits, possibly other touring algorithms.
7. **Networks**: Networks and Trees, Spanning Trees, Kruskal’s Algorithm
8. **Scheduling**: Introduction, Directed Graphs,
9. **Population Growth Models**: Linear growth, exponential growth
10. **Financial Mathematics**: Percentages, Simple Interest, Compound Interest, Consumer Debt, Possibly adding a topic of Annuities if time permits (mortgages, car loans, etc.)
11. **Math of Symmetry**: Rigid Motions, Reflections, Rotations, Translations
12. **Fractal Geometry**: optional depending on time
13. **Fibonacci Numbers and the Golden Ratio**: optional depending on time
14. **Census, Surveys, Polls and Studies**: Enumeration, Measurement, Cause and Effect
15. **Graphs, Charts, and Numbers**: Graphs and Charts, means, Medians, Percentiles, Ranges, Standard Deviations
16. **Probability**: Sample Spaces and Events, Multiplication Principle, Permutations, Combinations, Probabilities, Odds, Expectations, Measuring Risk
17. **The Math of Normality**: Approximately Normal Distributions, Normal Curves, and normality

Major Course Requirements

**Use of Blackboard**
- Handouts will be placed on Blackboard for you to print as necessary.
- They will appear under the tabs labeled **Course Information** (syllabus, office hours, etc.) and **Handouts** (handouts needed for class and homework).

**Use of Calculators**
- All students will need a calculator. We will discuss the type of calculator needed on the first day of class.

**Attendance:**
- Attendance will be taken daily and is mandatory for the entire class period! If you leave after the break, you will be marked absent for the day and given a zero on the homework you turned in that day! Excessive absences are reported to the administration and play a definite role in suspension considerations. Remember that I can teach you more in one hour than you can learn on your own in several hours.
Daily Work

- Daily work will consist of traditional homework problems assigned from the textbook or worksheets supplied to student through blackboard.
- Fold the assignment lengthwise with your name, course, and row on the outside near the top of the paper.
- I will drop 4 homework/quiz grades at the end of the semester. If you are absent for any reason, the homework can be delivered by a friend to my office or faxed to me prior to class or it will become one of the four dropped grades.
- **No late homework will be accepted.** The 4 dropped grades are meant to replace homework missed due to illness or emergency. Save them for when you are ill. Once they are used, any missing homework for any reason will be a zero.
- To receive credit for homework assignments, they must be placed on my desk prior to the beginning of lecture.

Exams

- We will have four exams where the fourth exam will be given on final exam day. The fourth exam (final exam) will not be cumulative unless you have missed an exam. The exact dates and coverage of these tests will be announced in class. The fourth exam will be held with times as specified in the final exam schedule posted on the ASU website under the registrar page.
- There will be no make-up exams. Therefore, if you miss an exam, you will be required to take a comprehensive final exam which will count as the missed exam grade and the 4th exam. If you are ill on an exam day, get a note from the clinic and call me immediately.

Grading: Exams will be given during the Math 1332 portion of the class. On exam days, the supplemental portion of the class will be used to supplement skills needed prior to beginning the next section of material.

<table>
<thead>
<tr>
<th>Daily Average (homework, worksheets, and quizzes)</th>
<th>20%</th>
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<tbody>
<tr>
<td>Each of three regular exams</td>
<td>20%</td>
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<tr>
<td>Final Exam (4th exam)</td>
<td>20%</td>
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</table>

**Final Grades will be assigned as follows:**

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<tr>
<th>Average 90 or above</th>
<th>Average 80-89</th>
<th>Average 70-79</th>
<th>Average 60-69</th>
<th>Average under 60</th>
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<tr>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>F</td>
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Math Lab:
- The Mathematics Department offers a Math Lab. This lab is an open lab meaning that you are not required to attend but can come and go as you please and as you need help. It is free tutoring so please take advantage of it!
- Math Lab is located on the third floor of the library, Room C302.
- Math Lab Hours can be found at this location on the Angelo State University website: http://www.angelo.edu/dept/mathematics/lab_hours.php
- You will also find these hours posted on my office door along with my office hours (also posted throughout the MSC building).

Class Rules:
- Arrive on time and remain entire class period! We will take a break of 5-7 minutes between the lecture and the supplemental portion of the class.

- No IPODS or MP3 players – you cannot listen to a lecture while listening to music.

- Cell phones are to be turned off during class.

- Cell phones must be placed in backpacks below desk during exams.

- No talking while I am talking – this is disruptive to your fellow students.

- No food or drinks in classrooms unless absolutely necessary (due to illness). If you do need a drink, please be sure it has a cover to prevent spills.

- During supplemental section, all students are to be focused on working problems in their groups. If I see chit chat that is not math related, you will be given an automatic zero on that day’s assignment.

- All students are to be respectful and courteous to each other. You are adults and I expect you to act as such.

Additional Syllabus Statements

- Student Disability Services
  ASU is committed to the principle that no qualified individual with a disability shall, on the basis of disability, be excluded from participation in or be denied the benefits of the services, programs or activities of the university, or be subjected to discrimination by the university, as provided by the Americans with Disabilities Act of 1990 (ADA), the Americans with Disabilities Act Amendments of 2008 (ADAAA), and subsequent legislation. The Office of Student Affairs is the designated campus department charged with the responsibility of reviewing and authorizing requests for reasonable accommodations based on a disability, and it is the student’s responsibility to initiate such a request by contacting:
  Dallas Swafford
  Director of Student Disability Services
  Office of Student Affairs
  325-942-2047
dallas.swafford@angelo.edu
• **Title IX**
  Angelo State University is committed to the safety and security of all students. If you or someone you know experience sexual harassment, sexual assault, domestic or dating violence, stalking, or discrimination, you may contact ASU’s Title IX Coordinator:

  Michelle Boone  
  Director of Title IX Compliance  
  325-486-6357  
  michelle.boone@angelo.edu

• **Student Absence for Observance of Religious Holy Days**: A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. ([http://www.angelo.edu/opmanual/ -- OP 10.19](http://www.angelo.edu/opmanual/ -- OP 10.19))

• **Incomplete Grade Policy**: It is policy that incomplete grades be reserved for student illness or personal misfortune. Please contact faculty if you have serious illness or a personal misfortune that would keep you from completing course work. Documentation may be required. See ASU Operating Policy 10.11 [Grading Procedures](http://www.angelo.edu/opmanual/ -- OP 10.19) for more information.

• **Student Absence for Observance of Religious Holy Days**: A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. ([http://www.angelo.edu/opmanual/ -- OP 10.19](http://www.angelo.edu/opmanual/ -- OP 10.19))

• **Student Conduct Policies**
  **Academic Integrity**
  Students are expected to maintain complete honesty and integrity in all work. Any student found guilty of any form of dishonesty in academic work is subject of disciplinary action and possible expulsion from ASU.
  The College of Science and Engineering adheres to the Statement of [Academic Integrity](http://www.angelo.edu/opmanual/ -- OP 10.19).

  **Plagiarism**
  Plagiarism is a serious topic covered in ASU’s [Academic Integrity policy](http://www.angelo.edu/opmanual/ -- OP 10.19) in the Student Handbook. Plagiarism is the action or practice of taking someone else’s work, idea, etc., and passing it off as one’s own. Plagiarism is literary theft.
  In your discussions and/or your papers, it is unacceptable to copy word-for-word without quotation marks and the source of the quotation. It is expected that you will summarize or paraphrase ideas giving appropriate credit to the source both in the body of your paper and the reference list. Papers are subject to be evaluated for originality via Turnitin. Resources to help you understand this policy better are available at the [ASU Writing Center](http://www.angelo.edu/opmanual/ -- OP 10.19).

  **Copyright Policy**
  Students officially enrolled in this course should make only one printed copy of the given articles and/or chapters. You are expressly prohibited from distributing or reproducing any portion of course readings in printed or electronic form without written permission from the copyright holders or publishers.

• **General Policies Related to this Course**: All students are required to follow the policies and procedures presented in these documents:
  - [Angelo State University Student Handbook](http://www.angelo.edu/opmanual/ -- OP 10.19)
  - [Angelo State University Catalog](http://www.angelo.edu/opmanual/ -- OP 10.19)
<table>
<thead>
<tr>
<th>Course day</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>Syllabus, Basic Elements of an Election, Preference Schedules</td>
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<tr>
<td>2</td>
<td>Voting Methods: Plurality, Borda, Plurality with Elimination</td>
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<td>3</td>
<td>Voting Methods: Pairwise Comparisons; Weighted Voting</td>
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<td>4</td>
<td>Weighted Voting, Banzoff Power</td>
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<td>5</td>
<td>Fair Division; Sealed Bids</td>
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<td>6</td>
<td>Sealed Bids</td>
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<td>7</td>
<td>Apportionment, Review</td>
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<tr>
<td>8</td>
<td>Test 1 (9/21/2017)</td>
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<tr>
<td>9</td>
<td>Apportionment, Hamilton’s Method, Jefferson’s Method</td>
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<tr>
<td>10</td>
<td>Street-Routing Problems, Introduction to Graphs</td>
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<td>11</td>
<td>Introduction to Graphs, Euler’s Theorem</td>
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<tr>
<td>12</td>
<td>Euler’s Theorem, Eulerizing Graphs</td>
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<tr>
<td>13</td>
<td>Traveling Salesman Problem, Hamilton Paths &amp; Circuits</td>
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<td>14</td>
<td>Brute Force Algorithm, Nearest Neighbor Algorithm</td>
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<td>15</td>
<td>Networks; Review</td>
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<td>16</td>
<td>Test 2 (10/19/2017)</td>
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<td>17</td>
<td>Networks; Spanning Trees</td>
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<td>18</td>
<td>Kruskal’s Algorithm</td>
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<td>19</td>
<td>Math of Finance</td>
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<td>20</td>
<td>Math of Finance</td>
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<td>21</td>
<td>Math of Finance</td>
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<td>22</td>
<td>Math of Finance</td>
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<td>23</td>
<td>Math of Finance, Review</td>
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<tr>
<td>24</td>
<td>Test 3 (11/16/2017)</td>
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<td>25</td>
<td>Rigid Motions- Translations, Reflections, Rotations</td>
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<tr>
<td>26</td>
<td>Frequency Tables; Graphs &amp; Charts; Statistics (Means, Medians and Percentiles)</td>
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<td>27</td>
<td>Statistics</td>
</tr>
<tr>
<td>28</td>
<td>Future Value of Annuities, Probability</td>
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<tr>
<td>29</td>
<td>Core Assessment, Review for Final Exam</td>
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</tbody>
</table>

Final Exam, Tuesday, December 12th.

**Please feel free to come to my office for help!**