MATH 1151: Mathematical Technology, Spring 2019

Contact Information

Instructor: Karl Havlak
Office: MCS 220A
Office Phone: (325) 486-5432
e-mail: Karl.Havlak@angelo.edu

Office Hours:
10:20 – 11:20 a.m., TR;
1:00 – 3:00 p.m., MTWR;
or by appointment

Textbook
All course materials will be made available on Blackboard.

Blackboard
This course has an associated Blackboard page where you will have access to grades, assignments, and other course-related items.

Course Content
The main focus of this class is to provide an introduction to the MATLAB software package.

Grading System
The final average will be determined according to the weights in the table that follows.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Date</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignments</td>
<td>most days</td>
<td>70%</td>
</tr>
<tr>
<td>Attendance</td>
<td>daily</td>
<td>10%</td>
</tr>
<tr>
<td>Final Project</td>
<td>October 7th</td>
<td>20%</td>
</tr>
</tbody>
</table>

Grading Policy
To determine the average needed to ensure that you obtain the grade that you want in this course, consult the table that follows.

<table>
<thead>
<tr>
<th>Average</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>89.5 and above</td>
<td>A</td>
</tr>
<tr>
<td>79.5 to 89.5</td>
<td>B</td>
</tr>
<tr>
<td>69.5 to 79.5</td>
<td>C</td>
</tr>
<tr>
<td>59.5 to 69.5</td>
<td>D</td>
</tr>
<tr>
<td>below 59.5</td>
<td>F</td>
</tr>
</tbody>
</table>

Homework Policy
Homework assignments will be assigned regularly throughout the semester. These will typically be short assignments testing the skills presented in class and will be due the next class period unless otherwise specified. Late homework may be accepted but with a substantial deduction of points. If you have trouble completing a homework assignment, please see me for assistance before it is due.
Final Project
There will be major final project due on the last day in this course. This final project will account for 20% of your final grade. It will require you to incorporate many of the skills that you learn throughout the semester in a single document. Late projects will not be accepted. If you have trouble completing the project, please see me for assistance before it is due.

Attendance
Attendance will be taken regularly and will account for 10% of your grade. Please inform me of any absences prior to the absence whenever possible.

Student Responsibilities
The student is solely responsible for:
• Completing each assignment by the specified due date.
• Obtaining assignments and other materials for classes from which they are absent.
• Utilizing, as needed, all available study-aid options (including meeting with the instructor, referring to outside texts, etc.) to resolve any questions that they might have regarding homework, course material, etc.
• Realizing from the beginning of the course the grade that they may need or want to graduate, maintain a scholarship, stay in athletics, etc. … and give as much effort as it takes to obtain this grade.

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 at Angelo State University
Angelo State University is committed to providing and strengthening an educational, working, and living environment where students, faculty, staff, and visitors are free from sex discrimination of any kind. Sex discrimination, sexual misconduct, public indecency, interpersonal violence, sexual assault, sexual exploitation, sexual harassment, and stalking are not tolerated at ASU. As a faculty member, I am a Responsible Employee meaning that I will report any allegations I am notified of to the Office of Title IX Compliance in order to connect students with resources and options
in addressing the allegations reported. You are encouraged to report any incidents to ASU's Office of Title IX Compliance and the Director of Title IX Compliance/Title IX Coordinator. You may do so by contacting:

Michelle Boone  
**Director of Title IX Compliance/Title IX Coordinator**  
Mayer Administration Building, Room 200  
325-942-2022  
michelle.boone@angelo.edu

You may also file a report online 24/7 using the [incident form](#).

If you are wishing to speak to someone about an incident in confidence you may contact the **University Health Clinic and Counseling Center** at 325-942-2173 or the **ASU Crisis Helpline** at 325-486-6345.

The Office of Title IX Compliance also provides accommodations related to pregnancy (such as communicating with your professors regarding medically necessary absences, modifications required because of pregnancy, etc.). If you are pregnant and need assistance or accommodations, please contact the Office of Title IX Compliance utilizing the information above.

For more information about Title IX in general you may visit the Title IX [website](#).

**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. The full details can be found in ASU Operating Policy OP 10.19 **Observance of Religious Holy Days**.

**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** for more information.

**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**.
Plagiarism

Plagiarism is a serious topic covered in ASU’s Academic Integrity policy 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 vii.

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:
  o Angelo State University Student Handbook viii
  o Angelo State University Catalog ix

• In the event that the university is closed for a scheduled class time, whatever was scheduled for that day and/or whatever was due that day will be scheduled and/or due on the next scheduled class time.
• All electronic correspondence will be sent to your ASU e-mail account unless other arrangements are made.
• Feel free to come by my office at any time for help. I will definitely be near my office during my office hours (or there will be a note telling you when I will be back). If my office hours are not convenient for you, meet with me to arrange for another time that is more convenient.
• Good luck. I sincerely hope you do well in this course, and I strongly encourage you to use me as a resource outside of class to help you succeed.

All items contained in this syllabus are subject to change as the semester progresses. Students will be notified in advance of any changes.

Mathematics 1151 – Mathematical Technology

Student Learning Outcomes

1. Students will demonstrate factual knowledge of mathematical notation and terminology used in this course. Students will utilize the specific functions and
commands for producing mathematical documents. Students will also utilize specific functions and commands from the program MATLAB.

2. **Students will describe the fundamental principles including the laws and theorems arising from the concepts covered in this course.** Students will use contemporary software to study a variety of mathematical problems such as those involving algebraic equations, probability simulations, curve fitting, iteration and recursion, area and volume computations, and matrix applications. Students will also represent data and functions using visual aids such as two-dimensional plots with linear and logarithmic scales, scatter plots, histograms, three-dimensional surface plots, contour plots, and animations.

3. **Students will apply course material along with techniques and procedures covered in this course to solve problems.** Students will implement algorithms for analyzing and solving mathematical problems, using an appropriate high-level programming language.

4. **Students will develop specific skills, competencies, and thought processes sufficient to support further study or work in this field or related fields.** Students will solve problems, represent solutions, and develop algorithms using software.

**Textbook**
Course notes and other course materials will be made available on Blackboard.

**Course Content**
Use of MATLAB for solving problems numerically, graphically, and symbolically, for representing solutions and data graphically, and for developing and implementing algorithms. The following sections from the course notes are covered.

- 3.1: Introduction to Excel
- 3.2: Data Management with Excel
- 4.1: Introduction to MATLAB
- 4.2: Iteration and Anonymous Functions
- 4.3: Working with Vectors I
- 4.4: Working with Vectors II
- 4.5: Scripts, Cells, and Publishing I
- 4.6: Scripts, Cells, and Publishing II
- 4.7: Basics of 2D Plotting
- 4.8: “for” Loops, Part 1
- 4.9: “for” Loops, Part 2
• 4.10: Linear Least-Squares Approximation
• 4.11: Nonlinear Least-Squares Curve Fitting
• Additional MATLAB topics as time permits

Anticipated Daily Schedule
The table below indicates the expected sections that will be discussed on the date listed.

<table>
<thead>
<tr>
<th>Day</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 15</td>
<td>Excel: Basics</td>
</tr>
<tr>
<td>January 17</td>
<td>Excel: Data Management</td>
</tr>
<tr>
<td>January 22</td>
<td>MATLAB: Introduction</td>
</tr>
<tr>
<td>January 24</td>
<td>MATLAB: Anonymous Functions, Iteration</td>
</tr>
<tr>
<td>January 29</td>
<td>MATLAB: Vectors (part 1)</td>
</tr>
<tr>
<td>January 31</td>
<td>MATLAB: Vectors (part 2)</td>
</tr>
<tr>
<td>February 5</td>
<td>MATLAB: Scripts (part 1)</td>
</tr>
<tr>
<td>February 7</td>
<td>MATLAB: Scripts (part 2)</td>
</tr>
<tr>
<td>February 12</td>
<td>MATLAB: Graphing</td>
</tr>
<tr>
<td>February 14</td>
<td>MATLAB: Loops (part 1)</td>
</tr>
<tr>
<td>February 19</td>
<td>MATLAB: Loops (part 2)</td>
</tr>
<tr>
<td>February 21</td>
<td>MATLAB: Linear Curve Fit</td>
</tr>
<tr>
<td>February 26</td>
<td>MATLAB: Nonlinear Curve Fit</td>
</tr>
<tr>
<td>February 28</td>
<td>Final Project</td>
</tr>
<tr>
<td>March 5</td>
<td>Final Project</td>
</tr>
<tr>
<td>March 7</td>
<td>Additional MATLAB Topic; Final Project Due</td>
</tr>
</tbody>
</table>

1 Blackboard Link: [http://blackboard.angelo.edu](http://blackboard.angelo.edu)
2 Title IX Incident Form: [www.angelo.edu/incident-form](http://www.angelo.edu/incident-form)
3 Title IX Website: [www.angelo.edu/title-ix](http://www.angelo.edu/title-ix)
4 Observance of Religious Holy Days: [http://www.angelo.edu/content/files/14206-op-1019-student-absence-for-observance-of](http://www.angelo.edu/content/files/14206-op-1019-student-absence-for-observance-of)
5 Grading Procedures: [http://www.angelo.edu/content/files/14197-op-1011-grading-procedures](http://www.angelo.edu/content/files/14197-op-1011-grading-procedures)
7 ASU Writing Center: [http://www.angelo.edu/dept/writing_center/academic_honesty.php](http://www.angelo.edu/dept/writing_center/academic_honesty.php)
9 University Catalog: [http://www.angelo.edu/catalogs/](http://www.angelo.edu/catalogs/)