MATH 6327 – 010 – Graph Theory for Educators – Summer 2018

Contact Information:

- Instructor: Jesse Taylor
- Office: MCS 219E
- Email: jesse.taylor@angelo.edu
- Our classroom and meeting times: Online
- Office Hours by appointment

Required Textbook

*A First Course in Graph Theory*, by Gary Chartrand and Ping Zhang. There will be readings assigned from the textbook so it is necessary for success in our course. Please do not delay getting the textbook.

Course Content

Selected sections from the text will be covered. An emphasis will be placed on chapters 1-10.

Course Structure

This is an online course. We will have two main websites to visit regularly. The first is the Blackboard course that corresponds to Math 6327. Every graded assignment of the semester will be submitted through Blackboard, so I encourage you to familiarize yourself with our course’s page if you are not familiar with Blackboard. To access Blackboard, navigate to blackboard.angelo.edu and login using your Angelo State University sign-in credentials. After you are logged in, you should see a link to our course on your home page.

The second website we will be using is for the instructional material and course videos. The web address is:

https://sites.google.com/a/angelo.edu/math-6327-summer-2018/

All the videos, handouts, reading assignments, and other instructional material will be given through the above website. I strongly recommend that you take some time early in the semester to familiarize yourself with the layout.

Homework

Homework will be assigned regularly throughout the semester. Our course is separated into seven units. There will be only one problem set corresponding to each unit. As soon as you have worked your way through the instructional material you can get started on the problem set. Except in genuinely extreme circumstances no late homework will be accepted (all due dates can be found at the end of this syllabus and on Blackboard). It is always your responsibility to know when an assignment is due and to make sure it is turned in on time.

Lesson Plans

After working through the content in each unit you will create a lesson plan from the material contained in that unit. First note that the goal of these assignments is that after completing the course you will
have a collection of ready-made lessons if you ever want to take a week or two and teach your students some basic graph theory. Here are a few things to keep in mind when creating your lesson plans:

- The lessons should be age-appropriate. If you teach middle school, then you should write the lessons for middle-schoolers. If you teach high school, you should make lessons appropriate for high-schoolers.
- Each lesson should be enough for 25-50 minutes of class time. I am allowing a wide range of times because some of the units have more accessible material than others. It is also fine to include examples for your students to work on and students’ work time should be factored in to your time estimates. If you do include such problems, be sure to indicate that they are for student work on your lessons plans when you submit them.
- Each lesson plan MUST include material from the designated unit. It is acceptable to rely on material from previous lesson plans, but do not rely on material that you have not included in your previous lesson plans.
- Do not get too technical. In certain topics we will go over things in technical detail. This amount of detail will usually be too much for your students. Keep the intended audience in mind.
- The lessons do not have to include EVERYTHING from the unit. That would be impossible. The point if for you to sift through the material and choose a topic or two that you think would be accessible and interesting to your students.
- When you are finished with a lesson plan, either scan or take clear pictures of the lesson and upload it by navigating to the appropriate unit using the left-hand navigation menu and clicking the “Lesson Plan” link. All lesson plans should be submitted through Blackboard. Do NOT email me lesson plan submissions.

Grading

Your final grade in this class will be determined based on a ten-point grading scale. Your grade in this class will be awarded as a percentage out of 525 possible points based on the following grading rubric:

- Problem Sets: 350 possible points (50 per assignment)
- Lesson Plans: 175 possible points (25 per assignment)

Notes

- All electronic correspondence will be sent to your ASU email account unless other arrangements are made.
- Good luck. I want you to succeed in this course. If at any point during the semester you feel as if you do not understand the material, please email me as soon as possible. An ounce of prevention is worth a pound of cure.
- All items and dates in this syllabus are subject to change as the semester progresses. Students will be notified through email/Blackboard of any changes, and the changes will not be updated within this syllabus.
Mathematics 6327 – Graph Theory for Educators

Student Learning Outcomes

1. The students will demonstrate factual knowledge including the mathematical notation and terminology used in this course. Students will learn the vocabulary, symbolism, and basic definitions used in graph theory.

2. The students will be able to describe the fundamental principles related to the concepts covered in this course. Students will become familiar with algorithms and theorems related to graphs. For example, students will learn and study Kruskal’s Algorithm, Kuratowski’s Theorem, the Four-Color Theorem, and, more generally, Robertson and Seymour’s Graph Minors Project.

3. The students will apply course material along with techniques and procedures covered in this course to prove theorems and solve problems. Students will apply properties and theorems covered in this course to explore and determine various properties related to graphs. Students will demonstrate familiarity with the concepts and techniques through written assignments.

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 acquire a level of proficiency in the fundamental concepts and applications necessary for further study of graph theory or fields requiring knowledge of graph theory. These areas might include computer science or electrical engineering, as well as mathematics.

Course Content

Textbook: *A First Course in Graph Theory*, by Gary Chartrand and Ping Zhang.

Selected content from Chapter 1-10, as well as additional topics as time permits, will be studied. These additional topics might include, but are not limited to, graph minors, games on graphs, graph pebbling, and flows on graphs.

Anticipated Schedule

Below is a table containing the due dates for our class.

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit 1 Problem Set</td>
<td>Monday, June 11, 2018</td>
</tr>
<tr>
<td>Unit 1 Lesson Plan</td>
<td>Monday, June 11, 2018</td>
</tr>
<tr>
<td>Unit 2 Problem Set</td>
<td>Wednesday, June 20, 2018</td>
</tr>
<tr>
<td>Unit 2 Lesson Plan</td>
<td>Wednesday, June 20, 2018</td>
</tr>
<tr>
<td>Unit 3 Problem Set</td>
<td>Friday, June 29, 2018</td>
</tr>
<tr>
<td>Unit 3 Lesson Plan</td>
<td>Friday, June 29, 2018</td>
</tr>
<tr>
<td>Unit 4 Problem Set</td>
<td>Monday, July 9, 2018</td>
</tr>
<tr>
<td>Unit 4 Lesson Plan</td>
<td>Monday, July 9, 2018</td>
</tr>
<tr>
<td>Unit 5 Problem Set</td>
<td>Wednesday, July 18, 2018</td>
</tr>
<tr>
<td>Unit 5 Lesson Plan</td>
<td>Wednesday, July 18, 2018</td>
</tr>
<tr>
<td>Unit 6 Problem Set</td>
<td>Friday, July 27, 2018</td>
</tr>
</tbody>
</table>
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. 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.

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
  - Angelo State University Catalog

---

1 Observed 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)
2 Grading Procedures: [http://www.angelo.edu/content/files/14197-op-1011-grading-procedures](http://www.angelo.edu/content/files/14197-op-1011-grading-procedures)
4 ASU Writing Center: [http://www.angelo.edu/dept/writing_center/academic_honesty.php](http://www.angelo.edu/dept/writing_center/academic_honesty.php)
6 University Catalog: [http://www.angelo.edu/catalogs/](http://www.angelo.edu/catalogs/)