

**1: Course Number and Name**

- a. **CENG 3311:** Introduction to Transportation Engineering, Fall 2021
- b. Lecture: Section 010 10:00 am – 10:50 am, Monday, Wednesday, and Wednesday

**2: Credits and Contact Hours**

- a. **Credits:** 3
- b. **Contact Hours:** 3 hours/week (classroom)

**3: Instructor Information**

- a. **Course Coordinator:** Dr. Dick Apronti
- b. **Instructor:** Dick Apronti, 325-486-5512, [dick.apronti@angelo.edu](mailto:dick.apronti@angelo.edu). Office: VIN 275.
- c. **Office hours:** MW 2:00 pm – 4:30 pm (Mondays in my office, Wednesdays in Student Hub).

**4: Required Course Materials**

a. **Textbooks:**

- A Practical Approach to Highway Design, Traffic Analysis, and Systems Operations by Beverly Thompson Kuhn. ISBN: 9781260019575. Available for free online through ASU Library online resource.
- American Association of State Highway and Transportation Officials (AASHTO). (2018). Policy on Geometric Design of Highways and Streets (7th Edition). American Association of State Highway and Transportation Officials (AASHTO). Available for free online through ASU Library online resource.

b. **Additional Resources** (not required but extremely useful):

- Fred L. Mannering, and Scott Washburn (2016). Principles of Highway Engineering and Traffic Analysis, 6th Edition. John Wiley & Sons. Inc., U.S.A.
- Traffic & Highway Engineering, 5th Edition by Garber and Hoel.

**5: Technology Requirements**

To successfully complete this course, you need to have internet access and the ability to use the following online tools: Blackboard, Gradescope, Blackboard Collaborate, Adobe Acrobat (or another pdf maker), YouTube. No specific hardware is required, but access to a computer with webcam is highly encouraged.

**6: Specific Course Information**

- a. **Catalog Description:** Introduction to Transportation Engineering focuses on the tools and methodologies available to the transportation professional to address many of the areas within this diverse field. The course is meant to serve as an introduction to the field and a survey of the various job responsibilities within each area as well as to provide a foundation for further study in the transportation field. Attention is given to teamwork and problem-solving skills that are trademarks of a successful engineering professional.
- **Prerequisites:** MATH 2314 – College Algebra or equivalent academic preparation
- c. **Required or elective:** Required.

**7: Specific Goals for the Course**

- a. Course Learning Outcomes:

1. Perform a level of service and capacity analysis for a transportation facility.
2. Complete a signal timing design for a fixed time isolated intersection.
3. Design and complete a safety analysis for a hazard location.
4. Forecast future travel demand for a transportation system.
5. Work in teams to analyze the geometric characteristics of a roadway.

b. Course Learning Outcome Mapping to ABET Criterion 3 Student Outcomes:

**Table 1: Course Learning Outcomes mapped to ABET Student Outcomes**

<b>ABET Student Outcomes</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1. Solve Problems	X	X	X	X	X
2. Design		X	X		
3. Communication					
4. Ethics & Professionalism					
5. Teamwork					X
6. Experimentation					
7. Acquire New Knowledge					

**8: Topics Covered**

1. U.S. Transportation History
2. Road Design Controls and Criteria
3. Fundamentals of Traffic Flow
4. Capacity and Level of Service
5. Elements of Design
6. Highway Safety
7. Traffic Control Devices
8. Signalized Intersection

**9: Course Delivery and Communications**

**9.1: Delivery Method(s)**

This is a face-to-face course with learning resources and supplemental materials posted in [Blackboard](#)<sup>1</sup>. Accommodations will be made for students who are in quarantine or isolation and are unable to attend.

**9.2: Communications**

The primary means of communication during this course are Blackboard and Piazza. Lesson materials will be delivered via Blackboard. Piazza will be used for announcements and discussion of course materials. Please do not email your instructor with questions about class—instead, post your questions on Piazza. One reason for using Piazza is for you to benefit from the collective knowledge of your classmates and instructors. You are encouraged to ask questions when you are struggling to understand a concept—you can even do so anonymously or send private messages to the instructor.

The instructor will respond to Piazza messages within six to twelve hours during working hours Monday through Friday. Weekend messages may be responded to within 24 hours or until Monday. Messages posted on Piazza will be sent to your ASU email address. Check frequently for announcements and policy changes.

When face-to-face office hours are not possible, office hours or advising may be arranged with the assistance of Collaborate, Zoom, or another web meeting platform.

### **10: Professionalism**

Professional engineering standards apply in this class. You are expected to demonstrate a behavior consistent with the conduct of an individual practicing in the engineering profession. You are expected to: (1) come prepared for class; (2) respect faculty and peers; (3) demonstrate responsibility and accountability for your own actions; (4) demonstrate sensitivity and appreciation for diverse cultures, backgrounds, and life experiences; (5) offer and accept constructive criticism in a productive manner; (6) demonstrate an attitude that fosters professional behavior among peers and faculty; (7) be punctual to class meetings; (8) maintain a good work ethic and integrity; and (9) recognize the classroom as a professional workplace.

### **11: Graded Material**

#### **11.1: Class Attendance, Participation, Timeliness and Teamwork**

You are expected to meet every class meeting on time and prepared. Attendance will be taken. Should you find it necessary to miss a class for any reason, you are expected to notify your instructor as early as the absence is known—preferably before the absence.

Your online assignments will be due at the time specified on Blackboard. Assignments submitted in hard copy are due at the beginning of class on the due date. Your instructor may assess penalties for late work.

Nearly all worthwhile accomplishments from raising a family to launching the space shuttle are the work of teams. Civil engineering is no exception. All significant civil engineering projects are completed by teams. You will be assigned to a team for most labs. The purpose of the teams are to give you practice working together and to provide a support group for you within the class. Outside of class, please collaborate and work with anyone you wish.

#### **11.2: Quizzes**

There may be in-class quizzes. The quizzes will be unannounced and unscheduled. The quizzes are intended to assess your comprehension of the basic concepts of topics covered, and to determine whether you have completed the pre-class work and are prepared for class.

#### **11.3: Homework**

There will be homework assignments covering each topic. Each homework is an individual effort that may require reading beyond the discussions presented by the instructor in class. Homework assignments will be due on the dates indicated on Blackboard. Your lowest submission will be dropped.

#### **11.4: Civil Engineering Design Project**

You shall be placed in groups to work on a geometric design project. The project shall be submitted on the due dates as indicated on Blackboard or by your instructor.

#### **11.5: Exam**

There will be two in-class exams and one final exam. The first in class exam will be 50 minutes and scheduled during class time. The second in-class exam will be 120 minutes and scheduled at a special meeting time. The final exam will be 120 minutes and scheduled per the university final exam calendar. All exams will be closed book. You will be allowed to bring in a limited amount of handwritten notes.

### 11.6: Grades: Weighting and Letter Grades

The weighting system shown in Table 2 will be used in determining final grade for this course.

**Table 2: Grade Weighting**

<u>Item</u>	<u>Weight</u>
Quizzes & Participation	10%
Homework	25%
Project	10%
Exam 1	15%
Exam 2	15%
Final Exam	25%
Total	100%

The instructor will determine letter grades for the course using his professional judgment, and the following standards as described in the University Catalog:

A = excellent work      B = good work      C = average work      D = poor work      F = failing work

### 11.7: 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](#)<sup>2</sup> for more information.

## 12: Classroom and University Policies and Student Support

All students are required to follow the policies and procedures presented in the [Angelo State University Student Handbook](#)<sup>3</sup> and [Angelo State University Catalog](#)<sup>4</sup>.

### 12.1: Accommodations for Students with Disabilities

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.

Student Disability Services is located in the Office of Student Affairs, and is the designated campus department charged with the responsibility of reviewing and authorizing requests for reasonable accommodations based on a disability. It is the student's responsibility to initiate such a request by contacting an employee of the Office of Student Affairs, in the Houston Harte University Center, Room 112, or contacting the department via email at [ADA@angelo.edu](mailto:ADA@angelo.edu). For more information about the application process and requirements, visit the [Student Disability Services website](#).<sup>5</sup> The employee charged with the responsibility of reviewing and authorizing accommodation requests is:

Dr. Dallas Swafford  
Director of Student Disability Services  
Office of Student Affairs  
325-942-2047

[dallas.swafford@angelo.edu](mailto:dallas.swafford@angelo.edu)

Houston Harte University Center, Room 112

## **12.2: 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. In accordance with Title VII, Title IX, the Violence Against Women Act (VAWA), the Campus Sexual Violence Elimination Act (SaVE), and other federal and state laws, the University prohibits discrimination based on sex, which includes pregnancy, and other types of Sexual Misconduct. Sexual Misconduct is a broad term encompassing all forms of gender-based harassment or discrimination and unwelcome behavior of a sexual nature. The term includes sexual harassment, nonconsensual sexual contact, nonconsensual sexual intercourse, sexual assault, sexual exploitation, stalking, public indecency, interpersonal violence (domestic violence or dating violence), sexual violence, and any other misconduct based on sex.

You are encouraged to report any incidents involving sexual misconduct to the Office of Title IX Compliance and the Director of Title IX Compliance/Title IX Coordinator, Michelle Miller, J.D. You may submit reports in the following manner:

Online: [Incident Reporting Form](#)<sup>6</sup>

Face to Face: Mayer Administration Building, Room 210

Phone: 325-942-2022

Email: [michelle.miller@angelo.edu](mailto:michelle.miller@angelo.edu)

Note, as a faculty member at Angelo State, I am a mandatory reporter and must report incidents involving sexual misconduct to the Title IX Coordinator. Should you wish to speak to someone in confidence about an issue, you may contact the University Counseling Center (325-942-2371), the 24-Hour Crisis Helpline (325-486-6345), or the University Health Clinic (325-942-2171).

For more information about resources related to sexual misconduct, Title IX, or Angelo State's policy please visit the [Title IX website](#).<sup>7</sup>

## **12.3: 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. See ASU Operating Policy 10.19 Student Absence for [Observance of Religious Holy Day](#)<sup>8</sup> for more information.

## **12.4: Information About COVID-19**

Please refer to ASU's [COVID-19 \(Coronavirus\) Updates](#)<sup>9</sup> web page for current information about campus guidelines and safety standards as they relate to the COVID-19 pandemic.

## **12.5: Student Conduct Policies**

### **12.5.1: 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.

### 12.5.2: Plagiarism

Plagiarism is a serious topic covered in ASU's [Academic Integrity policy](#)<sup>10</sup> 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 or SafeAssign. Resources to help you understand this policy better are available at the [ASU Writing Center](#)<sup>11</sup>.

### 12.5.3: 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.

## 13: Course Outline

The tentative course outline is presented in the Table 3. Specific submission details for homework assignments, projects, and quizzes along with updates to this schedule will be provided via Bb. The following schedule may be modified as the semester progresses.

**Table 3: Course Lesson Outline**

Week	Date	Topic	Reading	Tasks
1	Aug 23	Course Introduction	Syllabus	HW01
	Aug 25	U.S. Transport History	THE 1	
	Aug 27	Sustainability & Decision Making in Transportation	PHE 1.3	
2	Aug 30	Design Controls and Criteria – Driver Performance	GB 2.2	HW02
	Sept 1	Design Controls and Criteria – Human Factors		
	Sept 3	Design Controls and Criteria – Traffic Characteristics	GB 2.3	
3	Sept 6	<b>Holiday</b>		HW03
	Sept 8	Traffic Engineering Studies – Speed & Volume Studies	THE 4.1	
	Sept 10	Traffic Engineering Studies –Travel Time, Delay, and Parking Studies	THE 4.6	
4	Sept 13	Practice Problems		HW04
	Sept 15	<b>Exam 1</b>		
	Sept 17	Principles of Traffic Flow – Traffic Flow Elements	PHE 5.2	
5	Sept 20	Principles of Traffic Flow – Flow Density Relationships	PHE 5.3	HW05
	Sept 22	Principles of Traffic Flow – Models of Traffic Flow	PHE 5.4	

Week	Date	Topic	Reading	Tasks
	Sept 24	Principles of Traffic Flow – Queuing Theory	PHE 5.5	
6	Sept 27	Practice Problems		HW06
	Sept 29	Highway Capacity Overview	GB 2.4	
	Oct 1	Capacity & Level of Service (Basic Freeway Segments)	PHE 6.4	
7	Oct 4	Capacity & Level of Service (Basic Freeway Segments)		
	Oct 6	Practice Problems		
	Oct 8	Elements of Design –Sight Distance (SSD)	GB 3.2.1	
8	Oct 11	Elements of Design –Sight Distance (DSD)	GB 3.2.3	HW07
	Oct 13	Elements of Design –Sight Distance (PSD)	GB 3.2.4	
	Oct 15	Highway Alignment - Principles	PHE 3.1	
9	Oct 18	Vertical Alignment I	PHE 3.3	HW08
	Oct 20	Vertical Alignment II		
	Oct 22	Horizontal Alignment I	PHE 3.4	
10	Oct 25	Horizontal Alignment II		
	Oct 27	Practice Problems		
	Oct 29	Project 1		
11	Nov 1	Practice Problems		
	Nov 3	<b>Exam 2</b>		
	Nov 5	Highway Safety – Introduction	THE 5.1	
12	Nov 8	Highway Safety – Safety Effectiveness Evaluation	THE 5.4	HW09
	Nov 10	Highway Safety – Crash Patterns	THE 5.5	
	Nov 12	Highway Safety – Effectiveness of Safety Design Features	THE 5.6	
13	Nov 15	Traffic Control Devices - Introduction	THE 8.1	HW10
	Nov 17	Traffic Control Devices - Warrants	THE 8.3	
	Nov 19	Intersection Control – Signal Timing Terminologies	PHE 7.2	
14	Nov 22	Intersection Control – Phasing and Timing Plan	PHE 7.4	
	Nov 24	<b>Thanksgiving Holiday Break</b>		
	Nov 26	<b>Thanksgiving Holiday Break</b>		
15	Nov 29	Analysis of Traffic at Signalized Intersections	PHE 7.5	
	Dec 1	Practice Problems		
	Dec 3	Project Presentation		
16	Dec 6	<b>Final Exam @ 10:30 am – 12:30 pm</b>		

## 14: End Notes

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<sup>1</sup> [angelo.blackboard.com](http://angelo.blackboard.com)

<sup>2</sup> <https://www.angelo.edu/content/files/14197-op-1011-grading-procedures>

<sup>3</sup> <http://www.angelo.edu/student-handbook/>

<sup>4</sup> <https://www.angelo.edu/academics/catalog/>

<sup>5</sup> <https://www.angelo.edu/current-students/disability-services/>

<sup>6</sup> <https://www.angelo.edu/incident-form>

<sup>7</sup> <https://www.angelo.edu/title-ix>

<sup>8</sup> <http://www.angelo.edu/content/files/14206-op-1019-student-absence-for-observance-of>

<sup>9</sup> <https://www.angelo.edu/covid-19/>

<sup>10</sup> <http://www.angelo.edu/student-handbook/community-policies/academic-integrity.php>

<sup>11</sup> [http://www.angelo.edu/dept/writing\\_center/academic\\_honesty.php](http://www.angelo.edu/dept/writing_center/academic_honesty.php)