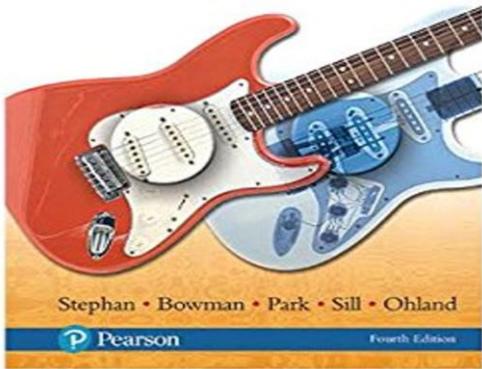


STUDENT VALUE EDITION

**Thinking Like  
An Engineer** *An Active  
Learning  
Approach*



**SOUTH PLAINS COLLEGE**

Department of Math & Engg

Fall 2022

**ENGR 1201-INTRO TO ENGG**

**Dr. Krams**

## Table of Contents

Department.....	1
Course Number .....	1
Course Title.....	1
Course Description.....	1
Prerequisite .....	1
Student Learning Outcomes.....	2
Attendance Policy .....	2
Student Code of Conduct Policy.....	3
Diversity Statement.....	3
Disability Statement.....	3
Title IX Pregnancy Accommodations Statement.....	3
Campus Concealed Carry .....	3
SPC Bookstore Price Match Guarantee Policy .....	4
HOMEWORK & LAB ASSIGNMENTS .....	5
COURSE PURPOSE.....	6
COURSE OUTCOMES:.....	6
Course Outline .....	7

### **ENGR 1201 – INTRODUCTION TO ENGINEERING** **South Plains College**

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**Department:** Mathematics, Engineering, and Computer Science

**Discipline:** Engineering

**Course Number:** ENGR 1201

**Course Title:** Introduction to Engineering

**Campuses:** Levelland

**Course Description:** An introduction to the engineering profession with emphasis on technical communication and team-based engineering design.

**Prerequisite:** Successful completion with a grade of 'C' or better in MATH 1314

**Credit:** 2 **Lecture:** 2 **Lab:** 2

**Supplies:** Please see the instructor's course information sheet for specific supplies.

**This course partially satisfies a Core Curriculum Requirement:** None

**Core Curriculum Objectives addressed:**

- **Communications skills**—to include effective written, oral and visual communication
- **Critical thinking skills**—to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
- **Empirical and quantitative competency skills**—to manipulate and analyze numerical data or observable facts resulting in informed conclusions

**Student Learning Outcomes:** Upon completion of this course and receiving a passing grade, the student will be able to:

1. Describe the engineering profession and engineering ethics, including professional practice and licensure.
2. Use technical communication skills to explain the analysis and results of introductory laboratory exercises in engineering and computer science.
3. Explain the engineering analysis and design process.
4. Analyze data collected during laboratory exercises designed to expose students to the different engineering disciplines.
5. Describe the impact engineering has had on the modern world.
6. As part of a team, design a simple engineering device, write a design report, and present the design.
7. Demonstrate computer literacy.

**Student Learning Outcomes Assessment:** A pre- and post-test questions will be used to determine the extent of improvement that the students have gained during the semester

**Attendance Policy:** Attendance and effort are the most important activities for success in this course. Records of your attendance are maintained throughout the semester. Five (5) absences, **for any reason**, are allotted to the student for the semester. Tardies count as one-half (1/2) of an absence. Tardies will be applied for consistently being late to class, as deemed by the instructor and leaving class early. If this number is exceeded, the instructor has the right to drop you with a grade of F or an X, depending on their discretion.

Plagiarism violations include, but are not limited to, the following:

1. Turning in a paper that has been purchased, borrowed, or downloaded from another student, an online term paper site, or a mail order term paper mill;
2. Cutting and pasting together information from books, articles, other papers, or online sites without providing proper documentation;
3. Using direct quotations (three or more words) from a source without showing them to be direct quotations and citing them; or
4. Missing in-text citations.

Cheating violations include, but are not limited to, the following:

1. Obtaining an examination by stealing or collusion;
2. Discovering the content of an examination before it is given;

3. Using an unauthorized source of information (notes, textbook, text messaging, internet, apps) during an examination, quiz, or homework assignment;
4. Entering an office or building to obtain an unfair advantage;
5. Taking an examination for another;
6. Altering grade records;
7. Copying another's work during an examination or on a homework assignment;
8. Rewriting another student's work in Peer Editing so that the writing is no longer the original student's;
9. Taking pictures of a test, test answers, or someone else's paper.

**Student Code of Conduct Policy:** Any successful learning experience requires mutual respect on the part of the student and the instructor. Neither instructor nor student should be subject to others' behavior that is rude, disruptive, intimidating, aggressive, or demeaning. Student conduct that disrupts the learning process or is deemed disrespectful or threatening shall not be tolerated and may lead to disciplinary action and/or removal from class.

**Diversity Statement:** In this class, the teacher will establish and support an environment that values and nurtures individual and group differences and encourages engagement and interaction. Understanding and respecting multiple experiences and perspectives will serve to challenge and stimulate all of us to learn about others, about the larger world and about ourselves. By promoting diversity and intellectual exchange, we will not only mirror society as it is, but also model society as it should and can be.

**Disability Statement:** Students with disabilities, including but not limited to physical, psychiatric, or learning disabilities, who wish to request accommodations in this class should notify the Disability Services Office early in the semester so that the appropriate arrangements may be made. In accordance with federal law, a student requesting accommodations must provide acceptable documentation of his/her disability to the Disability Services Office. For more information, call or visit the Disability Services Office at Levelland (Student Health & Wellness Office) 806-716-2577, Reese Center (Building 8) 806-716-4675, or Plainview Center (Main Office) 806-716-4302 or 806-296-9611.

**Nondiscrimination Policy:** South Plains College does not discriminate on the basis of race, color, national origin, sex, disability or age in its programs and activities. The following person has been designated to handle inquiries regarding the non-discrimination policies: Vice President for Student Affairs, South Plains College, 1401 College Avenue, Box 5, Levelland, TX 79336. Phone number 806-716-2360.

**Title IX Pregnancy Accommodations Statement:** If you are pregnant, or have given birth within six months, Under Title IX you have a right to reasonable accommodations to help continue your education. To [activate](#) accommodations you must submit a Title IX pregnancy accommodations request, along with specific medical documentation, to the Director of Health and Wellness. Once approved, notification will be sent to the student and instructors. It is the student's responsibility to work with the instructor to arrange accommodations. Contact the Director of Health and Wellness at 806-716-2362 or [email cgilster@southplainscollege.edu](mailto:cgilster@southplainscollege.edu) for assistance.

**Campus Concealed Carry:** Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in South Plains College buildings

only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and South Plains College policy, license holders may not carry a concealed handgun in restricted locations. For a list of locations and Frequently Asked Questions, please refer to the Campus Carry page at: <http://www.southplainscollege.edu/campuscarry.php>

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all South Plains College campuses. Report violations to the College Police Department at 806-716-2396 or 9-1-1.

**SPC Bookstore Price Match Guarantee Policy:** If you find a lower price on a textbook, the South Plains College bookstore will match that price. The difference will be given to the student on a bookstore gift certificate! The gift certificate can be spent on anything in the store.

If students have already purchased textbooks and then find a better price later, the South Plains College bookstore will price match through the first week of the semester. The student must have a copy of the receipt and the book has to be in stock at the competition at the time of the price match.

The South Plains College bookstore will happily price match BN.com & books on Amazon noted as *ships from and sold by Amazon.com*. Online marketplaces such as *Other Sellers* on Amazon, Amazon's Warehouse Deals, *fulfilled by Amazon*, BN.com Marketplace, and peer-to-peer pricing are not eligible. They will price match the exact textbook, in the same edition and format, including all accompanying materials, like workbooks and CDs.

A textbook is only eligible for price match if it is in stock on a competitor's website at time of the price match request. Additional membership discounts and offers cannot be applied to the student's refund.

Price matching is only available on in-store purchases. Digital books, access codes sold via publisher sites, rentals and special orders are not eligible. Only one price match per title per customer is allowed.

Note: The instructor reserves the right to modify the course syllabus and policies, as well as notify students of any changes, at any point during the semester.

**Professor:** Dr.Ramesh Krishnan (alias: Krams)

**Office:** AG 108 **PHONE:** (806) 894-9611 x 2698

**Email:** [rkrishnan@southplainscollege.edu](mailto:rkrishnan@southplainscollege.edu)

**Office Hours:** **MW:** 10:20 – 11:00am ; 12:15 – 2:30pm; Fri 8:00 – 10:00 am

The Faculty will be at his office at AG108 only on Mondays and Tuesdays.

The rest of the days will be virtual office hours. Emails sent after noon on Fridays will be responded to by the end of the day on Monday.

**Class Times:** **The first class of the week will meet at the scheduled time FACE TO FACE (in person).**

**The second class of the week will meet online through BLACKBOARD COLLABORATE ULTRA. The students will watch a recorded lecture unless notified by the faculty of a live lecture online.**

Should the students miss the class due to COVID, the lecture recordings will be made available upon request via blackboard. On the course session look for the hamburger menu to get your recordings.

**Textbook:** Thinking Like An Engineer, Stephan, Bowman et al., 4<sup>th</sup> edition, Pearson Publishing.

**GRADING:** Grades in the course will be based on the following components:

• Exams	(50%)	$A \geq 90$
• Projects	(20%)	$80 \leq B < 90$
• Homework	(15%)	$70 \leq C < 80$
• Lab Work	(15%)	$60 \leq D < 70$
		$F < 60$

**TOTAL 100%**

**PS: NO MAKE-UP** exams will be given. If you miss **one**, the final exam will count twice.

### **MATERIAL REQUIREMENTS**

All students are required to have a reliable machine, reliable internet, and a good web camera.

The exams, if and when necessary, will be conducted through zoom. The students will be required to upload their exams on blackboard. This can be done using the notes app on iphone or camscanner app (free) on either iOS or Android.

### **COURSE DESCRIPTION**

Introduction to the various engineering disciplines including familiarization with the relevant engineering sciences, computer analysis tools and techniques, discussion of professionalism and ethics, and experiences in team design projects.

### **HOMEWORK & LAB ASSIGNMENTS**

All lab assignments are posted on the blackboard on the college website at [www.southplainscollege.edu](http://www.southplainscollege.edu). All lab work should be emailed to my email at [rkrishnan@southplainscollege.edu](mailto:rkrishnan@southplainscollege.edu) within one day of the assigned date. Please do not turn in any late labs as it will not be graded.

All homework assignments are done online at [www.pearsonmylabandmastering.com](http://www.pearsonmylabandmastering.com)

Steps to follow are:

1. Purchase access code (books bought at the bookstore come with the code)
2. Go to the [www.pearsonmylabandmastering.com](http://www.pearsonmylabandmastering.com) and set up your user id and pw
3. Enroll in your course using the id: “**krishnan76315**”

Assignments with their due dates will be listed. No extensions on due dates for the homework assignments will be allowed.

### **COURSE PURPOSE**

This course is designed to develop the motivation, study habits, and problem solving skills necessary for success as a freshman engineering student. Students are introduced to the opportunities and challenges offered by a career in engineering. They also gain experience in the application of basic computer tools (e.g., Excel and MATLAB) to analyses typical of engineering. Finally, students develop an understanding and appreciation of the design process and the open-ended problems found in the practice of engineering.

### **COURSE OUTCOMES:**

Upon completion of this course, students should have:

1. An elementary knowledge of the disciplines in engineering, especially the undergraduate programs and extracurricular opportunities available
2. A basic understanding of and experience in the steps and techniques of engineering design
3. Emerging skills in written and/or oral communication related to engineering design
4. Introductory skills in teamwork with peers
5. Preliminary development of the habits of mind that engineering study and practice require
6. Summarize and give examples of the ethical and professional issues characteristic of an engineering career
7. Apply Microsoft Excel and Mathworks MATLAB to engineering analyses\* (Time permitting)

<b>Course Outline</b>		
This schedule is tentative and subjective to change. Changes will be announced in class.		
<b>Week</b>	<b>Date</b>	<b>Topics and Sections Covered</b>
<b>1</b>	8/29, Mon	Introduction, Form Teams for Project, Project 1 guidelines
	8/31, Wed	Chapter 1
<b>2</b>	9/5, Mon	Chapter 1
	9/7, Wed	Chapter 2
<b>3</b>	9/12, Mon	Project #1
	9/14, Wed	Lab 1
<b>4</b>	9/19, Mon	Project 1 feedback, Project 2 Discussion
	9/21, Wed	Chapter 3
<b>5</b>	9/26, Mon	Chapter 5
	9/28, Wed	Chapter 5
<b>6</b>	10/3, Mon	Chapter 5
	10/5, Wed	Chapter 7
<b>7</b>	10/10, Mon	Chapter 7
	10/12, Wed	Chapter 7
<b>8</b>	10/17, Mon	Exam 1
	10/19, Wed	Introduce Excel
<b>9</b>	10/24, Mon	Chapter 8
	10/26, Wed	Lab 2
<b>10</b>	10/31, Mon	Chapter 8
	11/2, Wed	Lab 3
<b>11</b>	11/7, Mon	Chapter 8
	11/9, Wed	Lab 4
<b>12</b>	11/14, Mon	Chapter 8
	11/16, Wed	Lab 5
<b>13</b>	11/21, Mon	Matlab
	11/23, Wed	Lab 6, Thanksgiving Break
<b>14</b>	11/28, Mon	Matlab
	11/30, Wed	Introduction to world problems
<b>15</b>	12/5&12/7	Finals Review