

UNIV 1301
Foundations of Engineering
CRN 18196
Fall 2019
Draft Syllabus

F 9:00 – 11:50 AM

Miner's Hall 201



As an engineer, I pledge to practice integrity and fair dealing, tolerance and respect, and to uphold devotion to the standards and dignity of my profession. I will always be conscious that my skill carries with it the obligation to serve humanity by making the best use of the Earth's precious wealth.

A first degree-course – creating the foundation – success through practice-based education

UNIV 1301
Foundations of Engineering
CRN 18186
Fall 2019 Draft Syllabus
TR 9:00 – 10:20 AM
C 101

*Making a Difference
- Being an Engineer –
Life in the 21st Century*

[FOUNDATIONS of ENGINEERING
for
THE PROBLEM SOLVER](#)
(Click on the above)



WELCOME TO OUR COURSE! We are glad you are here! We look forward to the semester, academic year, and degree completion ahead. Thanks for being in our class. Let's get started. What is a Syllabus? It defines our goals (our purpose for undertaking this journey and working together), outcomes (what we want to achieve by the end of the course), and objectives (what we are wanting to achieve in 5-years' time). And then we share details you need to know to be successful in your course.

What is it that we are engineering? Your education!

Education is in some real sense the penultimate creative process in our lives. It is a personal engineering design and production process. It is artistry and science entwined in making magic. And you, new colleagues, (if you work hard and persevere) are headed to be the magicians of the 21st Century! **Engineering, Creativity, Leadership and Inventology are themes of this class.**

The class is about you changing your attitudes, which lead to behaviors, which become habits - which is who you are. We want to know what you think and how you know what you think. What do you think? Questions and possible answers? Problems and possible solutions. This is the essence of what it feels and sounds like to do Engineering! Fun!!!!

Visualize and then act, taking control of your engineering (and whole) education from this new beginning forward. So then, being entrepreneurial, innovative and doing leadership in engineering is about you making the process of advancing your engineering education. You will get out of this course what you put into it – and your UTEP Edge-opportunities will advance according to what you put into them!

Integrity and authenticity and autonomy: we will visit these concepts in our mind's eye. Learning engineering is a way of being, as opposed to a method, in actuality. If you can do this you will begin to achieve leadership development in profound ways. You are going to CRE@TE YOUR FUTURE! **Again, welcome to our course.** Come with an open mind. Be prepared to change your whole way of thinking. Then go on to be successful sustainably! To be effective, it will take three things: ability, awareness and commitment.



Your Course Teaching Team:

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R 4 – 5 PM, and Fr 12 – 1 PM, and 3:00 – 4:30 PM
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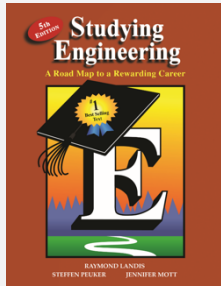
UTEP College of Engineering Student Orgs
<https://www.utep.edu/engineering/Student%20Organizations/index.html>

Engineering Edge Advising Office:

Linda Vera lsvera@utep.edu Office: E226, 747-6779
Patricia Mendoza pamendoza@utep.edu Office: E226, 747-8684

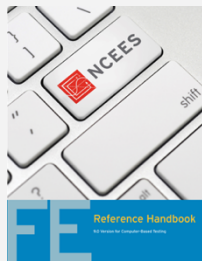
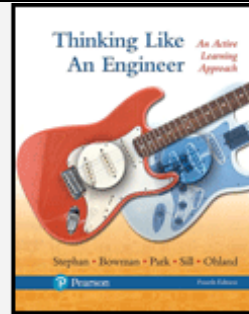
Desired / Required Class Text Resources:

Access to “Studying Engineering 5th Edition” and “Borders” 8th Edition is required.
You will need access to “Inventology: How We Dream Up Things That Change the World.”
Please note that we will use materials from a variety of texts. Here below are key texts:



Studying Engineering:
Road Map to a Rewarding Career
5th Edition
 Raymond B. Landis
 Cost
 UTEP Bookstore (Softcover): \$29.25
 ISBN: 9780979348723
 Publisher: Discovery Press
 Format: Paperback
Access to this is the required for this course

Elizabeth Stephan, David Bowman, William Park,
 Benjamin Sill, and Mathew Ohland
 It is titled:
Thinking Like an Engineer
An Active Learning Approach
 Cost: 110.94
 Publisher Details: Pearson 2017



The **FE Supplied-Reference Handbook** is the only reference material that may be used during the Fundamentals of Engineering (FE) exam. You should study and become familiar with the contents throughout the 6 ± ? years of your undergraduate engineering education.

The handbook is available from the [NCEES](http://www.ncees.org).
 Or from other places (Use: NCEES9)

We will often refer to the content of the handbook during our class process. The student who is successful is often distinguished by their use of the handbook and their use of a wide range of reference resources. Will you take the time to find, review and refer / study the handbook?

National Council of Examiners for Engineers and Surveyors Handbook

An important and valuable reference for you is the NCEES FE Supplied-Reference Handbook. The National Council of Examiners for Engineers and Surveyors (NCEES) offers the Fundamentals of Engineering (FE) Supplied-Reference Handbook, 7th Edition (© 2006), in its entirety as a PDF file that may be downloaded free of charge. A bound copy may also be purchased from NCEES.

The rationale for your getting hold of the reference handbook is that you can familiarize yourself with material RELATED TO YOUR CLASSES as well as seeing what is ahead (and possibly what you have left to learn about!).

The reference handbook covers the key fundamental subjects used in professional engineering practice, including: mathematics, chemistry, physics, statics, dynamics, thermodynamics, fluids, heat transfer, computer technology, engineering economy, ethics, electric circuits and power. It also contains summaries of content in disciplines.

You can use the handbook as a desk reference, when you study.
 What was that word? **STUDY!** Great word! And actions speak louder than words! ☺

<p>We will also use core content from the text: Becoming a MASTER STUDENT David Ellis Publisher: 16th Edition or later Houghton Mifflin You are the focus of the book and the course. You will be acquiring the tools that will help you achieve your academic, personal, and career goals. Along the way you will discover a great deal about yourself</p>	
	<p>We will also refer to the text by:</p> <p>Engineering Your Future nth Edition Authors: Gomez, Oakes, Leone Hardcover Cost: \$82.99 794 pages ISBN: 978-1-881018-87-2</p>
<p>Inventology How We Dream Up Things That Change the World Author: Pagan Kennedy Houghton Mifflin 270 pages ISBN: 9780544811928 Access to this text is required for this course</p>	
	<p>How to Fly a Horse: The Secret History of Creation, Invention and Discovery Author: Kevin Ashton Anchor Books 314 pages ISBN: 978-0-8041-7006-2</p>
<p>Borders - Crossing Into Your Future 8th Edition Cost UTEP Bookstore (Softcover): \$25.25 Author: UTEP ISBN: 9781533911827 Hayden McNeil Pub, Inc Format: Paperback Access to this text is required for this course</p>	

Other materials needed:

One notebook or 3-ring binder for filing readings/handouts, class notes, assignments.
Additionally, each student will need a soft or hard copy journal for hard-copy journal entries.
Either or both the above may be collected upon notified request by the teaching team at any time during the semester for review and grading (see homework, quizzes, attendance, in this syllabus for context).

Our Class Learning Environment:

Our course is project-, problem- and team-based; thus, your commitment to and active participation in a team is critical for the success of each of the team-based projects in which you will be a member. Each team member will assume an expected level of responsibility and will be held accountable for his or her individual and group tasks and deliverables. In addition to these projects, you will also engage in various activities to effectively integrate you into engineering student life. Your active participation in all activities will ensure your success in this course.

Professional Responsibilities:

On Attendance:

As in all the courses you will take as a college student, your attendance is a necessary and critical component of our course. This is particularly important because our course is team-based. In the event of an absence, you need to check with one or two classmates to find out what you missed. Also, you may evaluate your peers at the end of the semester (and they will evaluate you) to determine your contribution to their learning in our course.

On Participation:

As pre-professionals in engineering, you should exhibit traits worthy of the profession, such as active participation and listening, questioning and clarification, summarizing others' ideas, trustworthiness/trustfulness, integrity, and respect. Participation points in the course will be evaluated on the following: activity in class discussions and project assignments; assignments/discussions; critical analysis/intellectual growth; collegiality; and preparedness.

On Use of Wireless Devices:

You can use wireless devices in our classroom. Be respectful of others, and yourself.

On Community Service:

Students are expected to volunteer a minimum of 15 hours with a community or university organization that benefits others. Documentation is required for gaining credit for this portion of your grade. (Beyond-the-Class Engagement). Student organizations are one example; get involved: "You will get out of life what you put into it."

Projects:

Project work is central to engineering proficiency. Projects will be team based: you are responsible as a team and are also individually accountable. More information and deadlines about the projects will be given beginning during the second week of classes.

Course Description:

"Foundations of Engineering" is the **Gateway** to your engineering education at the University of Texas at El Paso and to the exciting profession of engineering. You will have the opportunity to make meaningful connections to the magic of engineering and to contribute to the UTEP legacy of leadership in developing outstanding students and career professionals. The Foundations **you** build will enable you to be a successful student and a successful engineer!

The foundations are tools for developing:

- academic skills and personal growth skills
- engineering skills in critical thinking and problem solving
- mathematical tools and applications for engineering
- connections with the engineering profession and opportunities to appreciate the world of engineering

At the end of the semester you will:

- Develop and apply elements of leadership through effective individual participation and meaningful team collaboration.
- Examine your roles and responsibilities crucial for your success in college and beyond.
- Identify, assess, and build on your strengths and experiences to develop academic and transitional strategies necessary for success in your academic, career, and life goals.
- Engage in research and critical thinking activities that demonstrate your ability to effectively integrate your learning within, across, and beyond academic settings
- Engage in campus and community activities to increase your sense of academic and social belonging.

The Center for Accommodations and Support Services (CASS):

Students requiring unique accommodations must contact the CASS office and provide their instructor with the proper documentation at the beginning of the semester. CASS office may be contacted at 747-5148, cass@utep.edu or go to Room 106 Union East Building.

Harassment:

Please be aware that harassment is unacceptable in the classroom. Jokes, comments of sexual nature, as well as racist comments will not be tolerated. The student that violates this rule will be sent to the Dean of students for disciplinary action.

Grading:

Projects: 30% Project work is central to engineering proficiency. Projects will be individual and team based: you are responsible as a team and are also individually accountable. Project work includes a mid-semester and final examination. More information and deadlines about the projects will proceed as we begin undertaking them, beginning in the second week of classes.

Project areas:

Projects 1: Reflective Professional Practice

Learn Reflective Practice, advanced through Journaling plus Portfolio Development.

Projects 2: Design and Creativity

Design, creativity and innovation: Learn Coach Grow Persist plus Continuous Quality Improvement (CQI) – these are keys to success in engineering and life.

Projects 3: Innovation and Invention

Learn Inventology, Advanced Design Principles and Creative Practices – software tools, design, and presentation with at UNIV research showcase.

Project Status and Presentation Reporting: Included in your projects, is an important part of demonstrating and sharing achievement. Any and all members of a team can be called upon to present at any time.

Homework: 20% The homework must be turned in at the beginning of the class by the due date. As part of your homework, you will be required to attend mentoring sessions and attend some UTEP events.

Quizzes: 20% The quizzes will be given before, or at the beginning of the class. No make-up quiz will be given and no late work will be accepted. **Quizzes will include class participation and activities:**

Participation and Activities: There will be many in class group and individual activities. In order to get a grade for them you must participate in the activity. There will be no make up for any of the class activities. **Mentoring:** You will be meeting, on a one-to-one basis, with your teaching team at least once during the semester. Each meeting will count as one homework.

Surveys: Surveys completed during or beyond class and at the end-of-semester survey is considered important participation is important and it will count as a homework and class activity.

Attendance: Attendance is obviously required for class participation ☺ You are required to come to class and be on time. Attendance is very important since during class you will be given the tools needed to successfully complete this class. You must contact the teaching team if you know you will be absent either by phone or email. It is your responsibility to get all the lecture notes, assignments, and hand-outs you missed. An excused absence will only be given as described in the undergraduate catalog. If you want to be dropped after the automatic W deadline, you must contact your professor or peer leader. Although you can be dropped for excessive absences (less than 75% attendance - 8 missed lectures), do not assume that if you stop showing up to class, you will be dropped.

Course Grading Scale:

100%-90%	A
89%-80%	B
79%-70%	C
69%-60%	D
59%- 0%	F

Missing Assignments and Exams:

- You will be allowed no make-up homework assignments during the course of the semester.
- Late participation work is accepted with a 50-% grade credit reduction.
- No project experiences, including mid-term and final examination, make-ups.

Academic Conduct:

Academic dishonesty will not be tolerated. You must submit your work only. If you are found to be cheating or plagiarizing, you will be subject to disciplinary action, per UTEP catalog policy (<http://www.utep.edu/dos/acadint.htm>).

Dropping the Class: Students may drop the class and receive a W any time prior to UTEP’s published final drop deadline. Please consult the Teaching Team prior to dropping.

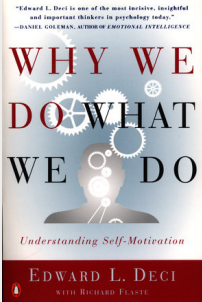
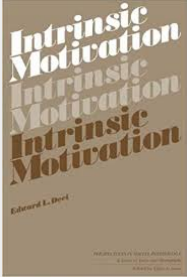
About Getting Started in Our Class:

There are three keys to innovation. Let’s think about your success in terms of these keystones:

Key #1: Think beyond the relatively conventional paradigms and examine traditional constraints using nontraditional thinking. You have to be able to go outside your own frame of reference and find another way to look at a problem. Albert Einstein (?) said: *“To me stupidity is simply doing the same thing I have always done and expecting the results to change. I have to think differently.”* This perhaps got Einstein thinking about relativity (and frames of reference)? Although, being a non-traditional thinker, you may [go here for reference](#).

Key #2: Develop the ability to discern the important issues and to keep your goal in view. [This sounds a little like Saint Francis of Assisi and his famous prayer]. The following commentary of Robert Burney is relevant here: *“We learned about life as children and it is necessary to change the way we intellectually view life in order to stop being the victim of old ways (in other words we need to become CRITICAL THINKERS).* By looking at, becoming conscious of, our attitudes, definitions, and perspectives, we can start discerning what works for us and what does not work. We can then start making choices about whether our intellectual view of life is serving us - or if it is setting us up to be victims because we are expecting life to be something that it is not. *‘In order to stop giving our power away, to stop reacting out of our ‘inner children self’, to stop setting ourselves up to be victims, so that we can start learning to trust and love ourselves, we need to begin to practice discernment.’* Discernment is then thinking critically or as [Burney says](#): “Having the eyes to see, and the ears to hear - and the ability to feel the emotional energy that is truth.” See how important ethics is in Engineering profession?

Key #3: Success comes through authenticity and autonomy. According to Edward Deci, we cannot become clear on what we are seeing or hearing if we are reacting to emotional wounds that we have not been willing/able to feel and subconscious attitudes that we have not been willing/able to look at. We have to relearn how to learn. We need to recognized that we are intrinsically motivated. Failure to manage our own determination and drive is not an option at university. Our focus is to learn to grow our authenticity and autonomy. Human motivation is largely intrinsic, and aspects of this motivation can be divided into: **autonomy, mastery, and purpose** (according to Daniel Pink). See the below sources for further insights.

<p style="text-align: center;">Why We Do What We Do Edward Deci and Richard Flaste 1995 What motivates us as students, employees, and individuals? ISBN: 9780399140471 240 pages.</p>	
	<p style="text-align: center;">Edward Deci and Richard Ryan Intrinsic Motivation Published in 1975 Cost: \$109.00 ISBN 978-1-4613-4446-9</p>

<p>Drive Daniel Pink 2009 256 pages OCLC: 311778265</p> <p>See also: <i>A Whole New Mind</i></p>	
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Subject to Change:

The teaching team reserves the right to make any changes to the syllabus during the term of the semester. Any changes made to the syllabus will be shared by the team ahead of the class period.

Note Important Fall 2019 Dates:

Labor Day – No classes	September 2
Census Day	September 11
Homecoming Week	September 30-October 6
Drop/Withdrawal deadline	November 1
Thanksgiving – No classes	November 28 – 29
Dead Day	December 6
Final Exams	December 9 - 13
Final Grades Posted	Dec 19

Also, re dates and topics, please note that a Tentative Course Lecture Calendar is provided separately for your information.

Course Management System:

The UTEP Blackboard App is great for course announcements, emails, and discussions. However, a desktop or laptop computer is recommended for downloading and/or reading course materials, uploading documents or submitting assignments.

Again, we welcome you to UTEP and to the Fall 2019 Semester and hope that through your ongoing efforts you will learn as much as you can. Your grades will follow! (See the *Master Student* text included in texts listing and attributes therein).

V9. Updated 2019-08-25