Notice of Potential Changes to Syllabus:

The information contained in this course syllabus is subject to change without notice. Students are expected to be aware of any additional course policies presented by the instructor(s) during the course. Students should check the EF141 website daily to view all current information related to course policy and content.

Course and Schedule

EF 141: Introduction to Physics and Modeling for Engineers I (4 credit hours)

An introduction to physics concepts for engineering, ways to model these concepts using numerical methods, and skills and practices necessary for a successful engineering career. Topics include vectors, kinematics, Newton's Laws, forces, numerical methods applications for modeling highlighted physics concepts, and an introduction to the university, exploration of engineering disciplines, and personal, academic, and professional skills development. Skills learned will include the ability to apply physics concepts to real-world problems, ability to use programming software to model physics concepts, and the ability to recognize and practice concepts related to successful engineering practice such as time management and a working knowledge of tools and strategies valuable to engineering study.

- **Satisfies Volunteer Core Requirement**: (EI)
- *Grading Restriction*: Letter grade only.
- *(RE) Corequisite(s)*: MATH 131.
- *Comment(s)*: Students who receive any grade in EF 151* or EF 157* may not register for EF 141 without instructor permission.
- *Registration Restriction(s)*: Majors in the College of Engineering or Biosystems Engineering.

This course, conducted in a flipped classroom model, will emphasize a consistent problem solving methodology and skills for close-ended problems. We will begin our study of fundamental engineering physics principles and will also apply tools of problem-solving, such as calculators and spreadsheets, to help solve more complex problems. As engineers in industry depend on team problem solving and communication skills to effectively do their job, we will work in teams to complete small projects. Throughout the semester we will focus on developing both professional and personal skills that engineers utilize in professional practice.

Course Section Meeting Times

Section	**Lecture (MWF)**	**Labs (TR)**
#	Time, Location	Time, Location
1	1:50pm - 2:40pm, ZEC 370	11:20 am - 12:35pm, ZEC 270
2	1:50pm - 2:40pm, ZEC 378	12:55pm - 2:10pm, ZEC 270
3	1:50pm - 2:40pm, ZEC 371	2:30pm - 3:45pm, ZEC 270
4	1:50pm - 2:40pm, ZEC 377	4:05pm - 5:20pm, ZEC 270
5	12:40pm - 1:30pm, ZEC 370	11:20 am - 12:35pm, ZEC 278
6	12:40pm - 1:30pm, ZEC 371	12:55pm - 2:10pm, ZEC 278
7	12:40pm - 1:30pm, ZEC 377	2:30pm - 3:45pm, ZEC 278
8	12:40pm - 1:30pm, ZEC 378	4:05pm - 5:20pm, ZEC 278
9	11:30am - 12:20pm, ZEC 378	9:45am - 11:00am, ZEC 278

EF141 Course Syllabus

Course Organization

This class meets every day of the week: 50 min on MWF (Mon-Wed-Fri) and 75 min on TR (Tue-Thur). Students in the class are split between 3 different MWF sections and 9 different TR sections. It's imperitive that you attend at the time and place indicated on your schedule. Some of the students in your MWF section will not be in your TR section and vice versa.

This class will be structured differently than you might be accustomed to. Below we try and breakdown the different aspects of the class.

Calendar

You can use the calendar to see an overview of the entire semester and the due dates for some of the assignments, however on the left-hand menu the Learning Pages tab will have a more indepth description of each day in the module.

Learning Pages

When you click on the Learning Pages tab of the left hand menu you will see the current module's days of class which includes: - M W F : Learning days - T R : Lab days

There are a set of learning pages for each MWF class. These pages and the learning questions are to be completed before class. They consist of reading, videos, short answer questions (a.k.a. learning exercises), feedback, supplementary information, and a few other random things. You will start on an overview page and read through the content and watch any associated videos, answering questions as you work through the material. You should work the daily exercise problems along with the videos (which will have different numbers than you) and turn your work in to the provided upload link. End your pre-class work on the feedback page (pencil icon, detailed below). When working through the learning pages you will receive a grade based on your completion of the pages and feedback (Progress, represented by P circle) and answers to the short answer questions (Quiz, represented by Q circle).

Class time

MWF Working Class Days

On Monday, Wednesday, and Friday you will come to class ready and prepared to work where we will:

1. Review the important concepts from the learning pages
2. Cover the topic(s) requested from the feedback form as needing more explination
3. Complete a quiz and/or in-class activity (individual or group submission)
4. Spend most of our time working the Practice problems for the day

Class times on M, W, and F will mostly be work time with short presentations and activities. You are expected to be in class and if you finish your work early to start working on the learning pages for the next class. Use this time to get your questions answered by the Instructor(s), GTAs, and UGAs present to support your learning.

TR Lab Days

On Tuesday and Thursday, we will be doing hands-on activities, watching demonstrations, and engaging with Excel and your calculator to problem solve. These days will be collaborative work days where you will be assigned a group to work with for each module. You will be expected to set expectations within your group about how you can best work together to complete the activities. Only one person in the team will need to submit the assignments on lab days.

Practice Questions

These problems are typically done during and after class. They will be due weekly by the end of day indicated in the assignment, usually Physics practice will be DUE Friday and Tools practice on Tuesday. However, our goal is to have you finish these assignments in class Monday or Wednesday so that you DO NOT have any homework. We will have time on Friday to answer any questions on Practice assignments if you are stuck so please bring those questions to class. The

Practice assignments are graded, and are to be written out or completed in Excel and uplaoded to the provided link in the assignment.

Course Objectives

- Develop physics fundamentals to apply in engineering problem solving
- Recognize the relationship between mathematical models and physical systems
- Apply tools, such as calculators and spreadsheets, to solve physics engineering problems
- Identify elements of different engineering disciplines which resonate with us
- Learn, participate in, and practice the engineering design process
- Explore and develop skills to help us grow as both engineers and students

Instructor and Course Contact Information

Instructors	**Lab GTAs**
Dr. Erin McCave (emccave@utk.edu) Dr. Darren Maczka (dkm@utk.edu)	McKensie Nelms (knelms3@vols.utk.edu) Macayla Dwyer (mdwyer3@vols.utk.edu) Neel Reeves (creeve13@utk.edu)

Engineering Fundamentals	**Main Office Information**
Office Administrator:	Cheryl Huskey (chuskey1@utk.edu)
Office Location:	260 Zeanah Engineering Complex
Office Phone:	865-974-9810

Course Policies

Website

https://efcms.engr.utk.edu/ef141-2022-08 - you must have consistent and reliable access to the web site. The web site contains a calendar of topics, assignments, and dates for exams.

Course Communications

Class-wide announcements will be posted to the [course website].
Time-sensitive class-wide announcements will be sent out via email, but in general EF instructors try to limit the number of emails you all receive because we know you receive a lot from other sources!

You may contact the Instructor or TAs at any time with questions. You can expect to receive an email reply within 24 hours Monday through Friday. In some cases this reply may be to indicate that we do not have an immediate answer to your question and will share the steps we are taking to find one.

Student Hours and Help Sessions

The EF141 Instructors have designated open student hours each week or you can set an appointment with them. See the Instructors/GTAs page for more details on when and how to contact your Instructors and/or GTAs for help!

Further, there is an on-line discussion board to be used throughout the semester. You can find other help available to you using the Help tab for more informaion. This includes the EF Study room, located in 258 ZEC, where you will find help from UTAs and GTAs Monday through Friday.

Materials

- A scientific calculator
- Engineering paper for homework assignments
- A 1" three-ring binder for your EF 141 portfolio

Grading

Weighted Grading Scale

- (30%) Exams
  - Each Module Exam 7%
  - Final Exam 9%
- (10%) Learning Assignments
- (15%) Practice Problem Assignments
- (10%) Team Projects
- (10%) Labs
- (10%) Engagement
- (15%) Professional Development

92	89	86	82	79	76	72	69	66	62
A	A-	B+	B	B-	C+	C	C-	D+	D	F

Grades are rounded, so a 91.5 average would be an A.
A grade of **C-** or better in EF 141 is required in order to take EF 142.

Absence Instructions for this Course

If you find that you have COVID-19, are sick, or in quarantine you are still responsible to all assignments for the course by the original DUE dates, unless an extension has been granted by the instructors of the course through email communication. At the onset of symptoms, quarantine, etc. please email all EF141 instructors immediately and submit a missed class form. This form will be the ONLY way to get your participation grade for that missed class day. You have 24 hours after missing a class to submit your missed class form.

If you are missing a Lab day (Tuesday/Thursday) where data is collected during the lab to be used in calculations, you will receive an email (after the last section of the class for the day) with the necessary data IF you submitted your missed class form.

At the end of the semester, EF141 Instructors will award back up to 6 excused absences unless there are extenuating circumstances agreed upon through communication with the instructors.

Late policy

As much of the content and activities in this course builds on previous work, it is important to stay current with assigned work. Strive to have all previous work completed before coming to the next class meeting, even when the due date allows otherwise.

Late submission policies vary by type of work:

- *Learning (Prep) Assignments*: Answers submitted the night before your scheduled class section will earn a 100%. Answers submitted after the due date will be weighted by a value between 90% and 75% based on how late they are submitted up to the exam for that module. The score will then drop to 50% until the course close date, currently set as the last day of classes.

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- *Practice Problem Assignments* (website driven): These assignments are similar to Learning assignments in that you have multiple attemps to get to the correct answer. To entice you to complete these assignments in class you will receive a 10% bonus for finishing them by midnight on the day they are given. Answer submitted by the DUE date (5th day after release) will receive 100%. Answers submitted after the due date will be weighted by a value between 100% and 75% based on how late they are submitted up to the exam for that module. The score weight will remain at 50% until the close date, currently set as the last day of classes.

- *Lab Feedback Forms*: These forms are to be completed during lab time as you are collecting data, investigating experimental vs. theoretical differences, etc. and are intended to share your immediate reaction to the content and activities in a particular lab, thus after the due date their score weight will drop immediately to 75% until the module exam and then drop to 50% and remain at that value until the close date.

- *Dropbox Assignments*: Because dropbox files must be graded by hand, processing late submissions adds an additional burden on us. A daily penalty will be applied to dropbox files submitted after the due date up to one week. Dropbox files submitted after one week from the due date without prior approval will not be graded.

General Institutional Policies

General Education Natural Sciences Course Objectives

As a course that fulfills the Natural Sciences (NS) requirement of the University of Tennessee's General Education Requirements, it will produce the following outcomes.

1. Students will demonstrate the ability to describe fundamental principles and chief discoveries through appropriate use of the basic vocabulary of a course's discipline.
2. Students will demonstrate the ability to identify the scientific dimensions of contemporary issues.
3. Students will demonstrate the ability to use experimental techniques to answer questions and test hypotheses.

Digital Device Policy

Technology can enhance classroom learning in many ways, but can also be a source of distraction for yourself or others in your class. We encourage the use of technology in the classroom as an aid to learning. There are limits to what can be used in the classroom. The following guidelines should be followed:

- You should not use a digital device that is a distraction to your learning. You are responsible for your learning. You may only use a device to aid in your learning. It is important that you practice self-regulation with your use of technology or digital devices in all learning settings.

- You cannot use a digital device that is a distraction to another person's learning. You share your learning space with many others in our class. At no time should you use a device in a way that is distracting to others. This includes viewing content, sites, or social media that does not pertain to that day's work as well as any type of behavior that is inappropriate or harmful to others in the class. There is a zero tolerance policy in our course as well as at UTK for any behavior that can be interpreted as harrassment or bullying.

- You cannot use a device with communication capability on an exam. For example, while phone, tablet or computer apps are acceptable for use during a regular class day, you cannot use a smartphone calculator app on an exam. You must use a calculator with no communication capabilities.

All other forms of digital device use are acceptable and encouraged in this course, both during class and lab.

Academic Integrity

Each student is responsible for his/her personal integrity in academic life and for adhering to UT's Honor Statement. The Honor Statement reads: "An essential feature of the University of Tennessee, Knoxville is a commitment to maintaining an atmosphere of intellectual integrity and academic honesty. As a student of the university, I pledge that I will neither knowingly give nor receive any inappropriate assistance in academic work, thus affirming my own personal commitment to honor and integrity."

We encourage students to work collaboratively to learn in our course. Appropriate means of collaboration may include meeting collectively to work on assignments. During collective meetings, all members are expected to participate in discussion and contribute to collective understand and dialogue. The following actions are specifically identified as inappropriate:

- Direct copy (in part or in whole) of another class member's assignment or work to turn in as one's own work.
- Direct copy (in part or in whole) of a solution provided by anyone outside of our class. This may include (but is not limited to) previous students, tutors, or solutions gathered from websites like Chegg.
- Posting on a website, like Chegg, to ask for a solution to an assignment or exam in order copy the solution (in part or in whole) for submission.
- Viewing solutions on a website, like Chegg, in order to submit solutions (in part or in whole) as one's own work for assignments or course exams.
- Posting solutions or exam questions to social media, group chat, or other communication means to provide the questions or solutions for others in the course.
- Collaboration in ANY WAY during a course exam.
- Copying written work to submit as one's own work (in part or in whole) for written project reports.

We take inappropriate or unethical work in this course VERY seriously. Inappropriate or unethical work is unfair to those students in the course who follow academic integrity guidelines. It also shows a lack of character in regards to future practice in the engineering profession. EF faculty and staff are dedicated to ensuring integrity of all work conducted throughout our courses and will pursue all means necessary, in partnership with the Tickle College of Engineering, the Dean of Students, and the Office of Student Conduct and Community Standards to ensure an equitable learning environment.

Course Material Copyright

The instructors of this class own the copyright to the syllabus, handouts, assignments, quizzes, and exams associated with the class. All presentations developed by the instructors, as well as the instructors' lectures, are also protected by copyright, whether these presentations are delivered live in-class, shared through Zoom or other videoconference platforms, or uploaded to a web site.

Sharing any of this material without the written permission of the instructor is a violation of copyright law, and is therefore also a violation of the University's policy on acceptable use of information technology resources (UT policy number IT0110). That policy states that students will not commit copyright infringement, "including file sharing of video, audio, or data without permission from the copyright owner" and that file sharing is a violation of the university's student code of conduct. All such violations will be reported to the Office of Student Conduct and Community Standards.

COVID-19 Guidelines

Masking

With the spread of the Omicron variant of COVID-19, students, faculty, and staff are strongly encouraged to wear masks in classrooms, labs, and for indoor academic events. According to public health authorities, in areas where there is substantial or high COVID transmission, wearing masks in indoor spaces can help reduce transmission of the virus and keep communities healthy. Any individual can choose to wear a mask anywhere on campus, even when it is not

required. The university expects everyone to protect others from the spread of COVID-19 and strongly recommends wearing masks in academic and administrative spaces.

For the most current information on masks, please check the COVID-19 website.

Vaccines

The university recommends that all members of the campus community be vaccinated for their own protection, to prevent disruption to the semester, and to prevent the spread of COVID-19. Vaccination information and appointment signups. The Student Health Center medical staff is available to students to answer questions or discuss concerns about vaccines, and the center provides vaccines free of charge for anyone 18 years or older who would like one.

Sickness or Exposure

If students think they are sick or have been exposed to COVID-19, they should contact the Student Health Center or their preferred health care provider. Students can also contact the university's COVID-19 support team for guidance by filling out the COVID-19 self-isolation form. Students are advised not to attend class in-person if they have tested positive for COVID-19 and are in the isolation period, if they have COVID-19 symptoms and have not been cleared by a medical provider, or if they are an unvaccinated close contact in the quarantine period. The university recommends that students and employees stay home anytime they do not feel well. **If you need to miss class for illness, please contact the EF141 instructors (see the absence policy above).** You can find more information and updates on the UTK Covid-19 Information and Support page.

University Civility Statement

Civility is genuine respect and regard for others: politeness, consideration, tact, good manners, graciousness, cordiality, affability, amiability and courteousness. Civility enhances academic freedom and integrity, and is a prerequisite to the free exchange of ideas and knowledge in the learning community. Our community consists of students, faculty, staff, alumni, and campus visitors. Community members affect each other's well-being and have a shared interest in creating and sustaining an environment where all community members and their points of view are valued and respected. Affirming the value of each member of the university community, the campus asks that all its members adhere to the principles of civility and community adopted by the campus: http://civility.utk.edu/.

Students with Disabilities

The University of Tennessee, Knoxville, is committed to providing an inclusive learning environment for all students. If you anticipate or experience a barrier in this course due to a chronic health condition, a learning, hearing, neurological, mental health, vision, physical, or other kind of disability, or a temporary injury, you are encouraged to contact Student Disability Services (SDS) at 865-974-6087 or sds@utk.edu. An SDS Coordinator will meet with you to develop a plan to ensure you have equitable access to this course. If you are already registered with SDS, please contact your instructor to discuss implementing accommodations included in your course access letter.

Wellness

The Student Counseling Center is the university's primary facility for personal counseling, psychotherapy, and psychological outreach and consultation services. The Center for Health Education and Wellness manages 974-HELP, the distressed student protocol, case management, the Sexual Assault Response Team, and the Threat Assessment Task Force.

Emergency Alert System

The University of Tennessee is committed to providing a safe environment to learn and work. When you are alerted to an emergency, please take appropriate action. Learn more about what to do in an emergency and sign up for UT Alerts. Check the emergency posters near exits and elevators for building specific information. In the event of an emergency,

the course schedule and assignments may be subject to change. If changes to graded activities are required, reasonable adjustments will be made, and you will be responsible for meeting revised deadlines.

Campus Syllabus

https://utk.instructure.com/courses/55015/pages/utk-campus-syllabus-2020-2021