Embry-Riddle Aeronautical University

Department of Physical Sciences

PS 250–Physics for Engineers–III FALL–2018 ERAU 3 – credits

Important Information:

Instructor:	Dr. Muhammad OMER Farooq
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Phone number (office):	386 – 226 – 7994
Office Hours:	MWF 08:00 AM – 11:00 AM and by appointment
Section 04 DB:	MWF 11:00 AM – 11:50 AM in COAS 207
Section 06 DB:	MWF 01:00 PM – 01:50 PM in COAS 207
Section 07 DB:	MWF 02:00 PM – 02:50 PM in COAS 207

Points Distribution:

Table 1: **PS 250–Physics for Engineers–III Points Distribution[1] for Fall–2018**

Assignments	Due	Weightage
Home Work	On an average twice a week in–class[2]	10%
	Mastering Physics HW* Use course ID: farooq38333	10%
Exam–1†	September 21, 2018 (Friday)	20%
Exam–2†	October 24, 2018 (Wednesday)	20%
Exam–3†	November 30, 2018 (Friday)	20%
Final Exam†	December 10, 2018 (Monday)	20%

[1] **The instructor reserves the right to change schedule, points distribution, material covered in each exam, number of in–semester exams, time, place, and dates of exams etc., in special cases. Keep yourself up-to-date with this schedule. You can do that by attending all the lectures, since all the announcements regarding any changes will be made in–class not via e-mail or Canvas ☺.**

[2] **See page# 4—7 of syllabus for detail about the homework.**

† THERE WILL NOT BE ANY MAKEUP FOR IN–SEMESTER AS WELL AS FOR FINAL EXAMS IN ANY SITUATION.

*** Please see page number 9 to get step by step instructions to enroll in Mastering Physics website, in order to complete this part of the course.**

Required Text:

University Physics, 14th Edition by Young and Freedman, available as separate vols. 1, 2, and 3 in paperback, or in combined volumes in hardcover. We will cover the material of vol. 3 in PS–250 that is from chapter # 21 to 32 and then chapter # 37 to 38. I highly recommend you to read the text book. My lectures will support the book, and the book will support my lectures. Alone sitting in lectures is not enough for the complete understanding of complex concepts of physics, as well as to be able to do all homeworks with complete understanding, you have to have a book, and you must read it before and after every lecture.

Course Web Site:

Important course resources such as homeworks, homeworks grades, exam grades, practice public final exam, lecture problems and so on will be posted on the course web site, accessed through Canvas.

Prerequisites:

A good knowledge of geometry, trigonometry, algebra, calculus and calculator is needed. Officially the prerequisites of PS−250 are PS−160 (Physics for Engineers−II) or PS−227, and MA−242 (Calculus and Analytical Geometry − II).

Description:

This course is a calculus-based study of the fundamental principles of classical physics. It is the third course of a three-semester sequence, intended for students of science and engineering and is designed to provide the student with an appropriate background for more advanced physics and engineering course work. Topics of discussion include; electric forces, electric field, Gauss's law, Ohm's law Ampere's law, Faraday's law, Lenz's law, Kirchhoff's' law and Maxwell's equations; electric potential and electrostatic potential energy; capacitance; simple DC circuit theory; magnetic force, magnetic field; inductance; electromagnetic oscillations and wave propagation; Linear accelerators, cyclotrons and select topics in modern physics.

Goals:

The fundamental aim of the course is to provide a rigorous introduction to classical physics at a realistic level of conceptual and mathematical sophistication for students who are concurrently taking a beginning course in calculus. The emphasis is on developing an understanding of the basic physical principles. Problem solving is central to this aim and practical applications are introduced where appropriate.

Learning Outcomes:

Upon the successful completion of the class students will be able to:

1. Describe the interaction of static electric charges, utilizing the concept of electric field and compute the electric field produced by simple charge distributions by direct integration and by employing Gauss's Law.
2. Define electric potential, potential energy, and capacitance, solve related problems.
3. Analyze the behavior of simple direct-current circuits, including resistance-capacitance arrangements.
4. Describe the interaction of moving electric charges utilizing the concept of magnetic field.
5. Describe Gauss' law for magnetism, creation of electric fields from changing magnetic fields (Faraday's Law) and the creation of magnetic fields from changing electric fields (Amperes' Law with displacement current).
6. Solve problems involving electromagnetic induction and motional EMF.
7. Define inductance, and analyze the behavior of resistance-inductance and inductance- capacitance circuits.
8. Describe the interplay of oscillating electric and magnetic fields required for propagating electromagnetic waves.
9. Select Topics in Modern Physics such as Special Relativity and Photoelectric effect.

Determination of Final Letter Grade:

The final letter grade will be assigned according to the following criteria.

Table 2: **PS 250–Physics for Engineers–III Grade Policy[1] for Fall–2018**

90% points or above	A (Superior)
80% — 89.99% points	B (Above Average)
70% — 79.99% points	C (Average)
60% — 69.99% points	D (Below Average)
Under 60% points	F (Failure)

[1] **The instructor reserves the right to change the grading scale in special cases.**

Grading:

Grades will be determined from In–Semester Exams, Final Exam, and Homework as follows:

Table 3: **PS 250–Physics for Engineers–III, Exams and Homework Points Distribution for Fall–2018.**

Task	**Points**	**Tentative Material Covered in Exams (# of Lectures)**	**Place (Time)**
Exam–1 (Sep 21, 2018)	100	Chapters 21—24 (10)	In–class
Exam–2 (Oct 24, 2018)	100	Chapters 25—29 (14)	In–class
Exam–3 (Nov 30, 2018)	100	Chapters 29—32, and 37, 38 (13)	In–class
Final Exam (Dec 10, 2018)	**100**	**Departmental Comprehensive** Chapters 21—38.	**10 : 15 – 12 : 15 PM Place= TBD**
Homework On the average Once a week	Minimum 14 HW each of 100 Points, total Points 1400	**The most important part of the course** You have to understand the home works. [See Page page# 4—7 of this syllabus]	HW will be submitted in–class

Written Homework (W–HW), Exams and their Policies (Fall–2018, PS–250):

In the main PROBLEMS section (NOT the QUESTIONS section), do the assigned homework in University Physics, 14^{th} ed., by Young & Freedman. PLEASE MAKE SURE THAT YOU ARE NOT USING THE "INTERNATIONAL EDITION" or the "SOFT COPY". The homework problems are not in the same order.

- **W–HW–21) Due Date September 5, 2018 (100 Points)**
  Reading the syllabus,
  Chapter # 21 :- 1, 13, 27, 41, 48, 79.
  Practice # 21 – 3, 15, 28, 42, 49, 57, 68, 69, 74.
- **W–HW–22) Due Date September 10, 2018 (100 Points)**
  Chapter # 22 :- 2, 6, 15, 31, 55, 56.
  Practice # 22 – 3, 10, 21, 22, 36, 42.
- **W–HW–23) Due Date September 14, 2018 (100 Points)**
  Chapter # 23 :- 1, 8, 19, 26, 30, 50.
  Practice # 23 – 3, 9, 22, 29, 38, 52, 59. .
- **W–HW–24) Due Date September 19, 2018 (100 Points)** [Photocopy]
  Chapter # 24 :- 4, 14, 23, 37, 59.
  Practice # 24 – 6, 18, 33, 35, 43, 56. .
- **W–HW–25) Due Date September 28, 2018 (100 Points)**
  Chapter # 25 :- 5, 11, 26, 30, 45, 62.
  Practice # 25 – 6, 12, 22, 38, 44, 47, 51, 68.
- **W–HW–26) Due Date October 3, 2018 (100 Points)**
  Chapter # 26 :- 5, 13, 25, 28, 41, 47, 83.
  Practice # 26 – 2, 14, 26, 27, 49, 50, 78.
- **W–HW–27) Due Date October 10, 2018 (100 Points)**
  Chapter # 27 :- 7, 13, 15, 35, 42, 74.
  Practice # 27 :- 1, 12, 16, 37, 43, 47, 56, 69, 73.
- **W–HW–28) Due Date October 17, 2018 (100 Points)**
  Chapter # 28 :- 1, 11, 21, 28, 43, 63.
  Practice # 28 – 3, 9, 12, 14, 19, 24, 36, 65.
- **W–HW–29) Due Date October 22, 2018 (100 Points)**
  Chapter # 29 :- 6, 15, 29, 43, 50, 57. [Photocopy]
  Practice # 29 – 1, 8, 16, 44, 51, 53, 60, 61.
- **W–HW–30) Due Date November 2, 2018 (100 Points)**
  Chapter # 30 :- 6, 10, 19, 25, 32, 50.
  Practice # 30 – 4, 12, 22, 30, 34, 37, 57, 59, 60.
- **W–HW–31) Due Date November 5, 2018 (100 Points)**
  Chapter # 31 :- 34, 35.
  Practice # 31 – Will be assigned later.
- **W–HW–32) Due Date November 16, 2018 (100 Points)**
  Chapter # 32 :- 1, 12, 17, 30, 34, 51.
  Practice # 32 – 3, 8, 18, 21, 26, 27, 28.
- **W–HW–37) Due Date November 26, 2018 (100 Points)**
  Chapter # 37 :- 2, 4, 10, 20, 22, 43.
  Practice # 37 – 6, 8, 9, 12, 14, 18, 45.
- **W–HW–38) Due Date November 28, 2018 (100 Points)** [Photocopy]
  Chapter # 38 :- 1, 2, 3, 4, 5, 6.
  Practice # 38 – Will be assigned later.

1) Doing homework problems is an important part of obtaining success in physics, helping you organize your thoughts, learn the concepts, and apply them.

2) There will be on the average one homework every week, each of approximately 100 points.

3) Homework will be due at the start of the class on the due date.

4) It is advised to the students to keep the photocopy of the submitted homework in form of a picture or scanned document.

5) Do not turn in photocopied homework. Even if you work with someone else, you should write your own homework and it should look completely different. Do not turn in "solution manual" homework. Please follow the following rules for submission of homework, otherwise **it will not be graded**.

6) INSTRUCTIONS TO SUBMIT THE HOMEWORK

1) **Use 8.5" × 11" paper only. Do not use paper torn from a spiral binder.**
2) **Write neatly and legibly. STAPLE your homework pages together at the left top corner.**
3) **Write a title page that includes your NAME, SECTION, DATE, COURSE NAME and HOMEWORK NUMBER.**
4) **Submit the homework not later then the deadline in class when it is due.**
5) **Box the final answer with correct units, like** $\boxed{\textbf{Answer}}$.

7) In homework solutions you should show details regarding, how you solved the problems: include necessary diagrams, the equations you applied, show how the numbers with units were inserted after that, and finally, a numerical answer with the correct units. No credit will be given if just the final numerical answer is given without appropriate units. Try to get used to displaying a solution that another student could understand. See the problem-solving-tips on page# 10.

8) There will be a severe penalty for submitting incomplete homework.

9) Grader will be grading only selected problems (~ 6 problems) in each homework, not all the problems. I encourage you to visit my office hours and tutor center if you want to discuss the problems those were not graded. It is the responsibility of the student to understand the problems (in their real meaning) those are not graded. You might see the similar problems in the exams and you will not come to me and say that, you did the problem in the exam exactly the same way you did in homework, and you got it wrong because the problem was not graded in the homework.

10) There are well selected homework problems as homework on mastering physics, try to do them as soon as possible after each lecture. So you don't lag behind!!! Especially make sure that you solve atleast all the assigned problems in the homework.

11) Students who have difficulty with any homework assignment are encouraged to get assistance from me (in my office hours or by appointment) or other instructors, classmates or A^2 tutors (see page # 7 for detail). However, students should not simply copy solutions verbatim or permit others to do their assignments for them.

12) **TAKE LEGAL HELP TO DO HOMEWORK IF NEEDED.** What is legal help? **IT IS THE HELP THAT WILL GUIDE YOU TO THE CORRECT ANSWER OF PROBLEMS WITH COMPLETE UNDERSTANDING OF THE PHYSICS BEHIND THE SITUATION.** You can take illegal help from any body, from Internet, solution manuals, tutors, or even from me, so you are the best judge.

13) Do not submit anything as homework that you cannot reproduce or explain in detail if asked.

14) Instructor reserve the right to ask any student to come on the board (in-class or in instructor's office) and explain any problem that student have submitted in the homework.

15) **Do not do the homework only for the purpose of getting points. The homework weight is only 20% of your final letter grade. Homework problems are there so that you can understand physics and can do well on the exams. Exams weigh 80% of your final letter grade. Here, I mean an actual understanding in its real meaning not the feeling that you understand the material ☺.**

16) **NO LATE HOMEWORK IN ANY CASE.** I will be flexible about accepting homework handed in at the end of class if you happen to be arriving late. The homework assignment will be considered late, if I find your homework after the end of your lecture, on the day the homework is due. In that case homework will be corrected for your learning purpose but you will get **zero** points for that homework assignment.

17) In any case you miss the class on the day the homework is due, you have 2 options to obtain the grade for the work you have done, 1) Submit the homework early by coming to my office hours. 2) You can send you homework with a friend in your section.

18) There are three 50 min (approx) **in−semester exams** (each of 100 points) during the semester. The exams will be closed−notes and closed−book. **There will be no make−up and practice exams, in any case.** Only a non−programmable scientific calculator may be allowed during the in−class exams. No cell phones or any programmable, graphing, or alpha−numeric calculators will be allowed. **No equation sheet is allowed at all during in-semester exams**. Try to study the concepts and how to apply them; do not just try to memorize how to solve particular problems.

19) **No make−up exams will be given in ANY situation**. If you will miss any of the exam and you have proper proof (a written document) of the legitimate reason for missing the exam, it will be up to the sole discretion of the instructor that he/she can count your final exam percentage score also for the missed exam. Without any legitimate reason (will be judged by instructor) missing exam means you will get ZERO.

20) The **Final Exam** will be 2 hrs long departmental comprehensive test on Monday, December 10, 2018, from 10:15 AM to 12:15 PM in the place that will be announced in class (only), later in the semester. This is a tentative schedule, attend the lectures for update in case of any change. In case of any changes there will be in−class announcements (PLEASE ATTEND ALL THE CLASSES SO THAT YOU WILL BE INFORMED BY IN−CLASS ANNOUNCEMENTS ABOUT ANY CHANGES). It will be closed−notes and closed−book. A single, student−supplied, 3" × 5" index card can be used as a formula sheet during only final exam. The front and back of the card can be used; it doesn't have to be handwritten, but no visual aids (e.g., magnifying glasses) are allowed. If the student uses a card larger than 3" × 5", it is at the instructor's discretion whether to disallow the card completely or cut it down to the correct dimension. Only a non−programmable scientific calculator may be allowed during the final exam. No cell phones or any programmable, graphing, or alpha−numeric calculators will be allowed during the final. Again no make−up for final exam in any case as well.

21) **Attendance** is important and may be considered in your final letter grade calculation. If you happen to miss a class, please contact your fellow classmates to find out what was covered in the class. Irrespective of the reason you missed the class, you are responsible for everything said or done in class. All the announcements will be made in class lectures, I will not email you or use Canvas for class announcements, hence I highly recommend class attendance.

22) If you will be absent for a valid reason (death in the family, personal medical emergency, etc.), you must contact me BEFORE the absence. Absences must be documented via official communication from the Dean of Students office. I will provide instructions for how to make up the missed material once absence verification has been received.

23) Any student wanting individual help is urged to see me during my office hours. In addition, some physics graduate students work as paid tutors. A list of contacts will be posted when available.

24) You don't know whether you actually understand any of the concepts until you try to apply them yourself. Everything makes sense and looks simple in lecture **it's my job to make sure of that!** The homework problems give you the opportunity to apply the concepts from lectures and combines them with problems solving. **Doing the homework is probably the single most important activity in this class for learning and understanding the material.** I will assign a challenging set of problems once a week approximately. **Expect to spend at least 8 hours outside of class each week to do the reading and other work needed to solve the problems.** The detailed schedule of the Homework is given on page# 4.

25) **Changes may be done in the schedule of homework, points distribution of homework, material covered in each homework assignment, and number of homework assignments during the semester, solely at the discretion of the instructor, if needed. Keep yourself up-to-date with the schedule by attending all lectures, since all the announcements will be made in lectures ☺.**

26) **GRADES MAY BE CONTESTED UP TO ONE (1) WEEK AFTER BEING POSTED ON-LINE AFTER THAT THEY BECOME A PERMANENT ACADEMIC RECORD.**

27) Instructors do not give grades, students earn grades ☺.

Ultimately, you will get out of this course what you put into it. None of your instructors can force you to learn, and they cannot magically put knowledge into your brain. Your instructors will do everything they can to make the process easier, but you have to do the hard work to master every concept. You have to take responsibility for your own education.

Personal Responsibility:

As a ERAU student you are the one responsible for what you learn in class. Your teachers are only here to give some guidance. By being here at ERAU, you have a great opportunity to learn and succeed at your university that not everyone has. How much you get out of your ERAU experience and in this class depend on what you put into it. If you do well, you can congratulate yourself for that, and enjoy your success. If you don't do well on some part or the entire course, then try to see where you fell short, and how to improve the next time. Please do not blame others. **Don't beg for a grade that you did not earn.** You are getting the same opportunity as all the other students in this class. If "they" can put in the effort and do very well, why not you, too?

Tutoring:

The Academic Advancement ($AA=A^2$) center offers FREE tutoring in Chemistry (PS−105, PS−139 and PS−140) and Physics (PS−103, PS−104, PS−150, PS−160, and PS−250) courses. Please make use of this free service. The tutoring center is located on the first floor of the College of Arts and Sciences (COAS) building in room 102. This Fall the tutor center will open on September 2, 2018 (Sunday). After that the hours of operation are:

Detailed Tentative Schedule for PS 250– Physics For Engineers–III Fall–2018.

Table 4: Detailed Tentative Schedule for PS 250–Physics for Engineers–III Fall–2018.

Lecture#	Date	Day	Tentative topic from book[a]	Homework Due[b]
Lec–1	Aug 27, 2018	Monday	Syllabus, Ch–21(1/3)	
Lec–2	Aug 29, 2018	Wednesday	Ch–21(2/3)	
Lec–3	Aug 31, 2018	Friday	Ch–21(3/3)	
	Sep 3, 2018	Monday	Labor Day Holiday	
Lec–4	Sep 5, 2018	Wednesday	Ch–22(1/2)	HW–21
Lec–5	Sep 7, 2018	Friday	Ch–22(2/2)	
Lec–6	Sep 10, 2018	Monday	Ch–23(1/2)	HW–22
Lec–7	Sep 12, 2018	Wednesday	Ch–23(2/2)	
Lec–8	Sep 14, 2018	Friday	Ch–24(1/2)	HW–23
Lec–9	Sep 17, 2018	Monday	Ch–24(2/2)	
Lec–10	Sep 19, 2018	Wednesday	Revision Chapters [21—24]	HW–24 [Photocopy]
Lec–11	Sep 21, 2018	Friday	Exam – 1 in class,[c] Ch [21—24] + Early Alert Grade Due	
Lec–12	Sep 24, 2018	Monday	Ch–25(1/2)	
Lec–13	Sep 26, 2018	Wednesday	Ch–25(2/2)	
Lec–14	Sep 28, 2018	Friday	Ch–26(1/2)	HW–25
Lec–15	Oct 1, 2018	Monday	Ch–26(2/2)	
Lec–16	Oct 3, 2018	Wednesday	Ch–27(1/2)	HW–26
Lec–17	Oct 5, 2018	Friday	Ch–27(2/2)	
Lec–18	Oct 8, 2018	Monday	Problem Solving Ch—25—27	
Lec–19	Oct 10, 2018	Wednesday	Ch–28(1/2)	HW–27
Lec–20	Oct 12, 2018	Friday	Ch–28(2/2)	
Lec–21	Oct 15, 2018	Monday	Ch–29(1/2)	
Lec–22	Oct 17, 2018	Wednesday	Ch–29(2/2)	HW–28
	Oct 19, 2018	Friday	Fall Break Holiday (Oct 18 — Oct 21), + Mid–Term Grades Due	
Lec–23	Oct 22, 2018	Monday	Revision Chapters [25—29]	HW–29 [Photocopy]
Lec–24	Oct 24, 2018	Wednesday	Exam – 2 in class,[c] Ch [25—29]	
Lec–25	Oct 26, 2018	Friday	Ch–30(1/2)	
Lec–26	Oct 29, 2018	Monday	Ch–30(2/2)	
Lec–27	Oct 31, 2018	Wednesday	Ch–31(1/2)	
Lec–28	Nov 2, 2018	Friday	Ch–31(2/2)	HW–30
Lec–29	Nov 5, 2018	Monday	Ch–32(1/2)	HW–31
Lec–30	Nov 7, 2018	Wednesday	Ch–32(2/2)	
Lec–31	Nov 9, 2018	Friday	Problem Solving Ch—29—32	
	Nov 12, 2018	Monday	Veterans Day Holiday	
Lec–32	Nov 14, 2018	Wednesday	Problem Solving Ch—29—32	
Lec–33	Nov 16, 2018	Friday	Ch–37(1/2)	HW–32
Lec–34	Nov 19, 2018	Monday	Ch–37(2/2)	
	Nov 21, 2018	Wednesday	Thanks Giving Break	
	Nov 23, 2018	Friday		
Lec–35	Nov 26, 2018	Monday	Ch–38	HW–37
Lec–36	Nov 28, 2018	Wednesday	Revision Chapters [29—32, and 37, 38]	HW–38 [Photocopy]
Lec–37	Nov 30, 2018	Friday	Exam – 3 in class,[c] Ch [29—32, 37 and 38]	
Lec–38	Dec 3, 2018	Monday	Revision Chapters [21—27]	
Lec–39	Dec 5, 2018	Wednesday	Revision Chapters [28—33, and 37, 38]	
	Dec 7, 2018	Friday	STUDY DAY	
	Dec 10, 2018	Monday	FINAL EXAM,[c] Chapters [21—32, and 37, 38], Place = TBD, 10:15 AM—12:15 PM	

[a] Instructor keeps the right to change this tentative schedule if he/she will feel that it is required during the semester.
[b] Homework are due in the beginning of the class on the date mentioned.
[c] No makeup exam in any situation.

Instructions for students to enroll in Mastering Physics Website:

Please follow the following steps to enroll in mastering physics as soon as possible before the the start of the semester Aug 29, 2018.

Pearson | Mastering | Physics

Student Registration Instructions

To register for PS250 Fall 2018 :

1. Go to www.pearson.com/mastering .
2. Under Register, select **Student** .
3. Confirm you have the information needed, then select **OK! Register now** .
4. Enter your instructor's course ID: farooq38333 , and **Continue** .
5. Enter your existing Pearson account **username** and **password** to **Sign In** .

   You have an account if you have ever used a MyLab or Mastering product.

   - » If you don't have an account, select **Create** and complete the required fields.
6. Select an access option.
   - » Enter the access code that came with your textbook or that you purchased separately from the bookstore.
   - » If available for your course,
     - Buy access using a credit card or PayPal.
     - Get temporary access.
7. From the You're Done! page, select **Go To My Courses** .
8. On the My Courses page, select the course name **PS250 Fall 2018** to start your work.

To sign in later:

1. Go to www.pearson.com/mastering .
2. Select **Sign In** .
3. Enter your Pearson account **username** and **password,** and **Sign In** .
4. Select the course name **PS250 Fall 2018** to start your work.

To upgrade temporary access to full access:

1. Go to www.pearson.com/mastering .
2. Select **Sign In** .
3. Enter your Pearson account **username** and **password,** and **Sign In** .
4. Select **Upgrade access** for **PS250 Fall 2018 .**
5. Enter an access code or buy access with a credit card or PayPal.

Guidelines for homework:

- Discuss your homework with classmates as much as you like – this can be an efficient way to tackle a challenging course like Physics. But, write your homework solutions on your own!
- The problems in this class can all be solved by the same general strategy. I summarize this strategy as "Picture, Solve, and Check". This is the strategy I will use in lecture and that you will see in recitation. "Picture" means to visualize the physical situation, usually by drawing a diagram. This step includes identifying what quantity needs to be calculated. "Solve" means to write down the relevant equations and solve algebraically for the desired quantity, substituting numerical values at the end of the calculation. Finally, you should always "Check" to make sure that your answer makes sense. This means checking the order of magnitude and units, for instance. Get in the habit of following this strategy every time you solve a problem.

Tips on doing homework problems

* **Don't wait until the last minute.**
  - Begin homework assignments several days before they are due.
  - You can surely do some of them even before hearing about the topic in lecture.
* **What's going on here?**
  - Sketch the situation. Make it seem real for yourself.
  - Identify desired quantities, with their units.
    e.g., I want to find distance, in meters
  - List the quantities you know, with units.
    e.g., I know velocity, in meters/sec.
  - Recall the definitions of these items, it may help a lot!
  - What are the important equations or relations between them?
    e.g., Velocity times time equals distance. $x = vt$.
* **Get help if you need it.**
  - Being completely stuck is no fun. If you really are getting no where, and have no idea what to do next, you are encouraged to cooperate with other students, or seek help from your instructors.
* **What's my strategy?**
  - What concepts and equations apply?
  - Briefly state your strategy in words and sentences.
  - (Pretend you are explaining to another student.)
  - Write down the equation(s) you will use, in symbols.
* **Solve algebraically for the desired quantity.**
  - You may need to combine some equations, or use trigonometry, that's OK!
  - Get the quantity you want on the left of the equals sign, and everything else on the right.
  - Don't skip steps.
* **Do the arithmetic, with units.**
  - Substitute numbers with units in your equation.
    e.g., $x = vt$ becomes $x = (5.0 \text{ m/s})(2.0 \text{ s}) = 10 \text{ m}$.
  - Keep the units on everything until the end. It's a useful check.
* **Write down the answer, with correct units!**
* **Does the answer make sense?**
  - Is the number of reasonable size, not excessively large or small?

  - If you change the given numbers to very simple cases, will you get an expected result?
  - If you modified the situation into a simpler one, will your approach still work?

* **Enjoy the challenge.**
  - Hey, you figured out something new. Now you understand it.
  - And it wasn't so simple.
  - Have confidence, you can do as well or better on the next problem!

Physics Study Hints:

1. Read the textbook, and paying attention to the equations and figures.
2. When you take notes in class, don't just copy equations and diagrams. Listen to the instructor and write down the ideas behind the equations and diagrams!
3. Study the examples in the book in order to learn how to solve problems.
4. If you don't understand, formulate a question. Write down your questions so you can ask your instructor later. Then ask your instructor later!
5. Stop occasionally and think about what you just read. Try to think of real-life examples where the physics ideas might be applicable.
6. Look at extra questions and level I problems, just to see if you would know how to answer them. If so, you have a good grasp of the definitions of basic concepts.
7. If you can't work a difficult homework problem, try to work on a related, and easier one first. Or, try breaking your problem into steps or parts.
8. Keep in mind that the level II problems usually require you to apply more than one concept. You probably need to use more than one equation.
9. In physics, the same idea can be expressed several ways, as a picture or diagram, an equation, or a graph. Look for the main idea. Think about how the different presentations help you to understand it.
10. Remember, physics isn't always complicated. Most of the ideas are of the simple, common-sense type.

Class Policies:

1. Turn off (completely off $\cdots$ not just silent or vibrate) all electronic equipment at the beginning of class (e.g. cellphones, iPods, pagers, PDAs, etc).
2. Laptops/tablets, etc. are not permitted in class.
3. No headphones or earphones are permitted in class.
4. If you get sleepy, please go to the back of the class and stand up to keep yourself awake (I don't mind).
5. Don't do your homework or any other work for this class or any other class during class time.
6. **Bring your books and calculator to class every day.**
7. Check Canvas and your ERAU e-mails every day till the day of the final exam.
8. Any homework turned in after the class period when it is due will be considered late and will receive a grade of ZERO. I will not accept late homework. Please (ONLY) staple your homework.
9. **NO makeup tests/Exams at all (your final exam grade WILL NOT be used to substitute for your lowest in-class exam grade)**. So try to do best from the beginning of the semester. You can take a test one class period early (if approved by the instructor) but under no circumstances will a makeup test be given.

10. **At some point in the semester (usually after an Exam or after the final grades are released), you will ask me, "What can I do to improve my grade?" Aside from building a time-machine, there is nothing else you can do. So the next best thing to a time-machine is for me to tell you the following hints now at the beginning of the semester.**

    a) Read the book before coming to class.

    b) Don't miss class. While in class, stay awake and participate.

    c) Do all the example and exercise problems in the chapter.

    d) Do all the assigned homework with understanding and do not cheat yourself. (Better yet, do ALL the problems at the end of each chapter). If you will use solutions manual for homework the bad thing that will happen is you will not learn physics but the worse effect of using solution manual is that you will THINK that you understand physics.

    e) Come to my office hours OFTEN (even when you think you completely understand). If you don't understand, then DEFINITELY come to my office.

    f) If you miss a class, please don't come to my office and ask me to give the lecture a second time. Get the class notes from your classmates, read the chapter, try to do the homework, THEN come to my office to clear up any questions.

    g) Work in a group.

All Course Syllabi Must Include the Following Statements

Statement Regarding Academic Honesty:

Embry-Riddle Aeronautical University has an Honor System based on personal integrity, which is presumed to be sufficient assurance that, in academic matters, one's work is performed honestly and without unauthorized assistance. Undergraduate and graduate students, by registration, acknowledge the jurisdiction of the Honor System. The policies and procedures of the Honor System apply to all full and part-time students enrolled in undergraduate and graduate courses on-campus, off-campus, and via distance learning. The details of honor system are given on page# 170—184 of the DB−Student−Handbook that can be downloaded via the following URL: http://daytonabeach.erau.edu/campus-life/dean-of-students/index.html#. A component vital to the Honor System is the inclusion of the Honor Pledge which applies to all assignments, examinations, or other course work undertaken by students. The Honor Pledge is implied, whether or not it is stated. A grade of XF can result from a breach of academic honesty. The F indicates failure in the course; the X indicates the reason is an Honor Pledge violation. For more information refer to the "Academic Dishonesty" policy in the Embry-Riddle Aeronautical University Undergraduate Catalog and the Undergraduate Honor System Policy on the Dean of Students Office web page at http://daytonabeach.erau.edu/campus-life/dean-of-students/index.html#.

Statements for Academic Accommodations for Students with Disabilities

ERAU is committed to the success of all students. It is a University policy to provide reasonable accommodations to students with disabilities who qualify for services. If you would like to request accommodations due to a physical, mental, or learning disability, please contact the Vanessa Lloyd at 386-226-7916 or *lloydv@erau.edu* or *http://daytonabeach.erau.edu/about/disability-support/*

Statement Defining Expectations for Classroom Conduct

All student activities in the University, including this course, are governed by the Student Judicial Conduct Code as outlined in the Student Governing Association By Laws, Article VI, Section 3, number 2. Students who engage in behavior that disrupts the learning environment may be asked to leave the class.

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Instructor's Right

Instructor of the course reserved the right to change any thing in this tentative syllabus including topics covered, grading scheme, homework due dates, number of homework, number of exams, exam length etc.