

Approval Chart for Curriculum Changes

A = Approve I= Information Item¹ R= Advise & Respond²

Course Number PHYS 360 or Degree Plan(s) _____

State the requested change and reason. A memo may be attached if more space is necessary.

Change: cross-list with ENGR 360.

Rationale: This course covers the fundamentals of electricity and magnetism. Exposure to this material is critical for electrical engineers, and we therefore propose that engineering majors with an interest in electrical engineering should receive engineering science credit for this course. Whether the material is taught by physics or engineering faculty makes no difference in an introductory course, because the important introductory concepts are the same in either case.

Circle the number that corresponds to the requested change. Degree plan changes are on the second page.

Change to a Course		COUNCIL ³								
		Dept./School	College Academic	Deans	TEC	UGEC	UUAC	GRAD	Provost	President
1.	Title (description unchanged)	A	A	A	I				I	I
2.	Description (not affecting content)	A	A	A	I				I	I
3.	Course term(s)	A	I	A	I				I	I
4.	Content (substantive change)	A	A	A	I				A	A
5.	Number of hours (lecture, lab, contact)	A	A	A	A				A	A
6.	Course number within the hundred	A	A	I	I				I	I
7.	Course number beyond the hundred	A	A	A	A				A	A
8.	Prerequisites	A	A	A	I				I	I
9.	Course fee(s)	A	--	A	--				A	I
10.	From U to G <i>or</i> G to U	A	A	A	A				A	A
11.	Cross list with another department: U or G level	A	A	A	A				A	A
12.	Department of record	A	A	A	A				A	A
13.	Open or close a course	A	A	A	A				A	A
14.	New course — See website for application and process. This change includes combining or splitting a course(s).	A	A	A	A				A	A

Note: When an academic unit does not have a council, the UGEC and/or UUAC will serve as its academic council, depending on the nature of the issue.

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		COUNCIL ³							President	Faculty	Provost	GRAD	UAC	UGEC	TEC	Deans	College Academic	Dept./School	Change to a Degree Plan	
1.	University Requirements — Change in approved course content ⁶	A	A	A	A				A	--	A									--
2.	University Requirements — Add or drop a required course from the University Requirements chart ⁶	A	A	A	A				A	A	A									--
3.	University Requirements — Add or drop a course from a menu within the University Requirements ⁶	A	--	--	A				A	--	A									--
4.	University Requirements — Change hours within a menu on the University Requirements chart ⁶	A	A	A	A				A	A	A									--
5.	Major — Revision of major ^{4,5}	A	A	A	A				A	--	A									--
6.	Major — Adopt or change admission requirements	A	A	A	A				A	--	A									--
7.	Major — Add ^{4,5}	A	A	A	A				A	A	A									I
8.	Major – Discontinue (proposed by the department or college)	A	A	A	A				A	A	A									I
9.	Major – Discontinue (proposed by the Provost)	See below.																		
10.	GPA — Revise major or cumulative requirement	A	A	A	A				A	A	A									--
11.	Minor — Revise course selection	A	A	A	I				I	--	I									--
12.	Minor — Add	A	A	A	A				A	--	A									--
13.	Minor – Discontinue (proposed by the department or college)	A	A	A	A				A	--	A									--
14.	Minor – Discontinue (proposed by the Provost)	See below.																		
15.	Degree — Add	A	A	A	A				A	A	A									I
16.	Degree – Discontinue (proposed by the department or college)	A	A	A	A				A	A	A									I
17.	Degree – Discontinue (proposed by the Provost)	See below.																		
18.	Any change to a graduate degree program	A	A	A	A				A	--	A									--

COUNCIL ³										
	Provost-Proposed Change	Provost	Department	Dean	TEC	UAC	Graduate	Faculty	President	Board of Trustees
1.	Major/Graduate Program – Discontinue (proposed by the Provost)	A	R	R	A			A	A	I
2.	Minor – Discontinue (proposed by the Provost)	A	R	R	A			--	A	--
3.	Degree – Discontinue (proposed by the Provost)	A	R	R	A			A	A	I

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COUNCIL ³										
	Change to the Catalog Information	Dept./School	College Academic	Deans	UGEC	UUAC	GRAD	Provost	Faculty	President
1.	General requirements for graduation including course requirements that are common to all majors for all degrees ⁷	--	--	--	A			A	A	A
2.	Admission requirements	--	--	--	A			A	A	A
3.	Policies governing academic probation and suspension	--	--	--	A			A	A	A
4.	Requirements for graduating with honors	--	--	--	A			A	A	A
5.	Other academic policy changes	--	--	--	A			A	--	A

¹ Councils may request additional information about "Information" items. These items are approved as "Consent Agenda."

² The Dean and Department should respond to the Provost's recommendation to close a program in writing. Advise & Respond (R) requires that the voting body should receive the written responses at least one week prior to the vote.

³ All courses that meet University Requirements for general education must go through UGEC. Courses or degrees offered only to students seeking teacher certification must go through the Teacher Education Council. All undergraduate changes must go before the UUAC. All graduate degree plan changes must go through the Graduate Council.

⁴ A minimum of 30 hours is required for a major. A maximum is specified for each degree (e.g., BA, BS). The university minimum for elective hours is 6, unless the requirements of external accrediting bodies make it impossible.

⁵ Program or course changes that apply to any major that includes Teacher Certification will be reviewed by the college, the Teacher Education Council (TEC), and then the UUAC.

⁶ Courses that satisfy ACU's University Requirements (General Education) will normally have lower-level numbering, be free of prerequisites and co-requisites, appeal to more than one or two majors, and "not narrowly focus on those skills, techniques, and procedures specific to a particular occupation or profession" (SACS 2.7.3). Departments may request exceptions to the first three criteria.

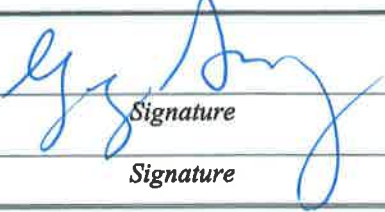
⁷ The UUAC approved the clarification that "general requirements for graduation" means the enumerated items in the "General Requirements for Bachelor's Degrees" section of the catalog.

Revised 3-8-17

Curriculum/Catalog Changes Signature Page

Department/School Chair(s)	
 Signature	<u>10/30/18</u> Approval date
_____ Signature	_____ Approval date

College Academic Council(s)	
 Signature	<u>12-7-2018</u> Approval date
_____ Signature	_____ Approval date

Dean(s)	
 Signature	<u>12/20/18</u> Approval date
_____ Signature	_____ Approval date

Teacher Education Council	
_____ Chair's signature	_____ Approval date

General Education Council	
_____ Chair's signature	_____ Approval date

Undergraduate Academic Council	
_____ Chair's signature	_____ Approval date

Graduate Council	
_____ Chair's signature	_____ Approval date

Provost	
_____ Signature	_____ Approval date

Faculty	
_____ Chair of faculty senate	_____ Approval date

President	
_____ Signature	_____ Approval date

PHYS 360: ELECTRICITY AND MAGNETISM

INSTRUCTOR: Jim Drachenberg, Ph.D. Office: Onstead Science Center 123A
Phone: 325-674-6539 E-mail: jld00a@acu.edu
Office Hours: MWF 9:00 – 11:00 AM, T 8:00 – 9:00 AM or by appointment

LECTURE: MWF 8:00-8:50 PM in Onstead Science Center 345
TEXTBOOK: *Introduction to Electrodynamics* by David Griffiths

COURSE DESCRIPTION: Electro- and magneto-statics theory, Maxwell's equations, electromagnetic field theory, dielectrics, displacement current, current density, Poynting vector, scalar potentials, vector potentials and design applications. Prerequisite: PHYS 222. Corequisite: PHYS 463 or MATH 463.

GRADE: Course grades will be based on the following with **approximate weights** as shown.

Exams (2)	25% each for a total of	50%
Homework		25%
Final Exam		25%

Course letter grades will be assigned using the following **approximate** scale:

A: 90 – 100% B: 80 – 89% C: 70 – 80% D: 60 – 70% F: < 60%

Grades are considered set **two weeks** after the grades have been posted to Canvas. Any objection must be received prior to conclusion of the two-week period, otherwise I will assume you consent to the posted grade.

DROP POLICY: All university policies and deadlines must be followed.

HOMEWORK: Homework assignments will generally be given weekly and due on Wednesdays the **beginning** of class. What you submit should be of professional quality, legible, and well-enough organized that you have an inkling of what you were thinking when you review it, later!

COLLABORATION: As with your other physics courses, collaboration is strongly encouraged! **HOWEVER**, it is still critical for you to "own" material. As a reminder, assistance should be limited to verbal help. **Do not take written information from others.** This will help you think independently after receiving assistance. Excellent performance on homework correlated with poor performance on exams is one indicator you are receiving too much help.

EXAMS: There will be two exams during the semester. Make-up exams may be administered only for university-approved absences (e.g. university-sponsored activity), provided you furnish me with written notification and documentation **prior to the absence.**

The comprehensive final examination will be **Friday, December 14, from 8 AM – 9:45 AM in Onstead Science Center 345.** **There will be no make-up final exam.**

ATTENDANCE: Daily attendance in class is **essential**. If you are unable to attend, you should notify me by e-mail, phone, or in person **before** class. If so doing is impossible, I expect you to contact me after the absence to offer an explanation. I will take attendance during class and participation will be considered in your final grade assessment at my discretion. Regardless of absence, you are fully responsible for material discussed in class. If absent from a quiz or exam, your grade will be zero unless I grant prior approval.

DRESS CODE: Please follow the student guide. **If you aren't sure, don't wear it.** I reserve the right to ask you to remove hats at any time, e.g. during exams.

ELECTRONICS: No cell phones, laptops, iPods, or other electronic devices are allowed in class unless we are using them corporately. **If I determine your electronic device is disturbing the class or distracting you or others, you will be dismissed.** If such distractions become a pattern, I will not hesitate from further action, including expulsion from the course.

**ACADEMIC
INTEGRITY:**

DO. NOT. CHEAT.

I expect you to report cheating if you witness it. **Failure to report academic dishonesty is considered academic dishonesty, at my discretion.**

Required University statement:

"Academic integrity is defined as academic work completed as assigned for each class by the individual or group responsible for the work. Violations of academic integrity and other forms of cheating involve the intention to deceive, mislead, or misrepresent and therefore, are a form of lying. Such actions are contrary to behavioral norms that flow from the nature of God. Academic misconduct includes, but is not limited to, the following: 1) Failing to give credit to sources used in a work in an attempt to present the work as one's own, 2) Submitting papers or projects obtained from another source (e.g., research service or club paper file) as one's own, 3) Falsifying information orally or in writing, and 4) Receiving, giving, or using unauthorized aid on an examination or quiz. Academic misconduct may result in, but is not limited to, a zero on the assignment and/or an F in the course. Additionally, the department chair, Dean of the College of Arts and Sciences, and the Dean of Student Life will be notified. See the full university policy, including how to appeal a decision, by following this link:

<http://www.acu.edu/academics/provost/policies/index.html>."

For exams and quizzes, I will give specific instructions concerning authorized resources. Do not discuss quizzes or exams with anyone who has yet to take them. You are **strongly encouraged** and **welcomed** to consult me for assistance on homework. However, assignments submitted in your name must reflect your original work. **Copying the work of students past or present is a violation of the Academic Integrity Policy and will lead to disciplinary action including but not limited to loss of credit, course grade reduction, and automatic course failure.**

ACU MISSION: To educate students for Christian service and leadership throughout the world.

DISCLAIMER: To the best of my knowledge, this syllabus is currently complete and correct. If I determine it is in the best interest of the class, I reserve the right to modified this syllabus, at any time.

COURSE SCHEDULE:

The following tentative course schedule based on the textbook material indicates textbook chapters and exam dates, all of which are subject to change.

DATE	TOPICS COVERED	CHAPTERS
08/27	Intro, overview, electrostatics	1.1-1.3 (for review); pg. xiv-xviii; 2.1.1; 2.1.2
08/29	E fields, curly r, and continuous charge distributions	2.1.3-2.1.4
08/31	Computing E from continuous charge distributions	2.1.4
09/03	Divergence, Flux, and Gauss's Law	2.2.1; 2.2.2; 1.3.4
09/05	Delta functions and Gauss's Law	2.2.2; 2.2.3; 1.5
09/07	Applying Gauss's Law	2.2.3
09/10	Curl, Curl(E), Stokes, and Voltage	2.2.4; 2.3.1; 2.3.2
09/12	Voltage	2.3.3; 2.3.4; 2.3.5; 2.4.1
09/14	Boundary conditions and energy	2.3.3; 2.3.4; 2.3.5; 2.4.1-2.4.4
09/17	Boundary conditions and conductors	2.3.5; 2.5.1-2.5.2
09/19	Conductors and capacitors	2.5.2; 2.5.4
09/21	Laplace's equation and intro to method of images	3.1
09/24	Intro to method of images	3.2
09/26	Intro to separation of variables	3.3.1
09/28	Separation of variables and Fourier's trick	3.3.1
10/01	Finish Cartesian / start spherical sep. o' variables	3.3.2
10/03	Exam 1	1-3
10/05	Spherical separation of variables	3.3.2
10/08	Introduction to multipoles	3.3.2
10/10	Finish multipoles	3.3.2
10/12	Intro to fields in matter	4.1.1; 1.2; 1.4
10/15	Polarization continued	4.2
10/17	Electric Displacement: define D, E, and P	4.3
10/19	Fall Break (no class)	
10/22	Linear Dielectrics, finding D, using D	4.4
10/24	Boundary conditions with dielectrics	4.4
10/26	Finishing dielectrics and boundary conditions	4.4
10/29	Intro to B field	5.1.1; 5.1.2
10/31	B fields and currents / current density	5.1.3
11/02	Current density, current consv., intro to Biot-Savart	5.1.3; 5.2; 5.3.1-5.3.2
11/05	Biot-Savart, possible intro to Ampere	5.3.2-5.3.4
11/07	Ampere's Law	5.3.2-5.3.4
11/09	Ampere's Law	5.3.2-5.3.4
11/12	Finish Ampere's Law and begin vector potentials	5.3.2-5.3.4; 5.4.1
11/14	Vector potentials	5.4.1
11/16	Vector potentials and boundary conditions	5.4.1; 5.4.2
11/19	Exam 2	3-5
11/21	Thanksgiving Break (no class)	
11/23		
11/26	Bound. cond. & intro to magnetic dipole moments	5.4.2-5.4.3
11/28	Dipole expansion, torque & force, magnetization	6.1.1-6.1.4
11/30	Magnetization, dia/para-magnetism, H field	6.2
12/03	H field and magnetic materials	6.3
12/05	H field, magnetic susceptibility, and linear materials	6.4
12/07	Bound. cond., linear materials, ferromagnetism	6.4
12/14	Final Exam, 8:00-9:45 AM	