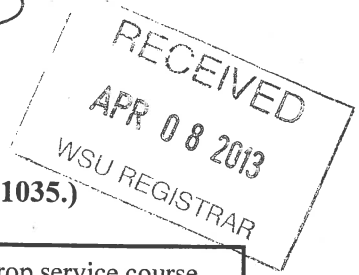


* New Revised Syllabus *
attached

010



Washington State University
MAJOR CURRICULAR CHANGE FORM -- COURSE
(Submit original signed form and ten copies to the Registrar's Office, zip 1035.)

Future Effective Date: 01/01/2014 New course Temporary course Drop service course
(effective date cannot be retroactive) There is a course fee associated with this course (see instructions)

- Variable credit _____
- Increase credit (former credit _____)
- Number (former number _____)
- Crosslisting (between WSU departments)
(Must have both departmental signatures)
- Conjoint listing (400/500)
- Request to meet Writing in the Major [M] requirement (Must have All-University Writing Committee Approval)
- Request to meet GER in _____ (Must have GenEd Committee Approval) Fulfills GER lab (L) requirement
- Professional course (Pharmacy & Vet Med only) Graduate credit (professional programs only)
- Other (please list request) _____

EE 526 High Voltage Overhead Transmission Lines
course prefix course no. title

3	3			graduate standing in electrical engineering
credit	lecture hrs per week	lab hrs per week	studio hrs per week	prerequisite

Description (20 words or less) Electrical analysis, performance and design of high voltage transmission lines. power capacity, electromagnetic environment, electromagnetic compatibility, measurements, grounding

Instructor: Robert G. Olsen Phone number: (509) 335-0348 Email: bgolsen@wsu.edu
Contact: Cindy Zimmerman Phone number: (509) 335-6603 Email: zimmermanc@wsu.edu
Campus Zip Code: 2752

- Please attach rationale for your request, a current and complete syllabus, and explain how this impacts other units in Pullman and other branches (if applicable).
- Secure all required signatures and provide 10 copies to the Registrar's Office.

Robert G. Olsen 4/4/13 Cindy Zimmerman 4/4/13
 Chair/date Dean/date General Education Com/date

Chair (if crosslisted/interdisciplinary)* Dean (if crosslisted/interdisciplinary)* Graduate Studies Com/date

All-University Writing Com/date Academic Affairs Com/date Senate/date

*If the proposed change impacts or involves collaboration with other units, use the additional signature lines provided for each impacted unit and college.

SEP 26 2013

Catalog Subcommittee

Rationale for EE 526

High Voltage Overhead Transmission Lines

The School of Electrical Engineering and Computer Science has invested significant resources over the last two years into its program in electric power engineering. One plan for expanding its graduate program in this area is to offer a Professional Science Masters (PSM) degree in Electric Power Engineering through WSU's Global Campus. This new program will be similar to the PSM presently being offered in the Molecular Biosciences area. More about this can be found at

<http://www.smb.wsu.edu/academic-training/graduate-studies/professional-science-master's-degree>

In addition to being offered as part of the growing on campus graduate program, EE 526 will be one of the required core courses in the new PSM program.

Electrical Engineering 526

High Voltage Overhead Transmission Lines

Course Instructor: Robert G. Olsen, PhD
Work Phone: 509-335-0348
Email Address: bgolsen@wsu.edu

Text and Resources: TBD

Course Notes will be made available to all students in either printed or electronic form.

Course Overview

This course will cover the electrical analysis, performance and design of high voltage transmission lines with an emphasis on electromagnetic fields approaches. More specifically, the course will cover analysis of single and multiconductor power lines and examine the fundamental reasons why these lines have power capacity limits. In addition, subjects relating to the electromagnetic environment of power lines, coupling to other systems, electromagnetic field measurements and grounding systems will be covered.

Course Goals

Upon completion of this course, students will demonstrate understanding of:

- The basics of high voltage overhead power transmission.
- The components of real high voltage overhead transmission lines.
- The physical approximations to real high voltage overhead transmission lines prior to analysis.
- Rules of thumb for minimizing the effects of approximations.
- The electromagnetic theory needed to analyze transmission lines.
- How currents can be found on wires above the earth.
- The origin of low frequency approximations and the resulting equivalent transmission line.
- Basic lumped elements on transmission lines and why they are used.
- How to calculate low frequency electric and magnetic fields near a transmission line as well as how they reduce to quasi-static theory.
- The basics of electrostatic methods.
- How the theory can be extended to multiconductor transmission lines.

- Limits on power flow from fundamental principles.
- The physics of corona and its effects.
- How transmission line electromagnetic fields couple to other structures on the right of way.
- How low frequency electric and magnetic fields are measured.
- The issues related to the electric and magnetic field environment of transmission lines.
- How grounds are analyzed and designed.

Course Work

Overview:

This course covers 13 sections of material. The length of time we will spend on each section varies as indicated in the course schedule below.

Assignments:

The course schedule gives a basic description of when homework assignments will be given. They will generally be due one week after they are assigned. Full descriptions of the assignments will be placed in the “Lessons” section of the course space at the appropriate times.

Exams:

For this course, there will be two hour exams and a final exam. Please refer to the “Course Schedule” link on the side menu for the exact dates of each exam. Exams will consist of 4 to 5 problems. Exam questions will be available one week prior to the due date and exams are submitted through the assignment link.

Course Schedule

Week #	<u>Reading</u>	<u>Topic</u>
1-1	Foreword	Course Introduction
1-2	Ch. 1	Intro to real high voltage overhead transmission lines
1-3	Ch. 2 (HW #1)	Physical approximations to real high voltage overhead transmission lines prior to analysis
2-1	Ch. 3.1, 3.2	Brief Overview of Electromagnetic Field Theory
2-2	Ch. 3.3, 3.5	(Review of Maxwells equations, wave equation,
2-3	Ch. 3.8 (HW #2)	Poynting theorem and reciprocity)
3-1	Ch. 4.7,	Low frequency propagation on an infinitely long single conductor transmission above earth

3-2	Ch. 4.8	Equivalent transmission line/distributed parameters
3-3	Ch. 4.9-4.12 (HW #3)	Examples
4-3	Ch. 5.3	Low frequency electromagnetic fields near a single conductor transmission line above earth
4-2	Ch. 5.3	capacitance and inductance per unit length, bundles
4-3	Ch. 5.4-5.6 (HW #4)	justification for electrostatics
5-1	---	Review
5-2	---	Exam #1
5-1	Ch. 6.1	electrostatics and electroquasistatics
6-1	Ch. 6.2	analytical techniques
6-2	Ch. 6.3 (HW #5)	numerical solutions
6-3	Ch. 7.2	low frequency balanced two conductor line
7-1	Ch. 7.3	examples of coupling
7-2	Ch. 7.5	general multiconductor case
7-3	Ch. 7.6-7.9 (HW #6)	Symmetrical components and its validity
8-1	Ch. 8.1	Poynting theorem and fundamental constraints
8-2	Ch. 8.2	Voltage limits on power flow
8-1	Ch. 8.3	Current limits on power flow
9-1	Ch. 8.4-8.5	Field uniformity and system limits
9-2	Ch. 8.6-8.7	Increasing voltage and current limits
9-3	Ch. 8.8-8.9 (HW #7)	Increasing field uniformity and system limits
10-1	---	Review
10-2	---	Exam #2
10-3	Ch. 9.1-9.2	Corona onset
11-1	Ch. 9.4, 9.7 (HW #8)	electromagnetic interference/ audible noise
11-2	Ch. 10.1	electromagnetic reciprocity theory
11-3	Ch. 10.3	inductive and capacitive coupling
12-1	Ch. 10.5-10.6	electrostatic reciprocity theory
12-2	Ch. 10.7 (HW #9)	examples
12-3	Ch. 11.1	Introduction to measurements
13-1	Ch. 11.2	magnetic and electric field sensors
13-2	Ch. 11.3-11.4 (HW #10)	practical measurements
13-3	Ch. 12.1	History of ELF electric and magnetic field bioeffects research
14-1	Ch. 12.2-12.3	Electric field calculation/ effects
14-2	Ch. 12.4-12.5	Magnetic field calculation/ effects
14-3	Ch. 12.6 (HW #12)	Mitigation of electric/magnetic fields

15-1	Ch. 13.1-13.2	Introduction and hemispherical electrode
15-2	Ch. 13.2-13.3	grounding resistance, touch, step and transferred potentials. Vertical rod electrode
15-3	Ch. 13.5 (HW #13)	General solutions for more complicated electrodes
16-1	---	Final Exam

Instructor Interaction

I will make every effort to be in the course space at least 3 times each week (Mon-Fri), and respond to email and questions posted to the Questions for the Instructor discussion board within 48 hours (Mon-Fri). Any exams or graded assignments may take as long as 14 days to be returned.

Grading

Students performance will be evaluated based on the following five assessments; the set of quizzes (10%), the set of homework assignments (25%), two hour exams (20% each) and a final exam (25%).

The total number of points available for the five assessments will be 100. Letter grades (with interpretations taken from WSU Academic Regulations) are distributed according to the following formula. Some adjustments may be made for improvement over the course of the semester and/or for the possibility that one of the assessments is significantly inconsistent with the others.

Overall, your final grade (based on a total of 100) points will be calculated as follows:

Course Work	Points	Percent of Final Grade
Homework Assignments	25	25%
Exams (2 @ 20 pts. each)	50	50%
Final Exam	25	25%
TOTALS	100	100%

Grade	Points
A	93-100
A-	90-92
B+	87-89
B	83-86

B-	80-82
C+	77-79
C	73-76
C-	70-72
D+	67-69
D	60-66
F	59 & Below

Late Assignment/Exam Policy

Homework assignments submitted late will receive a 20% reduction in score; if submitted more than one week late, they receive zero points. Students must request an absence prior to a missed exam in order to attempt it later. The exam (in a form determined by the instructor) must be made up within one week or a grade of zero will be given.

Incomplete Grade Policy & Withdrawals

Withdrawals: Academic Rules 57, 68 and 69 regarding the maximum number of W's a student is allowed do apply to Winter Session Courses. If you request a W and you have reached the maximum allowed for your WSU career, your request will be denied.

Incompletes are granted only with permission of the instructor and are subject to the following guidelines:

1. Students must request an incomplete in writing or by e-mail from the instructor at least 2 weeks before the end of the semester.
2. The student must assemble the following items, and submit them to the instructor:
 - o Incomplete Grade Agreement (<http://www.gradsch.wsu.edu/forms/>)
 - o The student's written and signed request
 - o A copy of the student's current grade and record of completed work copied from the Angel Gradebook
 - o Assignment descriptions for all remaining work
 - o Any available documentation verifying the student's reason for requesting the incomplete.
 - o If the student does not submit the required documentation, the instructor has the option of denying the incomplete request.
3. In order to be considered for an incomplete, there are three main conditions:
 - o The student must have completed at least 75% of the total work for the course.

- The student must have a mathematical possibility of passing the class.
 - The student must have completed and submitted the necessary documentation before the end of the semester.
4. If the incomplete is granted, the student and the instructor must sign the Incomplete Grade Agreement form (<http://www.gradsch.wsu.edu/forms/>) and submit it to the Registrar within 14 days of the end of the enrollment semester at issue. The student must also provide a copy of all of the documentation to their WSU Online Advisor.

If an incomplete is granted, the School of Electrical Engineering and Computer Science requires ALL work must be completed within **60 days** from the end of the enrollment semester at issue. Otherwise, an automatic grade of "F," or failing, will be entered on the student's transcript.

Academic Integrity Plagiarism and Academic Dishonesty

Academic integrity is the cornerstone of the university. You assume full responsibility for the content and integrity of the academic work you submit. You may collaborate with classmates on assignments, with the instructor's permission. However the guiding principle of academic integrity shall be that your submitted work, examinations, reports, and projects must be your own work. You can learn more about Academic Integrity on your campus using the URL listed in the Academic Regulations section or to <http://conduct.wsu.edu/academic-integrity-policies-and-resources>. Please use these resources to ensure that you don't inadvertently violate WSU's standard of conduct.

Plagiarism is the use of someone else's words or ideas without giving credit to the source. This includes not only copying someone else's work and presenting it as your own, but also failing to cite your sources, including Internet sites. The WSU Statement on Academic Integrity (which includes plagiarism) reads:

As an institution of higher education, Washington State University is committed to principles of truth and academic honesty. All members of the University community share the responsibility for maintaining and supporting these principles. When a student enrolls in Washington State University, the student assumes an obligation to pursue academic endeavors in a manner consistent with the standards of academic integrity adopted by the University. To maintain the academic integrity of the community, the University cannot tolerate acts of academic dishonesty including any forms of cheating, plagiarism, or fabrication. Washington State University reserves the right and the power to discipline or to exclude students who engage in academic dishonesty.

Responses to plagiarism in this course will be as follows:

- For a first offense, any assignment plagiarized will receive an "F" (0 points) and the matter referred to the Director of the School of Electrical Engineering and Computer

Science and the Office of Student Affairs. Students *will not be allowed to rewrite or resubmit a plagiarized assignment.*

- For a second offense, the student will receive an "F" in the course.

For clarification on what constitutes plagiarism, refer to the following web sites:

<http://owl.english.purdue.edu/owl/resource/589/1/> or www.wsulibs.wsu.edu/plagiarism/main.html

Any course-related materials, presentations, lectures, etc. are the instructor's intellectual property and may be protected by copyright. The use of University electronic resources (e.g., Angel) for commercial purposes, including advertising to other students to buy notes, is a violation of WSU's computer abuses and theft policy (WAC 504-26-218).

Academic Regulations

Students enrolled in online courses are subject to the same University academic regulations as on-campus students. For the most accurate and up to date information start with your home campus Web site. For information specific to Academic Regulations please use the Website search function.

- WSU Online & Pullman Campus: <http://wsu.edu/>
- WSU Spokane: <http://spokane.wsu.edu/>
- WSU Tri-Cities: <http://www.tricity.wsu.edu/>
- WSU Vancouver: <http://www.vancouver.wsu.edu>

MIDTERM GRADE POLICY

Midterm grades will be submitted for students enrolled in undergraduate courses by 5:00 p.m. on the Wednesday of the eighth week of the fall and spring semesters.

For courses that are letter graded, midterm grades may reflect the full range of letter grades (A-F) or may use the C or F grade only. Specifics for this course are located at the top of the grading section. (If this information is missing please contact your instructor.)

- C and F are defined as follows:
 - A C midterm grade is given to any student who is making satisfactory progress.
 - An F midterm grade is given to any student whose progress is not acceptable and who needs to discuss his/her progress with the instructor.

The assessment should not be interpreted as a formal grade, but rather as an indication of the student's progress to date. Midterm grades are advisory and do not appear on the student's permanent record, the WSU transcript.

Student Privacy

As a University student, you have legal rights under the Family Educational Rights and Privacy Act (FERPA) for protection of your academic records. For a complete explanation of these rights, visit the URL associated with your home campus in the Academic Regulations section or <http://www.registrar.wsu.edu/Registrar/Apps/FERPA.ASPX>.

Online Collaboration

The essence of education is exposure to diverse viewpoints. In your threaded discussion posts you'll meet students with vastly different opinions and backgrounds. When you don't agree with their views, pause a moment. Weigh their words. You're encouraged to disagree with the substance of others' ideas and opinions, but do so with an active sense of respect for one another, and without losing focus on the topic at hand. Personal attacks, inflammatory statements, flaming, trolling, and disruption of the discussion do not have a place in academic discourse.

Your instructors will promote high-quality academic discussions by removing any posts they view as disruptive of the educational process and alerting students whose posts have been removed that they have violated course expectations. Students who continue to misuse the discussion boards after a warning may be subject to removal of access rights, course failure, and referral to the Office of Student Conduct.

Postings must comply with University policy on use of computing resources, including those regarding harassment and discrimination, as well as conform to the Standards of Conduct for Students. Students are encouraged to review the Standards, particularly WAC 504-26-218, 504-26-220, and 504-26-222. Visit the University Website specific to your campus of enrollment for more information.

Disability Accommodations

Reasonable accommodations are available in online classes for students with a documented disability. All accommodations must be approved through your WSU Disability Services office. If you have a disability and need accommodations, we recommend you begin the process as soon as possible.

For more information contact a Disability Specialist on your home campus:

- WSU Online & Pullman: 509-335-3417
<http://www.accesscenter.wsu.edu>, Access.Center@wsu.edu
- Spokane: <http://spokane.wsu.edu.html>
- Tri-Cities: <http://www.tricity.wsu.edu/disability/>
- Vancouver: 360-546-9138 <http://studentaffairs.vancouver.wsu.edu/student-resource-center/disability-services>

Technical Support

If you need technical assistance, please expand the **Content** folder in the Map menu on the left by clicking the plus sign (+), then select **Technical Support**.

WSU Online Student Support

The WSU Online Web site (<http://online.wsu.edu>) has all the non-content and administrative related information you need to be a successful online learner. Login using your WSU Network ID and password to access your personalized information.

- Student Services information is available to provide assistance with any non-advising administrative questions
- Study tips and resources give you a good head start in assuring success with your course are also located on the Web site.

Library Support

All students enrolled in Washington State University online courses can use the WSU Libraries online databases and receive reference and research assistance from their home campus. Students can also borrow books and other circulating material and access full text journal articles.

- General Library Links by campus: <http://www.wsulibs.wsu.edu/electric/>

Review the Libraries' Online Information for more guidance.

- [Online Library Tour for Pullman Campus Undergraduates](#)
- [Online Library Tour for WSU Online Campus Students](#)

eTutoring

As a WSU student you have **FREE unlimited** access to eTutoring.org, a tutoring platform that enables students and tutors to collaborate in an online environment. This is not a course requirement, but simply an available resource that you may utilize as needed. With three ways to access a tutor you can choose the one that best fits your needs.

- Writing Lab tutors will respond to papers in ANY academic subject, including history, anthropology, sociology, and everything else. If you're working on a paper for ANY of your courses our tutors can help you. Just submit your paper, ask specific questions on the submission form and a tutor will respond within 24-48 hours.
- eChat rooms allow students to meet with tutors in one-on-one tutoring sessions via a fully interactive, virtual online environment.

- Students can also leave specific questions for an eTutor in any of our subjects by taking advantage of our eQuestions option. Our tutors will respond to your question within 24-48 hours.

The list of available tutoring subjects can be found on the <http://etutoring.org/login.cfm?institutionid=176> site. Current subjects include Accounting, Anatomy & Physiology, Biology, Chemistry, Math and Calculus, Medical Coding, MS Office 2007, Physics, Spanish, Statistics, Web Development and Writing!

Academic Calendar

Please review the current Academic Calendar to become familiar with critical deadlines on your campus. Visit the WSU Academic Calendar page: <http://www.registrar.wsu.edu/Registrar/Apps/AcadCal.ASPX>. and select your home campus from the drop down menu.

On Campus Safety

Washington State University is committed to maintaining a safe environment for its faculty, staff, and students on all campuses. Safety is the responsibility of every member of the campus community and individuals should know the appropriate actions to take when an emergency arises. In support of our commitment to the safety of the campus community the University has developed a Campus Safety Plan. It is highly recommended that you visit this web site <http://oem.wsu.edu/> to become familiar with the information provided as well as the site for your specific campus if applicable.

- WSU Pullman: <http://safetyplan.wsu.edu>
- WSU Spokane: <http://spokane.safetyplan.wsu.edu/>
- WSU Tri-Cities: <http://www.tricity.wsu.edu/safetyplan/>
- WSU Vancouver: <http://www.vancouver.wsu.edu/safety-plan>

9/19/13 - 010

Manzo-Robledo, Francisco

From: Olsen, Robert G
Sent: Monday, September 16, 2013 2:01 PM
To: Manzo-Robledo, Francisco; Zimmerman, Cindy Lou
Subject: RE: EE 526
Attachments: E E 526 Syllabus_draft_16_Sept_2013.docx

Francisco,

I believe that I have made all of the changes requested and will add only one clarification here.

The reason there is no text is that I am writing one and will be distributing it to the students. This is why in the syllabus, the references are to chapter 1 etc. My intention is to give these notes to the students for free. If the book is published, I will go through the normal channels that are used to approve the conditions under which a faculty member's own text is used for a course, but I am still intending to give the notes to students even if it is published.

Bob Olsen

Robert G. Olsen, Associate Dean for Undergraduate Programs
Dana Hall 138, 305 Spokane Street
College of Engineering and Architecture
Washington State University
Pullman, WA 99163-2713
(509) 335-0348
bgolsen@wsu.edu

From: Manzo-Robledo, Francisco
Sent: Friday, September 13, 2013 10:16 AM
To: Zimmerman, Cindy Lou; Olsen, Robert G
Subject: EE 526

After reviewing the syllabus for EE 526, the Catalog Subcommittee has the following suggestions:

1. Page 1: There is no text, but then in page 2 there are references to a text.
2. Page 1: "two hour exams", do you mean "two one hour exams"?
3. Page 3: In Week # 5, correct the numbering for week-class period (you have it as 5-1, 5-2, and then again 5-1.)
4. Page 4: Regardless of the delivery method this is a formal university course, please reword the paragraph "I will make every.....14 days to be returned."
5. Page 4: The set of quizzes (10%) mentioned in the paragraph does not appear in the table for the final grade distribution.
6. Page 5: The "Withdrawals" statement is no required in a syllabus.
7. Page 7: Graduate students are not given midterm grades, thus the "Midterm Grade Policy" does not apply.

Once the syllabus is changed please send it to me and I will distribute copies to the rest of the Committee.
Thank you.

Dr. Francisco Manzo-Robledo
Professor Latin American Literature and Culture
Foreign Languages and Cultures Department
Washington State University
Pullman, WA 99164-2610

Rec'd 9/26

Electrical Engineering 526

High Voltage Overhead Transmission Lines

Course Robert G. Olsen, PhD
Instructor: Work Phone: 509-335-0348
 Email Address: bgolsen@wsu.edu

Text and Draft text will be made available to all students at no cost in
Resources: either printed or electronic form. If published, normal
 university channels will be pursued to allow the use of the
 instructor's text for the course, although the intent is to
 continue to make the text available to students at no cost.

Course Overview

This course will cover the electrical analysis, performance and design of high voltage transmission lines with an emphasis on electromagnetic fields approaches. More specifically, the course will cover analysis of single and multiconductor power lines and examine the fundamental reasons why these lines have power capacity limits. In addition, subjects relating to the electromagnetic environment of power lines, coupling to other systems, electromagnetic field measurements and grounding systems will be covered.

Course Goals

Upon completion of this course, students will be able to:

- Explain the basics of high voltage overhead power transmission.
- Describe the components of real high voltage overhead transmission lines.
- List the physical approximations to real high voltage overhead transmission lines made prior to analysis.
- Identify rules of thumb for minimizing the effects of approximations.
- Apply the electromagnetic theory needed to analyze transmission lines.
- Demonstrate how currents can be found on wires above the earth.
- Discuss the origin of low frequency approximations and the resulting equivalent transmission line.
- Describe the basic lumped elements used to model transmission lines and to discuss why they are used.
- Calculate low frequency electric and magnetic fields near a transmission line as well as to explain how they reduce to those derived using quasi-static theory.

- Use basic electrostatic methods to design high voltage components.
- Demonstrate how single conductor theory can be extended to multiconductor transmission lines.
- Summarize the limits on power flow from fundamental principles.
- Describe the physics of corona and its effects.
- Employ techniques for calculating transmission line electromagnetic field coupling to other structures on the right of way.
- Describe how low frequency electric and magnetic fields are measured.
- Debate the issues related to the electric and magnetic field environment of high voltage transmission lines.
- Design and Evaluate grounding systems.

Course Work

Overview:

This course covers 13 sections of material. The length of time we will spend on each section varies as indicated in the course schedule below.

Assignments:

The course schedule gives a basic description of when homework assignments will be given. They will generally be due one week after they are assigned. Full descriptions of the assignments will be placed in the “Lessons” section of the course space at the appropriate times.

Exams:

For this course, there will be two, one hour exams and a final exam. Please refer to the “Course Schedule” link on the side menu for the exact dates of each exam. Exams will consist of 4 to 5 problems. Exam questions will be available one week prior to the due date and exams are submitted through the assignment link.

Course Schedule

Week #	Reading	Topic
1-1	Foreword	Course Introduction
1-2	Ch. 1	Intro to real high voltage overhead transmission lines
1-3	Ch. 2 (HW #1)	Physical approximations to real high voltage overhead transmission lines prior to analysis
2-1	Ch. 3.1, 3.2	Brief Overview of Electromagnetic Field Theory
2-2	Ch. 3.3, 3.5	(Review of Maxwell’s equations, wave equation,
2-3	Ch. 3.8 (HW #2)	Poynting’s theorem and reciprocity)

3-1	Ch. 4.7,	Low frequency propagation on an infinitely long single conductor transmission above earth
3-2	Ch. 4.8	Equivalent transmission line/distributed parameters
3-3	Ch. 4.9-4.12 (HW #3)	Examples
4-3	Ch. 5.3	Low frequency electromagnetic fields near a single conductor transmission line above earth
4-2	Ch. 5.3	capacitance and inductance per unit length, bundles
4-3	Ch. 5.4-5.6 (HW #4)	justification for electrostatics
5-1	---	Review
5-2	---	Exam #1
5-3	Ch. 6.1	electrostatics and electroquasistatics
6-1	Ch. 6.2	analytical techniques
6-2	Ch. 6.3 (HW #5)	numerical solutions
6-3	Ch. 7.2	low frequency balanced two conductor line
7-1	Ch. 7.3	examples of coupling
7-2	Ch. 7.5	general multiconductor case
7-3	Ch. 7.6-7.9 (HW #6)	Symmetrical components and its validity
8-1	Ch. 8.1	Poynting theorem and fundamental constraints
8-2	Ch. 8.2	Voltage limits on power flow
8-3	Ch. 8.3	Current limits on power flow
9-1	Ch. 8.4-8.5	Field uniformity and system limits
9-2	Ch. 8.6-8.7	Increasing voltage and current limits
9-3	Ch. 8.8-8.9 (HW #7)	Increasing field uniformity and system limits
10-1	---	Review
10-2	---	Exam #2
10-3	Ch. 9.1-9.2	Corona onset
11-1	Ch. 9.4, 9.7 (HW #8)	electromagnetic interference/ audible noise
11-2	Ch. 10.1	electromagnetic reciprocity theory
11-3	Ch. 10.3	inductive and capacitive coupling
12-1	Ch. 10.5-10.6	electrostatic reciprocity theory
12-2	Ch. 10.7 (HW #9)	examples
12-3	Ch. 11.1	Introduction to measurements
13-1	Ch. 11.2	magnetic and electric field sensors
13-2	Ch. 11.3-11.4 (HW #10)	practical measurements
13-3	Ch. 12.1	History of ELF electric and magnetic field bioeffects research

14-1	Ch. 12.2-12.3	Electric field calculation/ effects
14-2	Ch. 12.4-12.5	Magnetic field calculation/ effects
14-3	Ch. 12.6 (HW #12)	Mitigation of electric/magnetic fields
15-1	Ch. 13.1-13.2	Introduction and hemispherical electrode
15-2	Ch. 13.2-13.3	grounding resistance, touch, step and transferred potentials. Vertical rod electrode
15-3	Ch. 13.5 (HW #13)	General solutions for more complicated electrodes
16-1	---	Final Exam

Instructor Interaction

The course space will be visited at least 3 times each week (Mon-Fri), and responses to email and questions posted to the Questions for the Instructor discussion board will be given within 48 hours (Mon-Fri). Any exams or graded assignments may take as long as 14 days to be returned.

Grading

Students performance will be evaluated based on the following five assessments; the set of quizzes (10%), the set of homework assignments (25%), two, one hour exams (20% each) and a final exam (25%).

The total number of points available for the five assessments will be 100. Letter grades (with interpretations taken from WSU Academic Regulations) are distributed according to the following formula. Some adjustments may be made for improvement over the course of the semester and/or for the possibility that one of the assessments is significantly inconsistent with the others.

Overall, your final grade (based on a total of 100) points will be calculated as follows:

Course Work	Points	Percent of Final Grade
Homework Assignments	25	25%
Quizzes	10	10%
Exams (2 @ 20 pts. each)	40	40%
Final Exam	25	25%
TOTALS	100	100%

Grade	Points
A	93-100

A-	90-92
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72
D+	67-69
D	60-66
F	59 & Below

Late Assignment/Exam Policy

Homework assignments submitted late will receive a 20% reduction in score; if submitted more than one week late, they receive zero points. Students must request an absence prior to a missed exam in order to attempt it later. The exam (in a form determined by the instructor) must be made up within one week or a grade of zero will be given.

Incomplete Grade Policy

Incompletes are granted only with permission of the instructor and are subject to the following guidelines:

1. Students must request an incomplete in writing or by e-mail from the instructor at least 2 weeks before the end of the semester.
2. The student must assemble the following items, and submit them to the instructor:
 - o Incomplete Grade Agreement (<http://www.gradsch.wsu.edu/forms/>)
 - o The student's written and signed request
 - o A copy of the student's current grade and record of completed work copied from the Angel Gradebook
 - o Assignment descriptions for all remaining work
 - o Any available documentation verifying the student's reason for requesting the incomplete.
 - o If the student does not submit the required documentation, the instructor has the option of denying the incomplete request.
3. In order to be considered for an incomplete, there are three main conditions:

- The student must have completed at least 75% of the total work for the course.
 - The student must have a mathematical possibility of passing the class.
 - The student must have completed and submitted the necessary documentation before the end of the semester.
4. If the incomplete is granted, the student and the instructor must sign the Incomplete Grade Agreement form (<http://www.gradsch.wsu.edu/forms/>) and submit it to the Registrar within 14 days of the end of the enrollment semester at issue. The student must also provide a copy of all of the documentation to their WSU Online Advisor.

If an incomplete is granted, the School of Electrical Engineering and Computer Science requires ALL work must be completed within **60 days** from the end of the enrollment semester at issue. Otherwise, an automatic grade of "F," or failing, will be entered on the student's transcript.

Academic Integrity Plagiarism and Academic Dishonesty

Academic integrity is the cornerstone of the university. You assume full responsibility for the content and integrity of the academic work you submit. You may collaborate with classmates on assignments, with the instructor's permission. However the guiding principle of academic integrity shall be that your submitted work, examinations, reports, and projects must be your own work. You can learn more about Academic Integrity on your campus using the URL listed in the Academic Regulations section or to <http://conduct.wsu.edu/academic-integrity-policies-and-resources>. Please use these resources to ensure that you don't inadvertently violate WSU's standard of conduct.

Plagiarism is the use of someone else's words or ideas without giving credit to the source. This includes not only copying someone else's work and presenting it as your own, but also failing to cite your sources, including Internet sites. The WSU Statement on Academic Integrity (which includes plagiarism) reads:

As an institution of higher education, Washington State University is committed to principles of truth and academic honesty. All members of the University community share the responsibility for maintaining and supporting these principles. When a student enrolls in Washington State University, the student assumes an obligation to pursue academic endeavors in a manner consistent with the standards of academic integrity adopted by the University. To maintain the academic integrity of the community, the University cannot tolerate acts of academic dishonesty including any forms of cheating, plagiarism, or fabrication. Washington State University reserves the right and the power to discipline or to exclude students who engage in academic dishonesty.

Responses to plagiarism in this course will be as follows:

- For a first offense, any assignment plagiarized will receive an "F" (0 points) and the matter referred to the Director of the School of Electrical Engineering and Computer

Science and the Office of Student Affairs. Students *will not be allowed to rewrite or resubmit a plagiarized assignment.*

- For a second offense, the student will receive an "F" in the course.

For clarification on what constitutes plagiarism, refer to the following web sites:

<http://owl.english.purdue.edu/owl/resource/589/1/> or www.wsulibs.wsu.edu/plagiarism/main.html

Any course-related materials, presentations, lectures, etc. are the instructor's intellectual property and may be protected by copyright. The use of University electronic resources (e.g., Angel) for commercial purposes, including advertising to other students to buy notes, is a violation of WSU's computer abuses and theft policy (WAC 504-26-218).

Academic Regulations

Students enrolled in online courses are subject to the same University academic regulations as on-campus students. For the most accurate and up to date information start with your home campus Web site. For information specific to Academic Regulations please use the Website search function.

- WSU Online & Pullman Campus: <http://wsu.edu/>
- WSU Spokane: <http://spokane.wsu.edu/>
- WSU Tri-Cities: <http://www.tricity.wsu.edu/>
- WSU Vancouver: <http://www.vancouver.wsu.edu>

Student Privacy

As a University student, you have legal rights under the Family Educational Rights and Privacy Act (FERPA) for protection of your academic records. For a complete explanation of these rights, visit the URL associated with your home campus in the Academic Regulations section or <http://www.registrar.wsu.edu/Registrar/Apps/FERPA.ASPX>.

Online Collaboration

The essence of education is exposure to diverse viewpoints. In your threaded discussion posts you'll meet students with vastly different opinions and backgrounds. When you don't agree with their views, pause a moment. Weigh their words. You're encouraged to disagree with the substance of others' ideas and opinions, but do so with an active sense of respect for one another, and without losing focus on the topic at hand. Personal attacks, inflammatory statements, flaming, trolling, and disruption of the discussion do not have a place in academic discourse.

Your instructors will promote high-quality academic discussions by removing any posts they view as disruptive of the educational process and alerting students whose posts have been removed that they have violated course expectations. Students who continue to misuse the

discussion boards after a warning may be subject to removal of access rights, course failure, and referral to the Office of Student Conduct.

Postings must comply with University policy on use of computing resources, including those regarding harassment and discrimination, as well as conform to the Standards of Conduct for Students. Students are encouraged to review the Standards, particularly WAC 504-26-218, 504-26-220, and 504-26-222. Visit the University Website specific to your campus of enrollment for more information.

Disability Accommodations

Reasonable accommodations are available in online classes for students with a documented disability. All accommodations must be approved through your WSU Disability Services office. If you have a disability and need accommodations, we recommend you begin the process as soon as possible.

For more information contact a Disability Specialist on your home campus:

- WSU Online & Pullman: 509-335-3417
<http://www.accesscenter.wsu.edu>, Access.Center@wsu.edu
- Spokane: <http://spokane.wsu.edu.html>
- Tri-Cities: <http://www.tricity.wsu.edu/disability/>
- Vancouver: 360-546-9138 <http://studentaffairs.vancouver.wsu.edu/student-resource-center/disability-services>

Technical Support

If you need technical assistance, please expand the **Content** folder in the Map menu on the left by clicking the plus sign (+), then select **Technical Support**.

WSU Online Student Support

The WSU Online Web site (<http://online.wsu.edu>) has all the non-content and administrative related information you need to be a successful online learner. Login using your WSU Network ID and password to access your personalized information.

- Student Services information is available to provide assistance with any non-advising administrative questions
- Study tips and resources give you a good head start in assuring success with your course are also located on the Web site.

Library Support

All students enrolled in Washington State University online courses can use the WSU Libraries online databases and receive reference and research assistance from their home campus. Students can also borrow books and other circulating material and access full text journal articles.

- General Library Links by campus: <http://www.wsulibs.wsu.edu/electric/>

Review the Libraries' Online Information for more guidance.

- [Online Library Tour for Pullman Campus Undergraduates](#)
- [Online Library Tour for WSU Online Campus Students](#)

eTutoring

As a WSU student you have **FREE unlimited** access to eTutoring.org, a tutoring platform that enables students and tutors to collaborate in an online environment. This is not a course requirement, but simply an available resource that you may utilize as needed. With three ways to access a tutor you can choose the one that best fits your needs.

- Writing Lab tutors will respond to papers in ANY academic subject, including history, anthropology, sociology, and everything else. If you're working on a paper for ANY of your courses our tutors can help you. Just submit your paper, ask specific questions on the submission form and a tutor will respond within 24-48 hours.
- eChat rooms allow students to meet with tutors in one-on-one tutoring sessions via a fully interactive, virtual online environment.
- Students can also leave specific questions for an eTutor in any of our subjects by taking advantage of our eQuestions option. Our tutors will respond to your question within 24-48 hours.

The list of available tutoring subjects can be found on the <http://etutoring.org/login.cfm?institutionid=176> site. Current subjects include Accounting, Anatomy & Physiology, Biology, Chemistry, Math and Calculus, Medical Coding, MS Office 2007, Physics, Spanish, Statistics, Web Development and Writing!

Academic Calendar

Please review the current Academic Calendar to become familiar with critical deadlines on your campus. Visit the WSU Academic Calendar page:

<http://www.registrar.wsu.edu/Registrar/Apps/AcadCal.ASPX>. and select your home campus from the drop down menu.

On Campus Safety

Washington State University is committed to maintaining a safe environment for its faculty, staff, and students on all campuses. Safety is the responsibility of every member of the campus

community and individuals should know the appropriate actions to take when an emergency arises. In support of our commitment to the safety of the campus community the University has developed a Campus Safety Plan. It is highly recommended that you visit this web site <http://oem.wsu.edu/> to become familiar with the information provided as well as the site for your specific campus if applicable.

- WSU Pullman: <http://safetyplan.wsu.edu>
- WSU Spokane: <http://spokane.safetyplan.wsu.edu/>
- WSU Tri-Cities: <http://www.tricity.wsu.edu/safetyplan/>
- WSU Vancouver: <http://www.vancouver.wsu.edu/safety-plan>