ET 437a – COMMUNICATIONS SYSTEMS TECHNOLOGY

SYLLABUS

Instructor: D. T. Williams
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Office Hours: MWF 11-2 and by appointment as necessary
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EMail: dtw322@siu.edu

Text: Modern Electronic Communication, 9/E
Jeff Beasley, New Mexico State University
Gary M. Miller, Monroe Community College
ISBN-10: 0132251132
Publisher: Prenhall

Lab Manual, 9/E
Oliver, Beasley & Shores | ©2008 | Prentice Hall | Paper; 320 pp

Goal: To introduce students to transmission lines, waveguides, radio wave propagation, and antennas. To enable the students to gain an understanding of the material for the practical application of the aforementioned topics.

Topics including, but not limited to:
Radio systems             RF spectrum              RF Transmission lines & connectors
Traveling and standing waves Reflection Transmission line models and characteristics
SWR & impedance mismatch  Smith Charts             Impedance matching devices
Electromagnetic fields & power Losses & efficiency Radiation patterns and beam width
Wave propagation          RF safety                 Various antennas: design & analysis

Laboratory exercises including, but not limited to:
Admittance meter          Artificial transmission line Slotted line
Antenna SWR               Fiber optic cable losses

Project: Antenna design, construction, demonstration, and report

Course grade:
Homework: 10%  Lab work: 25%  Class participation: 10%  Project: 15%  Exams: 50%
Scale: 90-100%  A; 80-89%  B; 70-79%  C; 60-69%  D; <60%  F
Exam Policy: There will be NO make-up exams; students who must miss the mid-term will have their final count twice.

At the end of the course, the student should be able to:
• Converse effectively in the language of communications systems, including correct understanding and use of technical terms, mathematical description, and signals versus media
• Correctly use mathematical relationships involving wave length, frequency, velocity factor, characteristic impedance, power losses, SWR
• Use a Smith Chart
• Effectively use basic laboratory instrumentation in the analysis of communications circuits
• Effectively communicate laboratory work
• Discuss the advantages and disadvantages of various types of antennas
• Apply the construction details, losses, gain, and radiation pattern to the design and analysis various types of antennas
• Discuss wave propagation as it relates to antenna design, orientation, and placement.
• Discuss RF safety issues related to antennas
• Design a working antenna for a given frequency
**Syllabus Attachment**

**Fall 2013**

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**IMPORTANT DATES**

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last day to add a class (without instructor permission)</td>
<td>8/25/2013</td>
</tr>
<tr>
<td>Last day to withdraw completely and receive a 100% refund</td>
<td>9/1/2013</td>
</tr>
<tr>
<td>Last day to drop a course using SalukiNet</td>
<td>10/27/2013</td>
</tr>
<tr>
<td>Last day to file diploma application (for name to appear in Fall Commencement program)</td>
<td>11/1/2013</td>
</tr>
<tr>
<td>Final examinations</td>
<td>12/9 – 12/13/2013</td>
</tr>
</tbody>
</table>

*Note: For outreach, internet, and short course drop/add dates, visit Registrar’s Academic webpage [http://registrar.siu.edu/](http://registrar.siu.edu/)*

**FALL SEMESTER HOLIDAYS**

<table>
<thead>
<tr>
<th>Holiday</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor Day</td>
<td>9/02/2013</td>
</tr>
<tr>
<td>Fall Break</td>
<td>10/12 – 10/15/2013</td>
</tr>
<tr>
<td>Veterans Day</td>
<td>11/11/2013</td>
</tr>
<tr>
<td>Thanksgiving Break</td>
<td>11/27–12/1/2013</td>
</tr>
</tbody>
</table>

**WITHDRAWAL POLICY ~ Undergraduate only**

Students who officially register for a session may not withdraw merely by the stopping of attendance. An official withdrawal form needs to be initiated by the student and processed by the University. For the proper procedures to follow when dropping courses and when withdrawing from the University, please visit [http://registrar.siu.edu/pdf/upgradcatalog1314.pdf](http://registrar.siu.edu/pdf/upgradcatalog1314.pdf)

**INCOMPLETE POLICY ~ Undergraduate only**

An INC is assigned when, for reasons beyond their control, students engaged in passing work are unable to complete all class assignments. An INC must be changed to a completed grade within one semester following the term in which the course was taken, or graduation, whichever occurs first. Should the student fail to complete the course within the time period designated, that is, no later than the end of the semester following the term in which the course was taken, or graduation, whichever occurs first, the incomplete will be converted to a grade of F and the grade will be computed in the student's grade point average. For more information please visit: [http://registrar.siu.edu/grades/incomplete.html](http://registrar.siu.edu/grades/incomplete.html)

**REPEAT POLICY**

An undergraduate student may, for the purpose of raising a grade, enroll in a course for credit no more than two times (two total enrollments) unless otherwise noted in the course description. For students receiving a letter grade of A,B,C,D, or F, the course repetition must occur at Southern Illinois University Carbondale. Only the most recent (last) grade will be calculated in the overall GPA and count toward hours earned. See full policy at [http://registrar.siu.edu/pdf/upgradcatalog1314.pdf](http://registrar.siu.edu/pdf/upgradcatalog1314.pdf)

**GRADUATE POLICIES**

Graduate policies often vary from Undergraduate policies. To view the applicable policies for graduate students, please visit [http://gradschool.siu.edu/about-us/grad-catalog/index.html](http://gradschool.siu.edu/about-us/grad-catalog/index.html)

**DISABILITY POLICY**

Disability Support Services provides the required academic and programmatic support services to students with permanent and temporary disabilities. DSS provides centralized coordination and referral services. To utilize DSS services, students must come to the DSS to open cases. The process involves interviews, reviews of student-supplied documentation, and completion of Disability Accommodation Agreements. [http://disabilityservices.siu.edu/](http://disabilityservices.siu.edu/)

**STUDENT CONDUCT CODE**

[http://policies.siu.edu/other_policies/chapter3/conduct.html](http://policies.siu.edu/other_policies/chapter3/conduct.html)

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**SALUKI Cares**

The purpose of Saluki Cares is to develop, facilitate and coordinate a university-wide program of care and support for students in any type of distress—physical, emotional, financial, or personal. By working closely with faculty, staff, students and their families, SIU will continue to display a culture of care and demonstrate to our students and their families that they are an important part of the community. For Information on Saluki Cares: (618) 453-5714, or siscares@siu.edu, [http://saluki-cares.siu.edu/index.html](http://saluki-cares.siu.edu/index.html)

**EMERGENCY PROCEDURES**

Southern Illinois University Carbondale is committed to providing a safe and healthy environment for study and work. We ask that you become familiar with the SIU Emergency Response Plan and Building Emergency Response Team (BERT) programs. Emergency response information is available on posters in buildings on campus, available on BERT’s website at www.bert.siu.edu, Department of Safety’s website at www.dps.siu.edu (disaster drop down) and the Emergency Response Guideline pamphlet. Instructors will provide guidance and direction to students in the classroom in the event of an emergency affecting your location. *It is important that you follow these instructions and stay with your instructor during an evacuation or sheltering emergency.*

**INCLUSIVE EXCELLENCE**

SIU contains people from all walks of life, from many different cultures and sub-cultures, and representing all strata of society, nationalities, ethnicities, lifestyles, and affiliations. Learning from and working with people who differ is an important part of education as well as an essential preparation for any career. For more information please visit [http://www.inclusiveexcellence.siu.edu/](http://www.inclusiveexcellence.siu.edu/)

**MORRIS LIBRARY HOURS**

[http://www.lib.siu.edu/about](http://www.lib.siu.edu/about)

**LEARNING AND SUPPORT SERVICES**

Help is within reach. Learning support services offers free tutoring on campus and math labs. To find more information please visit the Center for Learning and Support Services website:

Tutoring : [http://tutoring.siu.edu/](http://tutoring.siu.edu/)


**WRITING CENTER**

The Writing Center offers free tutoring services to all SIU students and faculty. To find a Center or Schedule an appointment please visit [http://write.siu.edu/](http://write.siu.edu/)

**AFFIRMATIVE ACTION & EQUAL OPPORTUNITY**

Our office’s main focus is to ensure that the university complies with federal and state equity policies and handles reporting and investigating of discrimination cases. For more information visit: [http://diversity.siu.edu/#](http://diversity.siu.edu/#)

**Additional Resources Available:**

**SALUKINET:** [https://salukinet.siu.edu/cp/home/displaylogin](https://salukinet.siu.edu/cp/home/displaylogin)

**ADVICEMENT:** [http://advisement.siu.edu/](http://advisement.siu.edu/)

**PROVOST & VICE CHANCELLOR:** [http://pvcaa.siu.edu/](http://pvcaa.siu.edu/)

**SIU ONLINE:** [http://online.siu.edu/](http://online.siu.edu/)

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2013 FALL SEMESTER FINAL EXAMINATION SCHEDULE INFORMATION

The examination schedule attempts to avoid examination conflicts by providing separate examination periods for Tuesday-Thursday lecture classes. Other information about final examinations is listed below:

1. The class final exam period is scheduled based on the meeting time and days configuration listed on the first line of the class entry of the on-line Schedule of Classes (which should be the same as the first printed line for the section on the registered student's schedule print-out). For example, a class section is listed in the Schedule on two lines in the manner:
   
   08:00 – 08:50 T R
   09:00 - 10:50 W

   The listed starting time for the first line of the entry is "08:00". The meeting days of that first line are "T R", and therefore are in the category "Begins with a T or R ". The Exam Date and Period is by the attached Fall 2013 Final Examination Schedule to be Tuesday, December 10 at 07:50-09:50 a.m.

2. Classes should plan to hold their final examination in their regularly scheduled classrooms. The space scheduling section of the Office of the Registrar will forward to departments information relative to the location for examinations for those classes that cannot hold their examinations in their regularly scheduled rooms because of a space conflict. This will be done sufficiently in advance of the final examination days to provide adequate notice for all.

   Classes that meet less than the entire semester should hold their exams during the last regularly scheduled class session prior to the formal final examination week.

   It is a policy of the University that no final examination be given prior to the scheduled final examination period, and that students be given their examinations at the designated times. Any deviation from this policy must be approved by the Dean of the College.

3. Students who find they have more than three examinations on one day may petition, and students who have two examinations scheduled at one time should petition their academic dean for approval to take an examination during the make-up examination period on the last day. Provision for such a make-up examination period does not mean that students may decide to miss the scheduled examination time and expect to make it up during this make-up period. This period is to be used only for students whose petitions have been approved by their dean.

4. Students who must miss a final examination may not take an examination before the time scheduled for the class examination. Information relative to the proper grade to be given students who miss a final examination and are not involved in a situation covered in the preceding paragraph will be found in the memorandum forwarded to members of the instructional staff at the time they receive the final grade listing for the recording of grades.
5. One credit hour courses and classes that meet for less than the full semester should hold their examinations during the last regularly scheduled class session prior to the formal final examination week.

6. Other classes (not those for 1 credit) should hold their final exams as follows:

<table>
<thead>
<tr>
<th>Meeting Time Starts At:</th>
<th>Meeting Days:</th>
<th>Scheduled</th>
<th>Date of Exam</th>
<th>Exam Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00</td>
<td>Sat., Dec 7</td>
<td>Begin with a T or R --------------</td>
<td>Tue., Dec 10</td>
<td>07:50-09:50a.m.</td>
</tr>
<tr>
<td>08:00</td>
<td>Sun., Dec 8</td>
<td>Begin with a M or W or F----------</td>
<td>Mon., Dec 9</td>
<td>07:50-09:50a.m.</td>
</tr>
<tr>
<td>09:00</td>
<td>Tue., Dec 10</td>
<td>Begin with a T or R --------------</td>
<td>Tue., Dec 10</td>
<td>05:50-07:50p.m.</td>
</tr>
<tr>
<td>09:35</td>
<td>Thu., Dec 12</td>
<td>Begin with a T or R --------------</td>
<td>Thu., Dec 12</td>
<td>10:10a.m.-12:10p.m.</td>
</tr>
<tr>
<td>09:00</td>
<td>Thu., Dec 11</td>
<td>Begin with a M or W or F----------</td>
<td>Wed., Dec 11</td>
<td>07:50-09:50a.m.</td>
</tr>
<tr>
<td>10:00</td>
<td>Thu., Dec 12</td>
<td>Begin with a T or R --------------</td>
<td>Thu., Dec 12</td>
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<td>10:00</td>
<td>Thu., Dec 12</td>
<td>Begin with a M or W or F----------</td>
<td>Thu., Dec 12</td>
<td>12:50-02:50p.m.</td>
</tr>
<tr>
<td>11:00</td>
<td>Mon., Dec 9</td>
<td>Begin with a T or R --------------</td>
<td>Mon., Dec 9</td>
<td>12:50-02:50p.m.</td>
</tr>
<tr>
<td>11:00</td>
<td>Mon., Dec 10</td>
<td>Begin with a M or W or F----------</td>
<td>Tue., Dec 10</td>
<td>12:50-02:50p.m.</td>
</tr>
<tr>
<td>12:00</td>
<td>Wed., Dec 11</td>
<td>Begin with a T or R --------------</td>
<td>Wed., Dec 11</td>
<td>12:50-02:50p.m.</td>
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<tr>
<td>12:35</td>
<td>Wed., Dec 11</td>
<td>Begin with a T or R --------------</td>
<td>Wed., Dec 11</td>
<td>12:50-02:50p.m.</td>
</tr>
<tr>
<td>12:00</td>
<td>Fri., Dec 13</td>
<td>Begin with a M or W or F----------</td>
<td>Fri., Dec 13</td>
<td>10:10a.m.-12:10p.m.</td>
</tr>
<tr>
<td>01:00</td>
<td>Fri., Dec 13</td>
<td>Begin with a T or R --------------</td>
<td>Fri., Dec 13</td>
<td>05:50-07:50p.m.</td>
</tr>
<tr>
<td>01:00</td>
<td>Fri., Dec 13</td>
<td>Begin with a M or W or F----------</td>
<td>Thu., Dec 12</td>
<td>03:10-05:10p.m.</td>
</tr>
<tr>
<td>02:00</td>
<td>Fri., Dec 13</td>
<td>Begin with a T or R --------------</td>
<td>Fri., Dec 13</td>
<td>03:10-05:10p.m.</td>
</tr>
<tr>
<td>02:00</td>
<td>Fri., Dec 13</td>
<td>Begin with a M or W or F----------</td>
<td>Fri., Dec 13</td>
<td>12:50-02:50p.m.</td>
</tr>
<tr>
<td>03:00</td>
<td>Mon., Dec 9</td>
<td>Begin with a T or R --------------</td>
<td>Mon., Dec 9</td>
<td>08:00-10:00P.M.</td>
</tr>
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<td>03:35</td>
<td>Mon., Dec 9</td>
<td>Begin with a T or R --------------</td>
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<td>08:00-10:00P.M.</td>
</tr>
<tr>
<td>03:00</td>
<td>Wed., Dec 11</td>
<td>Begin with a M or W or F----------</td>
<td>Wed., Dec 11</td>
<td>03:10-05:10p.m.</td>
</tr>
<tr>
<td>04:00</td>
<td>Mon., Dec 9</td>
<td>Begin with a T or R --------------</td>
<td>Mon., Dec 9</td>
<td>08:00-10:00P.M.</td>
</tr>
<tr>
<td>04:00</td>
<td>Thu., Dec 12</td>
<td>Begin with a M or W or F----------</td>
<td>Thu., Dec 12</td>
<td>08:00-10:00P.M.</td>
</tr>
</tbody>
</table>

Classes starting at 5 p.m. or later and meet only on Monday-----Mon., Dec 9 05:50-07:50p.m. |
Classes starting at 5 p.m. or later and meet only on Tuesday -----Tue., Dec 10 08:00-10:00P.M. |
Classes starting at 5 p.m. or later and meet only on Wednesday--Wed., Dec 11 08:00-10:00P.M. |
Classes starting at 5 p.m. or later and meet only on Thursday ----Thu., Dec 12 05:50-07:50p.m. |
Night classes starting at 5 p.m. or later, but before 7 p.m. and first meeting day is a Monday or Wednesday-----------------Mon., Dec 9 05:50-07:50p.m. |
Night classes starting at 5 p.m. or later, but before 7 p.m. and first meeting day is a Tuesday or Thursday -----------------Thu., Dec 12 05:50-07:50p.m. |
Night classes starting 7 p.m. or later and first meeting day is a Monday or Wednesday-------------------Wed., Dec 11 08:00-10:00P.M. |
Night classes starting 7 p.m. or later and first meeting day is a Tuesday or Thursday ---------------------Fri., Dec 13 05:50-07:50p.m. |
Make-up examinations for students whose petitions have been approved by their dean ---------------------Fri., Dec 13 08:00-10:00P.M. |