

ECE 5654 – Advanced Digital Communications

Digital Communications II: Advanced Theory and Analysis

Instructors: Robert McGwier

And Ravi Tandon

Lecture #1.1: Overview of Course
Mechanics

Spring 2014





Learning Objectives

- In this set of slides we will introduce the student to the course mechanics
- After reviewing this set of slides, the student should be able to
 - Explain the components of the course
 - Explain the grading policy

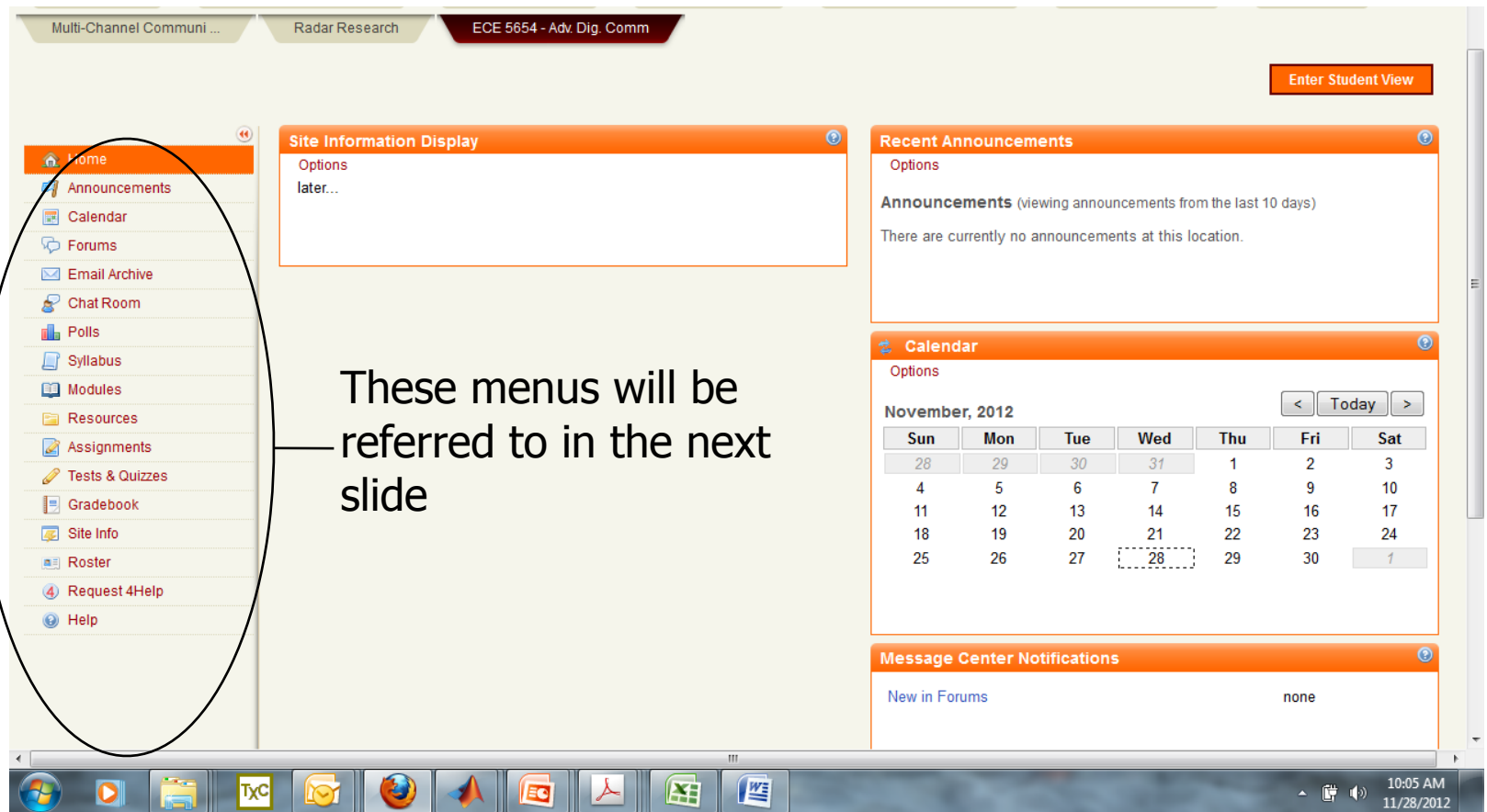


Course Mechanics

- Course title – Adv. Digital Communications
 - ECE 5654
 - CRN 12478
- Format - Synchronous (face-to-face)
- The course is tied to the course website
 - The students should pay special attention to the “Modules” section which provides a step-by-step description of the course components
- Important Dates
 - March 4 – Midterm exam (in class, 9:30 AM - 10:45 AM)
 - May 13 – Final Exam 09M (7:45 AM-9:45 AM!!)
- Please check your calendars now!
 - If you have conflicts due to religious observances or other immovable, important events, please see me before the end of the second week of class. After that time, I will not consider making special arrangements except in the case of an emergency.



Website: scholar.vt.edu



Multi-Channel Communi ... Radar Research ECE 5654 - Adv. Dig. Comm

Enter Student View

Site Information Display

Options
later...

Recent Announcements

Options

Announcements (viewing announcements from the last 10 days)

There are currently no announcements at this location.

Calendar

Options

November, 2012

Sun	Mon	Tue	Wed	Thu	Fri	Sat
28	29	30	31	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	1

Message Center Notifications

New in Forums none

These menus will be referred to in the next slide

10:05 AM 11/28/2012



Web Site for Course Documents

- scholar.vt.edu
- What is available
 - Syllabus (under "Syllabus" menu)
 - Lecture slides (under "Modules")
 - Homework assignments (under "Modules")
 - Project description (under "Modules")
 - Discussion forums for asking questions (under "Forums" menu)



Instructors: Robert McGwier and Ravi Tandon

- Office: ICTAS-CRC Hume Center, Second Floor
 - (Possible we will hold office hours in our hoteling office in Durham)
- Phone (during office hours): 231-2041 McGwier / 231-7059 Tandon
- e-mail: rwmcgwi@vt.edu and tandonr@vt.edu
 - Website is the preferred way to ask questions, unless they are of a personal nature
- Office Hours (450 Durham Hall)
 - Monday, 11 am- Noon
 - Wednesday, 11 am- Noon
- We work in the field of wireless communications in the Hume Center for National Security and Technology



Instructor: Robert McGwier

- Personal:

- Married to Sharon
- Seven children: Aimee, Sarah, John, Patrick, Shelby, Meghan, and Chelsey (and 11 grandkids)
- Hobbies: amateur radio (N4HY), flying, hiking, running, photography, arguing politics



Instructor: Ravi Tandon

- Educational background:
 - B.Tech, IIT Kanpur (India). (2004)
 - Ph.D., University of Maryland, College Park. (2010)
 - Post-doc, Princeton University. (2010-2012)
- Personal:
 - Married to Aakriti.
 - No kids...(yet)
 - Hobbies: reading, playing & watching tennis.



Getting Help

- There are three basic ways to get help with the course
 - Virtual Office Hours (see next slide)
 - Discussion Forum (preferred)
 - E-mail
 - This should be restricted to personal questions that cannot be answered in a public forum
- The Discussion Forum is accessible via the scholar website



Required Course Materials

- **Textbook:**

- J. G. Proakis and M. Salehi, Digital Communications, 5th edition, McGraw-Hill, 2008. ISBN# 978-0-07-295716-7

- **Software:**

- Matlab for Windows
- Nearly any version of Matlab is acceptable, provided that it is from the past 4 years.



Prerequisites

- **Some prior background in digital communications**
 - A good test: Do you know the difference between ASK, FSK, and QPSK?
 - One course which provides this background:
 - ECE 4634 - Digital Communications
- **You should be comfortable with basic probability and random process theory**
 - A good test: How is the autocorrelation function of a random process related to the power spectral density?
 - One course which provides this background:
 - ECE 5605 - Stochastic Processes
 - Hint: (What is autocorrelation with lag 0?)



Grading - Homework (20%)

- Overall 10-15 assignments
- Problems will focus on practicing the techniques and algorithms that we discuss in class.
- Grading will be on a simple scale with 2 points per part of a problem (0=did not attempt, 1=attempted, 2=correct)
- You may discuss the problems in groups but solutions should then be your own.
- Homework due in class. Late homework will not be accepted except in true emergencies (see course syllabus for guidance).



Homework Problems (20%)

- By definition the homework does not completely overlap with the lectures.
- We will have homework assignments that are a blend of book problems (intended for deeper understanding) and my own homework problems that will be more similar to the lectures.
- All homework problems are profitable and useful for learning!



Grading - Exams (60%)

- In-class Mid-Term
 - Tuesday, March 4, (in class, 9:30 am - 10:45 am)
 - 30% of Final Grade

- Final Exam
 - Tuesday, May 13, 7:45 am-9:45 am
 - This classroom
 - 30% of Final Grade
 - Covers the entire course

- Make up exams will be given only in the case of an emergency.



Quizzes (20%)

- Approximately once per week there is a quiz on the lecture/reading material
- Quizzes are online through the scholar webpage and multiple choice
- They are not difficult if you keep up with the reading



What's the Point?

- The course has five main components:
 - Lectures – these are meant to introduce the key concepts in the course and provide you with fundamental understanding
 - Book – this is meant to supplement the lectures and provide more detail that cannot be covered in a 75 minute lecture. (section numbers given in the syllabus and on the website)
 - Homework – This is meant to provide you deeper understanding of the material and to provide you with practice of class concepts
 - Quizzes – Designed to encourage you to keep up with the reading
 - Exams – These are meant to show me how well you have grasped the material