1. Catalog Description – (3 credits)

2. Pre-requisites and Co-requisites (Be specific – 5000 level courses should list topics, for example Phys 2049 or equivalent)

3. Course Objectives – Upon completion of this course, the student should be able to design receivers for arbitrary signal sets on additive Gaussian noise channels; determine the error probabilities for communications over an AWGN channel; evaluate tradeoffs between bandwidth and energy efficiency; design and evaluate the performance of coherent and noncoherent receivers; explain the terms fading, nonselective, frequency-selective, time-selective; evaluate the performance of modulation in fading channels with and without diversity; understand various carrier and symbol synchronization techniques; understand and evaluate the performance of multi-antenna communication schemes, including beamforming and Alamouti code (modulation); understand ISI and techniques to combat it in time and frequency

4. Contribution of course to meeting the professional component (ABET only – undergraduate courses) – N/A

5. Relationship of course to program outcomes: Skills student will develop in this course (ABET only undergraduate courses) – N/A

6. Instructor – Dr. John Shea
   a. Office location: 439 NEB
   b. Telephone: 352-575-0740
   c. E-mail address: jshea@ece.ufl.edu
   d. Class Web site: https://elearning2.courses.ufl.edu/
   e. Office hours: Mon. and Tues. 10:00–11:30 AM

7. Teaching Assistant - None
   a. Office location:
   b. Telephone:
   c. E-mail address:
   d. Office hours:

8. Meeting Times - MWF 10:40-11:30

9. Class/laboratory schedule - 3 class periods consisting of 50 minutes each

10. Meeting Location – 201 NEB

11. Material and Supply Fees -

12. Textbooks and Software Required -
13. Recommended Reading –

14. Course Outline –
   - Optimal Filtering, Decisions, and Signal Sets (_ 10 lectures)
   - Coherent Communications (_ 6 lectures)
   - Noncoherent Communications (_ 4 lectures)
   - Synchronization (_ 4 lectures)
   - Intersymbol Interference and Equalization (_ 6 lectures)
   - Fading Channels (_ 3 lectures)
   - Multi-antenna Communication (_ 4 lectures)
   - Multi-channel Communication (_ 3 lectures)

15. Attendance and Expectations - Attendance is not mandatory. However, students are expected to know all material covered in class, even if it is not in the book. Furthermore, the instructor reserves the right to give unannounced “pop” quizzes with no make-up option. Students who miss such quizzes will receive zeros for that grade. If an exam must be missed, the student must see the instructor and make arrangements in advance unless an emergency makes this impossible. Approval for make-up exams is much more likely if the student is willing to take the exam early.

Cell phones are to be silenced. No text messaging during class or exams.

Requirements for class attendance and make-up exams, assignments, and other work are consistent with university policies that can be found at:
https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx
16. Grading – Grading will be based on two exams (40% each), homework and quizzes (10%) and participation (10%).

The participation score will take into account in-class participation, e-mail or instant messaging exchanges, discussions outside of class, etc. A grade of > 90% is guaranteed an A, > 80% is guaranteed a B, etc. There is no grader for this class, so homework will generally be graded on a 0 or 1 scale. No formal project is required, but, as mention above, students may be required to use MATLAB in solving some homework problems. When students request that a submission (test or homework) be re-graded, we reserve the right to re-grade the entire submission rather than just a single problem.

Collaboration on homework is permitted unless explicitly prohibited, provided that:
1. Collaboration is restricted to students currently in this course.
2. Collaboration must be a shared effort.
3. Each student must write up his/her homework independently.
4. On problems involving MATLAB programs, each student should write their own program. Students may discuss the implementations of the program, but students should not work as a group in writing the programs.

If I suspect that too many people are turning in work that is not their own, then I will revert to grading based on exam performance

17. Grading Scale. –
A: >90%
B: >80%
C: >70%
D: >60%
E: 0-59%

“In order to graduate, graduate students must have an overall GPA and an upper-division GPA of 3.0 or better (B or better). Note: a B- average is equivalent to a GPA of 2.67, and therefore, it does not satisfy this graduation requirement. For more information on grades and grading policies, please visit: http://gradschool.ufl.edu/catalog/current-catalog/catalog-general-regulations.html#grades

18. Make-Up Exam Policy - If you have a University-approved excuse and arrange for it in advance, or in case of documented emergency, a make-up exam will be allowed and arrangements can be made for making up missed work. University attendance policies can be found at: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

Otherwise, make-up exams will be considered only in extraordinary cases, and must be taken before the scheduled exam. The student must submit a written petition to the
instructor two weeks prior to the scheduled exam and the instructor must approve the petition.

19. Honesty Policy – All students admitted to the University of Florida have signed a statement of academic honesty committing themselves to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a UF student and to be honest in all work submitted and exams taken in this course and all others.

“…failure to comply with this commitment will result in disciplinary action compliant with the UF Student Honor Code Procedures (http://www.dso.ufl.edu/sccr/procedures/honorcode.php)

20. Accommodation for Students with Disabilities – Students Requesting classroom accommodation must first register with the Dean of Students Office. That office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.

21. UF Counseling Services – Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:
   · UF Counseling & Wellness Center, 3190 Radio Rd, 392-1575, psychological and psychiatric services.
   · Career Resource Center, Reitz Union, 392-1601, career and job search services.

22. Software Use – All faculty, staff and student of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.