

Course Syllabus

[Jump to Today](#)

 [Edit](#)

Course syllabus is also available at: <http://wam.ece.ufl.edu/eel4599> (<http://wam.ece.ufl.edu/eel4599>)

Spring 2017 4599 Syllabus

Course Description Senior-level course on wireless and mobile networks. Investigates telecommunication architectures and protocols for wireless sensor networks and wireless embedded systems; Wi-Fi and wireless local area networks; mobile ad-hoc networks; next generation cellular systems and satellite networks.

Goal: To provide an overview of the state of the art in industry and research, while giving the student a technical foundation in the design and analysis of wireless and mobile systems.

Credits 3

Prerequisites Basic knowledge of C or C++ programming Senior or junior level standing. (EEL3701C)

Instructor: [Dr. Janise McNair](http://www.wam.ece.ufl.edu/mcnair) (<http://www.wam.ece.ufl.edu/mcnair>)

Lab: [Wireless And Mobile Systems Lab](http://wam.ece.ufl.edu) (<http://wam.ece.ufl.edu>)

Email: m c n a i r <at> e c e <dot> u f l <dot> e d u

Office: NEB 429

Office Hours: Mondays and Wednesdays 1030a - 12noon and by appointment

Class Times/ Room: Monday, Wednesday, Friday Period 3 (935am-1025am) BEN 328

Course Requirements Class website is available starting on first day of class through: [e-Learning @ UF](http://lss.at.ufl.edu) (<http://lss.at.ufl.edu>).

Login using your [gatorlink](http://www.gatorlink.ufl.edu/) (<http://www.gatorlink.ufl.edu/>) user name and password. The class website will be used to:

- view video links, announcements, course schedule updates and other required information,
- collaborate with project groups, start discussions,
- download class lecture notes, handouts and assignments, and
- submit presentations and project files (Office, Text, or PDF only).

NOTE: Participation in and regular access to this website is required.

Computer requirements

--Access to a wireless networked computer is needed for the project and some practice problems (e.g., MatLab, C/C++, ns-2)

--The instructor has some equipment, but each project team may need to purchase a couple of sensor nodes, a controller board and/or some wiring (total \$60). Purchasing details will be given at a later date in lecture and in Canvas.

--If you need remote access to the [ECE computer lab](http://www.ecel.ufl.edu/) (<http://www.ecel.ufl.edu/>), you must create an account. Contact instructor for more info.

Textbooks (Many of these books will be put on reserve and available for limited (2-day) loan from Marsten Science Library)

Required:

- [Principles of Wireless Access and Localization](https://www.amazon.com/Principles-Wireless-Access-Localization-Pahlavan/dp/0470697083) (<https://www.amazon.com/Principles-Wireless-Access-Localization-Pahlavan/dp/0470697083>) by K. Pahlavan and P. Krishnamurthy, Wiley, November 2013 ISBN-13: 978-0470697085 ISBN-10: 0470697083
- Note: The textbook has an older version called, [Principles of Wireless Networks: A Unified Approach](https://www.amazon.com/Principles-Wireless-Networks-Communications-Technologies/dp/0130930032/ref=sr_1_2?s=books&) (https://www.amazon.com/Principles-Wireless-Networks-Communications-Technologies/dp/0130930032/ref=sr_1_2?s=books&)

[ie=UTF8&qid=1476213400&sr=1-2&keywords=principles+of+wireless+networks](https://www.amazon.com/Principles-Wireless-Networks-Communications-Technologies/dp/0130930032/ref=sr_1_2?s=books&ie=UTF8&qid=1476213400&sr=1-2&keywords=principles+of+wireless+networks)]. The 2001 version is out of print, but can still be purchased on Amazon (and possibly at the UF bookstore). Book details: [Principles of Wireless Networks \(https://www.amazon.com/Principles-Wireless-Networks-Communications-Technologies/dp/0130930032/ref=sr_1_2?s=books&ie=UTF8&qid=1476213400&sr=1-2&keywords=principles+of+wireless+networks\)](https://www.amazon.com/Principles-Wireless-Networks-Communications-Technologies/dp/0130930032/ref=sr_1_2?s=books&ie=UTF8&qid=1476213400&sr=1-2&keywords=principles+of+wireless+networks) by K. Pahlavan and P. Krishnamurthy, Prentice Hall, December 2001. ISBN-13: 978-0130930033 ISBN-10: 0130930032

- Selected news articles and conference papers about the latest technologies.

Reference books (not required):

- Jochen Schiller, Mobile Communications, 2nd edition, Addison Wesley, 2003. ISBN 0-321-12381-6
- W. Stallings, Wireless Communications and Networks, Prentice-Hall, 2002 ISBN 0-13-040864-6
- Alberto Leon-Garcia, Communication Networks, McGraw-Hill, 2nd ed., 2003 "ISBN-10" 007246352X ("ISBN-13" 9780072463521)

The course will include some theory from the textbook and some experiences/presentations/reports from group projects. There is not a laboratory section for this course.

Course Topics (as time permits)

- Overview
- Review of Signals and Signal Propagation
- Multiplexing Techniques (SDMA, TDMA, FDMA, CDMA)
- Modulation Techniques
- Cellular Systems (GSM, UMTS, LTE, "5G")
- Wireless LANs (WiFi, 802.11a,b,g,n..., Internet of Things)
- Wireless Sensor Networks (Zigbee, Bluetooth, Internet of Things)
- Satellite Networks (Small Satellites, "Cube Sats")
- Wireless Security

Grades

| <i>Grades</i> | <i>Percentage</i> | <i>Dates</i> |
|-----------------------|-------------------|--|
| Homework | 15% | Approx every 2 to 3 weeks |
| Projects | 30% | 2 team projects with in-class presentations |
| Midterm Exam 1 | 25% | Wed, Feb 22, 2017, evening exam |
| Midterm Exam 2 | 25% | Wed, April 12, 2017, evening exam |
| Final Exam (optional) | | Mon, April 24 (730a-930a) Cumulative (includes material from Exams 1 and 2) |
| In-class grade | 5% | Discretionary grade assigned by instructor. Includes: Class participation, disruptive behavior, unexcused absences, etc. |

Course Policies

- Regular Participation is Expected:
 - Class attendance is required.
 - It is the student's responsibility to **independently** obtain any missed material (including handouts) from lecture.
- Deadlines:
 - There will be **no make-ups** for exams, homework, quizzes or in-class assignments.
 - Penalties will be assigned for late assignments
- All Non-project-related Assignments are an Individual Effort Unless otherwise explicitly specified by the instructor.
- Students are responsible for announcements made in Lecture, on Website, or via Email Check your gatorlink email and the

student access website several times per week for course announcements.

- **Students with disabilities:**

- Students requesting classroom accommodation must first register with the [Dean of Students Office \(http://www.dso.ufl.edu/drc\)](https://www.dso.ufl.edu). The DSO office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.

Academic Honesty

All students admitted to the University of Florida have signed a statement of academic honesty committing them 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 student at the University of Florida, and to be honest in all work submitted and exams taken in this class and all others For more information, please see the academic [honor code](https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/).

(<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>)

UF Counseling Services








Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:















- University Counseling Center, 301 Peabody Hall, 392-1575
- Career Resource Center, Reitz Union, 392-1601, career development assistance and counseling.
- Personal Counseling, SHCC mental Health, Student Health Care Center, 392-1171

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.

Course Summary:

| Date | Details | |
|------------------|--|----------------|
| Fri Jan 20, 2017 |  Homework 1 (https://ufl.instructure.com/courses/335480/assignments/3204664) | due by 11:59pm |
| Mon Jan 30, 2017 |  In Class Problem - FSK-PSK-QAM (https://ufl.instructure.com/courses/335480/assignments/3211847) | due by 10:57am |
| |  Project Proposal (https://ufl.instructure.com/courses/335480/assignments/3190868) | due by 11:59pm |
| Fri Feb 3, 2017 |  Project Proposal (https://ufl.instructure.com/courses/335480/assignments/3190868) (6 students) | due by 11:59pm |
| Mon Feb 13, 2017 |  Presentation Surveys -Day 1 (https://ufl.instructure.com/courses/335480/assignments/3219028) | due by 10:30am |
| Wed Feb 15, 2017 |  Presentation Surveys - Day - 2 (https://ufl.instructure.com/courses/335480/assignments/3219029) | due by 10:30am |
| Fri Feb 17, 2017 |  Presentation Surveys - Day 3 (https://ufl.instructure.com/courses/335480/assignments/3219030) | due by 10:30am |

| Date | Details | |
|------------------|---|----------------|
| |  Homework 2 (https://ufl.instructure.com/courses/335480/assignments/3211497) | due by 11:59pm |
| |  Project 1 - Wireless Signals (https://ufl.instructure.com/courses/335480/assignments/3190872) | due by 11:59pm |
| Wed Feb 22, 2017 |  Exam 1 (https://ufl.instructure.com/courses/335480/assignments/3228863) | due by 11:59pm |
| Wed Mar 15, 2017 |  In-class Problem/Exam Review (https://ufl.instructure.com/courses/335480/assignments/3228860) | due by 10am |
| Fri Mar 17, 2017 |  In Class Problem-XbeeRates (https://ufl.instructure.com/courses/335480/assignments/3229884) | due by 10:25am |
| Wed Mar 22, 2017 |  In Class - WSN TDMA frame (https://ufl.instructure.com/courses/335480/assignments/3238026) | due by 10:30am |
| Mon Mar 27, 2017 |  Homework 3 - Revised March 23 (https://ufl.instructure.com/courses/335480/assignments/3211533) | due by 11:59pm |
| Fri Mar 31, 2017 |  In class 80211 timing (https://ufl.instructure.com/courses/335480/assignments/3235169) | due by 10:30am |
| Mon Apr 3, 2017 |  WSN Project Proposal (https://ufl.instructure.com/courses/335480/assignments/3235918) | due by 11:59pm |
| Mon Apr 10, 2017 |  Homework 4 (https://ufl.instructure.com/courses/335480/assignments/3211535) | due by 11:59pm |
| Sun Apr 16, 2017 |  Schedule your project demo (https://ufl.instructure.com/courses/335480/assignments/3242389) | due by 11:59pm |
| Fri Apr 21, 2017 |  Exam 2 (https://ufl.instructure.com/courses/335480/assignments/3247007) | due by 1:05pm |
| Mon Apr 24, 2017 |  Final Exam (https://ufl.instructure.com/courses/335480/assignments/3254085) | due by 9:30am |
| Wed Apr 26, 2017 |  WSN Project (https://ufl.instructure.com/courses/335480/assignments/3232049) | due by 11:59pm |

