EEL 6507  Queueing Theory and Data Communications

1. Catalog Description – (3 credits) Introduction to basic queueing models; performance analysis of multiple access protocols; error control strategies.

2. Pre-requisites – EEL 5544

3. Course Objectives – To introduce students to the general mathematical foundation and applications in queueing system, different queueing models, how to use models to analyze queueing phenomena and develop queueing solutions, general scheduling problems and algorithm, and learning to apply course material to improve thinking, and problem solving.

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. Yuguang ‘Michael’ Fang
   a. Office location: 435 New Engineering Bldg
   b. Telephone: 846-3043
   c. E-mail address: fang@ece.ufl.edu
   d. Class Web site:
   e. Office hours: 10:00-11:30am, TTh or by appointment

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

8. Meeting Times - 1:55-2:45pm, Tuesdays, 1:55-3:50pm Thursdays

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

10. Meeting Location - 328 Benton

11. Material and Supply Fees - None

12. Textbooks and Software Required -
   a. Title: Data Networks,
   b. Author: D. Bertsekas and R. Gallager,
   d. ISBN number:

13. Recommended Reading
   a. Title: Queueing Systems I
b. Author: L. Kleinrock
c. Publication date and edition: John Wiley & Sons, 1975
d. ISBN number:

a. Title: *Telecommunications Networks: Protocols Modeling and Analysis*
b. Author: Mischa Schwartz
c. Publication date and edition: Addison-Wesley, 1987
d. ISBN number:

14. Course –

- Introduction to communications networks
- Probability basics
- Markov chain theory
- Queueing model basics and Little’s law
- M/M/1 and its variants
- M/G/1, G/M/1 and priority queues
- Midterm
- Time-reversibility and multidimensional queueing models
- Queueing networks: Jackson’s theorem and product form
- Queueing networks: Generalizations of Jackson’s theorem
- Multiple access control and ARQ
- Selected advanced topics: matrix geometric approach, wireless networks and multimedia networks

15. Attendance and Expectations - 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 – Grades are based 10% on homework, 35% on midterm, 40% on final, and 15% on project. No late homework is accepted.

17. Grading Scale – Overall average >90% is guaranteed an A, 80% is guaranteed a B, etc.

“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. For information on UF policies concerning attendance, please visit: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx#absences
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.

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.