Instructor: Professor Yariv Ephraim
Office: Nguyen Engineering Building Room 3229
Email: yephraim@gmu.edu
Phone: (703) 993-1562
Office Hours: Monday 6:00-7:00 pm, Tuesday 3:15-4:15 pm.

Course Credit: 3 credit hours
Time: Monday, 7:20-10:00 pm
Place: Music Theater Building, Room 1004.

Labor Day: Monday, September 3, university closed.

Columbus Day: There will be no class on Monday 10/8. We shall meet instead on Tuesday 10/9, same time, same place.

Thanksgiving recess: University closed on 11/21-25.

Final Exam: December 17, 7:30-10:15 pm.

Mid-term exam: 10/22.

Exams Policy: You are allowed to use my lecture notes and the textbook by E. Çinlar. No other material is allowed. Electronic devices of any kind are not allowed.

Grading: 1st test 45%; 2nd test 45%; homework 10%.

Prerequisites: Grade B or better in ECE 528 or equivalent.

Required Text Books:

- Y. Ephraim, Class Notes in ECE 728: Random Processes in ECE, August 15, 2018. Notes are sold (Mason Money only) by the department (at the Tech Shop - ENGR 3916) for nominal fee of about $10.00 to cover printing costs only.
Recommended Text Books:


Course Description:

This course focuses on Markov processes in discrete and continuous time, on renewal theory, and on Markov renewal theory. Quoting from E. Cinlar, “The theory of Markovian processes comprises the largest and most important chapter in the theory of stochastic processes. this importance is further enhanced by the many applications it has found in both the physical, biological, and social sciences and in engineering and in commerce.” Non-ECE students are welcome.

Course Outline:

- Review of basic probability concepts (Weeks 1,2)
- Bernoulli Processes (Week 3-4)
- Poisson Processes (Week 4-5)
- Markov chains (Discrete-Time) (Weeks 6,8,9)
- Mid Term exam (week 7)
- Markov Processes (Continuous-Time): (Weeks 10-11-12)
- Renewal Theory (Week 13-14)

Attendance and homework:

1. Students are encouraged to attend all lectures and to submit all homework assignments.

2. Students are encouraged to type their homework submissions in Latex. You may use the Latex editor Texmaker and the Latex compiler MikTex which are available for free on the Internet. A Latex template will be provided upon request.

3. Practicing the material taught in class, by working out the homework problems, is crucially important to your success in this class. Homework will be assigned weekly, and will be due in class the week following their assignment. Graded homework will be returned in class the week following their due date.

4. Late homework submission will not be graded. No exceptions except for medical emergencies.
5. You are encouraged to discuss the material and homework problems with other classmates, but you must submit your OWN solutions.

6. Copying solutions for homework assigned problems, from any source, constitutes a violation of the university honor code. See the paragraph on **Academic Integrity** below.

7. Electronic devices of any kind are not allowed (and will not be needed) during exams.

8. Audio taping, video taping, or picture snapping, during lectures, are not allowed.

9. Students must use their MasonLive email account to receive important University information, including messages related to this class. See [http://masonlive.gmu.edu](http://masonlive.gmu.edu) for more information. Homework assignments and other course material will be emailed to your MasonLive email account. Please make sure that your mail box is not full at any time during the semester. Also, when you send me an email, please write ece528 on the subject line.

10. Students who cannot attend an exam due to religious holidays and observations should contact me as soon as possible to arrange for an alternative date.

**Support Resources:** A list of support resources on campus may be found in: [http://ctfe.gmu.edu/teaching/student-support-resources-on-campus/](http://ctfe.gmu.edu/teaching/student-support-resources-on-campus/)

**University Policies:** The University Catalog, [http://catalog.gmu.edu](http://catalog.gmu.edu), is the central resource for university policies affecting student, faculty, and staff conduct in university academic affairs. Other policies are available at [http://universitypolicy.gmu.edu/](http://universitypolicy.gmu.edu/). All members of the university community are responsible for knowing and following established policies.

**Academic Integrity:** GMU is an Honor Code university; please see the University Catalog for a full description of the code and the honor committee process. The principle of academic integrity is taken very seriously and violations are treated gravely. What does academic integrity mean in this course? Essentially this: when you are responsible for a task, you will perform that task. When you rely on someone else’s work in an aspect of the performance of that task, you will give full credit in the proper, accepted form. Another aspect of academic integrity is the free play of ideas. Vigorous discussion and debate are encouraged in this course, with the firm expectation that all aspects of the class will be conducted with civility and respect for differing ideas, perspectives, and traditions. When in doubt (of any kind) please ask for guidance and clarification.

**Office of disability services:** If you are a student with a disability and you need academic accommodations, please see me and contact the Office of
Disability Services (ODS) at 993-2474. All academic accommodations must be arranged through the ODS. http://ods.gmu.edu

Other useful campus resources:

- Writing center: A114 Robinson Hall; (703) 993-1200; http://writingcenter.gmu.edu
- University libraries: “Ask a Librarian” http://library.gmu.edu/mudge/IM/IMRef.html
- Counseling and psychological services (CAPS): (703) 993-2380; http://caps.gmu.edu