

AMES 5441 Reliability Engineering

Instructor: Prof. Ali Bazzi, Office 331 ITEB, bazzi@uconn.edu.

Course Text: Marvin Rausand and Arnljot Høyland, *System Reliability Theory: Models, Statistical Methods, and Applications*, 2nd ed., Wiley, 2012.

Schedule: One three-hour lecture per week.

Specific Course Description

Reliability theory with specific application to manufacturing or complex systems. Generalized and probabilistic basics of reliability theory. Basic reliability modeling and analysis tools including fault trees, reliability diagrams, and Markov reliability models. Faults specific to electric drive components, i.e., electric machines, power electronics, control, and sensing. Techniques for evaluating or estimating failure rates of these components along with factors that impact these failure rates such as the environment, humidity, temperature, etc. Application to a simple process as a course project.

- *Prerequisite:* None
- *Required, elective, or selected elective:* Graduate-level elective.

Deliverables and Important Dates

- Problem Sets: Individual bi-weekly for up to seven problem sets will be posted. Students *should submit their solutions online through HuskyCT*. Problem set solutions will be posted afterwards.
- Midterm Exam: A take-home midterm exam will be issued and will be due within 48 hours through HuskyCT.
- Final Exam: A take-home final exam will be issued and will be due within 48 hours through HuskyCT.
- Projects:
 - Interim report: A four-page double-column single-spaced report (IEEE format), including all figures and references. The report should be uploaded through HuskyCT.
 - Final report: an eight-page double-column single-spaced report (IEEE format), including all figures and references. The report should be uploaded through HuskyCT.
 - Final presentation: A 15-minute presentation (up to 10 slides) should be presented during the last lecture.

Grade Distribution: The final course grade is divided as follows:

- Problem Sets: 30%
- Midterm Exam: 20%
- Final Exam: 20%
- Interim Project Report: 5%
- Final Project Report: 20%
- Final Project Presentation: 5%

Other UConn Policies

Students with Disabilities

The Center for Students with Disabilities (CSD) at UConn provides accommodations and services for qualified students with disabilities. If you have a documented disability for which you wish to request academic accommodations and have not contacted the CSD, please do so as soon as possible. The CSD is located in Wilbur Cross, Room 204 and can be reached at (860) 486-2020 or at csd@uconn.edu. Detailed information regarding the accommodations process is also available on their website at www.csd.uconn.edu.

Policy Against Discrimination, Harassment and Inappropriate Romantic Relationships

The University is committed to maintaining an environment free of discrimination or discriminatory harassment directed toward any person or group within its community – students, employees, or visitors. Academic and professional excellence can flourish only when each member of our community is assured an atmosphere of mutual respect. All members of the University community are responsible for the maintenance of an academic and work environment in which people are free to learn and work without fear of discrimination or discriminatory harassment. In addition, inappropriate Romantic relationships can undermine the University’s mission when those in positions of authority abuse or appear to abuse their authority. To that end, and in accordance with federal and state law, the University prohibits discrimination and discriminatory harassment, as well as inappropriate Romantic relationships, and such behavior will be met with appropriate disciplinary action, up to and including dismissal from the University. More information is available at <http://policy.uconn.edu/?p=2884>.

Sexual Assault Reporting Policy

To protect the campus community, all non-confidential University employees (including faculty) are required to report assaults they witness or are told about to the Office of Diversity & Equity under the Sexual Assault Response Policy. The University takes all reports with the utmost seriousness. Please be aware that while the information you provide will remain private, it will not be confidential and will be shared with University officials who can help. More information is available at <http://sexualviolence.uconn.edu/>.