

ME 3017 System Dynamics

Fall Semester 2017

Course Objective

Introduction to dynamic modeling and simulation of systems including mechanical, electrical, electromechanical, fluid and thermal systems. Topics include frequency response analysis, stability and feedback control design of dynamic systems.

Course Outline

- Laplace Transform
- Modeling of Mechanical Systems
- Transfer Function Models
- Modeling of Electrical & Electromechanical Systems
- Modeling of Fluid & Thermal Systems
- Time Response Analysis of Linear Dynamic Systems
- Computer Simulation of Dynamic Systems
- Frequency Response of Linear Dynamic Systems
- Free Vibration of Multi-Degree of Freedom Systems
- Input-Output Stability and Transient Response Analysis
- Introduction to Feedback Control Systems

Class Meeting Times

3 hours of class time per week. Times are decided upon by Georgia Tech Lorraine administration and are subject to change.

Instructor

Dr. Thiebaud Richeton

Email: tricheton@georgiatech-metz.fr

Office: 100

Office hours: Monday 11:00-12:30

Course Prerequisite

ME 2016 Computing Techniques

ME 2202 Dynamics of Rigid Bodies

MATH 2403 Differential Equations

ECE 3710 Circuits and Electronics

Course Materials

Textbook: William J. Palm III, *System Dynamics*, 3rd Edition, McGraw-Hill College, 2013

Other Reference: K. Ogata, *System Dynamics*, 4th Edition, Prentice-Hall, 2004

Grading

Your grade will be determined using the following weighting:

Homework/Participation	10%
Exam 1	25%
Exam 2	25%
Final Exam	40%

The final grade will be curved based on your attendance, performance and participation. Over two unexcused absences, no curving will be applied. If you have a health problem that will prevent you from taking an exam, a note from a doctor before rescheduling the exam is required otherwise you will have a zero to the exam.

Attendance Policy

You better have to be present to the course considering the curving of your final grade. Attendance will be taken at the beginning of each class. For more information about class attendance at Georgia Tech, you may go to <http://www.catalog.gatech.edu/rules/4/>.

Assignments

Homework assignments will be graded and the solutions will be handed out. Homeworks can be worked in group, but each homework should reflect your own work. Homeworks will be turned-in in class on due date. No late assignment will be accepted except in case of acceptable and justified reason.

Honor Code

GT Academic Honor Code is strictly enforced at GT Lorraine. Adherence to the Georgia Tech Honor Code is expected and all suspected instances of academic misconduct will be reported to the Dean of Students. It is your responsibility to ask for clarification if collaboration guidelines, test-taking policies, etc. are not clear. You will find detailed information at <http://osi.gatech.edu/content/honor-code>.

Student-Faculty Expectations Agreement

At Georgia Tech we believe that is important to strive for an atmosphere of mutual respect, acknowledgment, and responsibility between faculty members and the student body. See <http://www.catalog.gatech.edu/rules/22/> for an articulation of some basic expectation that you can have of me and that I have for you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in the class.

Major Emergencies

If you have some sort of major life emergency - serious illness or injury, death in the family, etc. - that impedes your progress in the class, please let me know as soon as possible so we can work something out. Don't disappear with no warning half way through, making me think that you dropped the class, and then reappear out of nowhere the week before finals asking what you can do to make things up.

Re-scheduled/Missed Exams

In case of illness, the re-scheduled of exams will be accepted only if you provide a dated documentation from a medical doctor.

Disabilities

Georgia Tech offers accommodation to students with disabilities. This policy is also enforced at GT Lorraine, if you need any accommodation let Dr. Bertrand Boussert and Corinne Guyot know.

Miscellaneous

No cellphone use, no food and no drink in classroom. Cellphones must be turned off or in Do Not Disturbed mode. You can use your laptop to take notes but not for gaming or surfing on the internet.

Important Dates

A tentative calendar is proposed below, the dates of exams 1 and 2 will be confirmed 2 weeks in advance.

First Day of Class	Aug 23
Exam 1	Sep 25
Exam 2	Nov 8
Last Day of Class	Dec 5
Final Exam	Dec 7 - 14