ECE 6450 – Introduction to Microelectronics Technology - Fall 2026	**Schedule**: Monday 9:30 – 10:45 and Wendnesday 9:30 – 10:45 Blue Room
Instructor: Prof. Jean Paul Salvestrini, Office 204	email: jean-paul.salvestrini@georgiatech-metz.fr
Office Hours: after class or on appointment (pre-arranged preferably by email).	Cell (emergencies only!) +33(0)6-45-53-46-41

Course Description:

Microelectronic circuits, colloquially referred to as microchips, combine billions of transistors on a small piece of semiconductor material. Their amazing integration densities have made today's information and communication society a reality. Microelectronics technology is permanently revolutionizing industry, industrial and consumer products.
Microfabrication and nanofabrication are the basis of manufacturing for nearly all modern miniaturized systems that are ubiquitously used in our daily life. Examples include; computer chips and integrated sensors for monitoring our environment, cars, mobile phones, medical devices and more.
Micro- and nanofabrication can be taught to students and professionals by textbooks and ex-cathedra lectures, but the real learning comes from seeing the manufacturing steps as they happen.
In this engineering course, we will go a step beyond classroom teaching to not only explain the basics of each fabrication step but also show you how it's done through **real device fabrication**.

Course Outcomes

The desired outcome is to provide the student with enough basic information so he/she can understand literature related to his/her desired topic and allow him/her to begin developing new technologies. In that frame, the student will know how to:

- Select the correct fabrication process for a specific micro-device or microsystem
- Establish the workflow for the cleanroom processes
- Resource planning for a given microsystem fabrication
- Fabricate your own device

Prerequisites: None
Corequisites: None

Textbook(s):

Campbell, *Fabrication Engineering at the Micro and Nanoscale* (4th edition), Oxford University Press, 2012. (required)

Class Attendance

Class attendance is mandatory! Class attendance is the easiest way I know of to attain a first attempt at an understanding of the material. Participation in lectures will be an important way to stay engaged with the course. (Of course, this has to be supplemented by working homework problems, reading the text and other materials, and other practice.) Class size is usually small.

Homework

Problems will be assigned at intervals; they are graded. Solutions will be made available. The problem sets are essential as these will provide that practice that will lead to mastery of the subject matter. Feel free to work with other students, but I advise you (1) to attempt problems on your own before working with other students and (2) making sure you can do the problems cold on your own without the help of other students once you have discussed them. Note that the last one or two problem sets, depending on the pace of the lectures, might be assigned during the last week of classes; it is nonetheless your responsibility to learn the material. Students who do not work diligently on the problem sets will not be able to do well on quizzes!

Final Exam

The final exam is cumulative and comprehensive

Grading

Grades will be based on a 100-based scale.
The class will follow the given grading schedule.

Homework	20%
Midterm Exam	25%
Report on device fabrication	30%
Final exam	25%

Academic Conduct

As noted above, you are free to work with other students on problem sets. You must work strictly alone on quizzes and the final exam. On quizzes and the final exam, unless I expressly grant exceptions later in the course, no notes, books, calculators, electronic devices, or any other aids will be permitted. I will supply a formula sheet that will be made available to you prior to the quizzes and final exam.

Students in this class are expected to abide by the Georgia Tech Honor Code and avoid any instance of academic misconduct, including but not limited to:

- Possessing, using, or exchanging improperly acquired oral or written information in the preparation of a quiz or the final project.
- Submission of material that is substantially identical to that created or published by another individual, except as noted below.
- False claims of performance or work that has been submitted by the student.

Be sure to report observed instances of violations of the Honor Code! Remember, the Honor Code is about honor. Apart from devaluing your own work, the work of your classmates, and the Georgia Tech degree, Violations of the Honor Code carry significant penalties, here at Tech, and for life. Do you want to be labeled as having cheated? The trustworthiness of engineering

and science (as well as the reliability and safety of products!) relies on the basic honesty of engineers and scientists. Students may work in groups on the final project as will be discussed in a future handout, though each must student make a good-faith effort to contribute to the group. Each student must also write up and turn in his/her work to integrate the knowledge.

Communications

You are responsible for all announcements (which may include information about the homework, quizzes, and the final exam) made in class. Quizzes will likely strongly reflect material covered in class. If you miss class, do not ask me what was covered. Handouts may also be distributed from time to time in class; it is your responsibility to obtain information from classmates if you are not present when information is given or materials are distributed, though materials are likely to be posted on Canvas. I may also email the class various information.

Notes, problem sets, solutions, and various other useful information will be posted on Canvas.

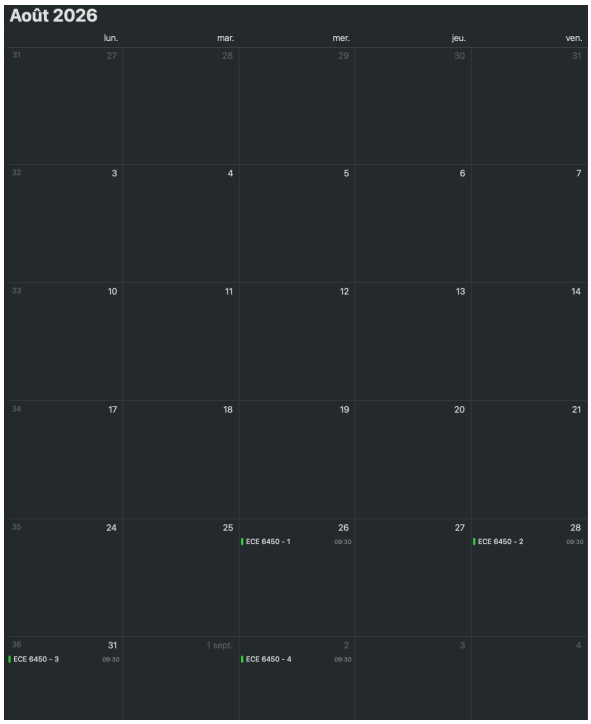
The best way to contact me is via email, briefly immediately before or after class or by appointment. If you email me, make sure to put "ECE6450" in the subject line, as sometimes it is difficult for me to figure out the context of a student's question otherwise since I am teaching more than one course.

Getting Help

The material in this course builds on earlier material, so it is very important to not get behind. Be sure to contact me (see above) or use other resources that are available. As noted above, email questions or arrange for an appointment. While some resources may be more difficult to access at GTE than in Atlanta, class sizes tend to be small, so use this to your advantage!

Tentative Syllabus:

It is unlikely that the listed topics and homework assignments will match up exactly on the listed dates. This is just a rough estimate of how the material will flow and homework coverage to give you a sense of where we are headed. However, the quiz dates are unlikely to be changed.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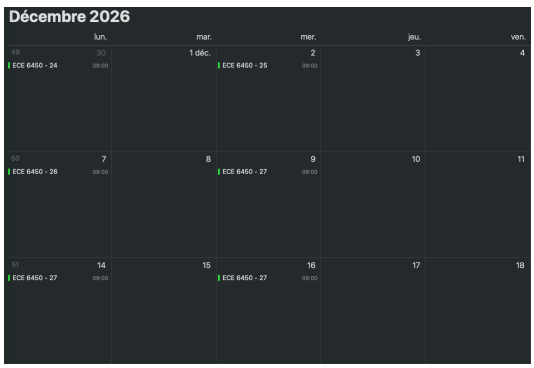
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