

Policies and Norms for the course ICOM5047 – Design Project in Computer Engineering¹

Introduction

The way in which the course is conducted determines the climate in the laboratory. Notice that Capstone is an actual laboratory. These rules were designed to have the most peaceful and fulfilling experience in this course. They try to avoid uneven workloads, people taking advantage of each other, and provide the setting for a positive work environment.

1 General Norms

The class and lab environment should be such that people are able to make the most of the workshops, lectures, space, time, and any other resource available to assist and enhance their learning experience. In order to guarantee the most efficient use of the resources, there are several rules that must be obeyed at all times. Needless to say, these rules are in addition to any civil and criminal laws as well as University and Department rules that could be in effect at any given time (Código Penal de Puerto Rico: <http://www.ramajudicial.pr/leyes/index.htm>). The following rules are just examples and should not be construed to be the only applicable rules. The lab and or teaching assistants are responsible for any aspect related to the course whenever the faculty members are not present and, as such, they should be treated as you would treat any faculty in charge of the course.

The capstone lab is an environment of respect and consideration. Proper demeanor is expected from all students in the course. Proper language must always be used, and any unnecessary noises must be avoided at all times. Being a lab and a class environment, you must use adequate clothing, shoes, and hands and eye protection. Eye protection must be worn whenever the soldering station or any other equipment that might endanger eyesight is used. Short pants or sleeveless shirts are not allowed in the lab. Closed shoes must be worn. Unauthorized use of any equipment is not permitted whether the equipment is property of the University of Puerto Rico or not. Anyone in the class or lab must behave in a way that minimizes risks to others and self, or danger to the facilities and equipment. Therefore, playing, eating, drinking, smoking or any other activity that could result in damage to the facilities, equipment, or represent a risk to anyone is not allowed. Only authorized students may enter the laboratory.

¹ These policies and norms may change to meet new needs. The changes, if any, will be announced in class and in the course Website; and will be enforced immediately.

Failing to comply with these and any other norms or rules will result in access to the laboratory being suspended immediately and proper notification will follow. If the fault is deemed by the faculty members to represent danger to people and/or property, further disciplinary actions may be pursued.

The course will be offered in the Stefani 123 laboratory and office hours in Dr. Santiago's office. Only when a situation that requires it, online technologies such as Google Meet and/or Zoom can be used during class hours. Only students within the roster of the semester are allowed to enter the online conference and online meetings during office hours. The students should not share or distribute the link to the online classes or office hours with anyone.

2 Attendance

Attendance to class and team meetings is compulsory². Missing 50% or more of a lecture or laboratory is equivalent to one absence. Missing 15 minutes to 50% of a lecture or laboratory is considered as a quasi-absence. Arriving late or leaving before the class ends with no justifiable reason is equivalent to a quasi-absence. Three quasi-absences are equivalent to one absence.

A list to sign will be available each day. Students are responsible for signing the list. If online, an electronic attendance list will be presented in each synchronous class, and it is the student's responsibility to sign the list to respond as present. It is the responsibility of the student to complete the work for asynchronous classes. Each absence from classes (in person and synchronous) will result in a deduction of one (1) point from attendance grade (1% of the final grade). Nevertheless, four or more absences to synchronous classes without reasonable excuse constitutes a grade of F in the course. More than eight total absences to class constitutes a grade of F in the course. A student with more than three absences to team meetings without reasonable excuses may be dismissed from the team with all the corresponding consequences described in section 3 below. Students engaged in activities not related to the lecture during lecture time will also be deducted one (1) point from the attendance grade for each occurrence. Each occurrence will be treated as an absence without excuse. The use of the cellular phone, tablets, or laptops is encouraged, however, if used for activities not related to the course or disruptive, they will not be allowed.

Excuses should be submitted no later than a week after returning to the class via Ecourses. Medical excuses should have printed the name of the physician, the office address, and the telephone number(s). The professors may verify the veracity of any excuse at their own discretion.

Students are responsible for making the arrangements for duly justified absences to oral presentations or practical demonstrations². Conditions for makeup presentations or practical demonstrations should be agreed upon with the professors and, when necessary, with the teammates.

² See Class attendance and Examinations. *Undergraduate Catalog 2020-2021*. University of Puerto Rico, Mayagüez Campus. **Page 82.**

3 Accountability and performance

All the teams should maintain a Web log (blog) which serves as a journal of the team activities, work, discussions, and decisions. This blog is to begin no later than the **second** week of class and should remain active during the entire semester. Professors and TAs must be given access to the team's blog. Team meeting notes and attendance control should be posted on the blog on a regular basis. Any doubts about the blog should be directed to the faculty members. Blog posts can and may be used as evidence of work from the team and individual team members. As such, it is imperative that teams post frequently throughout the week.

The use of a repository will be enforced. Github is preferred but any repository will do. Students should regularly (no less than weekly) commit code into their repository using their own identifier where the individual contribution to the code must be clearly identified. Last minute commitment of code is discouraged in the course.

Every student is accountable to their teammates. A student with poor performance in their work may be dismissed from their team. Dismissal of a student from the team can be the result of:

- individual student evaluation by the professor(s);
- request in writing by their teammates; or
- any other just and adequate procedure.

A request to dismiss a student from a team should present evidence of the student's poor performance, prejudice to the teamwork, endangering others and the laboratory environment, or unjustified absences to team meetings, but the decision of their dismissal is the sole decision and responsibility of the professors based on the evidence and arguments of all the parties involved. A student dismissed from a team will obtain a grade of F in the course³.

"Professors will allow students an opportunity to discuss grades or doubts regarding course work. A student should discuss such matters with the professor within a ten-day period after an exam or partial work is graded". [*Undergraduate Catalog 2020-2021*. University of Puerto Rico, Mayagüez Campus. **Page 82.**]

4 ADA

In order to make the necessary arrangements for ADA students, students must request the accommodations and meet with the faculty as soon as the documents of reasonable accommodations becomes available. If the letter has not been signed and discussed by all parties, the reasonable accommodation will not take place.

³ See Evaluation of Students' Academic Coursework. *Undergraduate Catalog 2018-2019*. University of Puerto Rico, Mayagüez Campus. **Page 80.**

Service animals are not pets, but animals trained to work with a person with disabilities. Pets are not allowed in the laboratory or classroom, however, service animals with all the proper documentation and certification of training are allowed only in facilities where the presence of the animal does not compromise the environment. The capstone laboratory is not a public area. Title II and title III establishes that animals whose sole function is to provide comfort or emotional support do not qualify as service animals under the ADA.⁴

5 Reports, presentations, and practical demonstration examinations

The project proposal, progress report, and final project report should be submitted no later than on the dates specified in the course calendar as established in ecourses and must be in PDF format, unless a date change is agreed upon with the professors. Every delayed submission will result in a penalty of 25% reduction of the full grade per calendar day of delay. After four calendar days of delay the grade will be 0.

Each report must contain a table of contents. This table of contents should list each section of the report. We require that every section of the report contain the name of the person who wrote it on the table of contents. In addition, the report must contain the name of the editor (person who edits the whole report).

Practical demonstrations should comply with the requirements established by the professors for each one and should at least present the outcomes described in section 5.1 below, on the dates specified in the course calendar and at the times agreed upon between each team and the professors. Delayed demonstrations will result in a penalty of 25% reduction of the full grade for each additional opportunity. After four opportunities the demonstration grade will be 0.

Absence to a presentation or practical demonstration without a reasonable excuse will result in a grade of 0 in the presentation or demonstration.

5.1 Expected demonstrations outcomes

There will be three practical demonstrations in the semester, and the expected results in each one is specified below:

- **First practical demonstration:** Complete detailed design of all the hardware and software components and bill of materials. Students must submit all the design documents, including technical specifications, diagrams, schematics, and any other design document necessary to support design decisions. Design decisions must be documented and justified. Design documentation must be submitted before or on the date and time set by the professors and posted on the course calendar.

⁴ https://www.ada.gov/ada_title_II.htm and https://www.ada.gov/ada_title_III.htm

- **Second practical demonstration:** Full implementation of all the components and modules of the system, individually tested and ready for integration and final testing. The code will be evaluated only from the repository. Contribution to the code in the repository will be evaluated individually, we expect regular use of the repository, and each student is responsible to **individually** commit their code using their own unique identifier when using the repository. Students are expected to explain in detail all the technical aspects of their module(s) specifications including interfacing with the rest of the system, their designs, implementations, and individual tests performed. Students should be able to explain any difficulties or problems faced with their project and how they were solved. Students must submit all the **updated** design documents, together with all the testing sheets. These testing sheets should present the expected results, the actual results, and any troubleshooting procedures followed to solve any problems. This documentation must be submitted before or on the date and time set by the professors and posted on the course calendar.
- **Third and final practical demonstration:** Fully integrated system: functional and tested. Students are expected to explain in detail all the technical aspects of the system specifications, design, implementation, integration, and testing. Students should provide testing evidence and data together with their analysis and be able to explain any difficulties or problems faced during the integration and the project in general and how they were solved. Students must submit all the **updated** design documents, together with all the integration and testing sheets. These testing sheets should present the expected results, the actual results, and any troubleshooting procedures followed to solve any problems. This documentation must be submitted before or on the date and time set by the professors and posted on the course calendar.

Demo 1	Demo 2	Demo 3
Full Design Completed	All individual parts completed and tested	Integration (tested and fully functional)

5.2 Grading of practical demonstrations

Practical demonstrations are at the very heart of this course and, thus, are a very significant part of the student's grade in the course. Therefore, a student's performance in each practical demonstration may become a deciding factor between their passing or failing the course. In the first two (2) practical demonstrations, students are **individually evaluated and graded** by the team of the course professors. At the professor's discretion, the teaching assistants may become part of the evaluating team. Other persons may be invited to assist in the evaluation of a project when there is a need for expertise in a particular area.

In all the demonstrations, each student is expected to have **sound knowledge of the whole system and detailed in-depth knowledge of their assigned components or modules**. The first two practical

demonstrations will be graded according to the achievement of the outcomes described in section 5.1 above.

For the final demonstration, the system should be fully functional, integrated, and tested according to specifications. In this practical demonstration, students will be evaluated as a team. However, should the circumstances need it, students may be evaluated individually for their contributions. In this final demonstration, **partial credit will not be given for isolated components or modules that are working**. Teams are given up to four attempts for the final demonstration. If the system is not fully functional in the first attempt, the maximum grade for the final demonstration will be multiplied by the factors indicated in the Table 1 below:

Table 1. Attempts and multiplying factors

Attempt	Factor
2 nd	0.75
3 rd	0.50
4 th	0.25
Not functional after the 4 th attempt	0

6 Teamwork and Peer evaluation

Teamwork is a requirement of every project in the course, so every student must be part of a project team. **Professors and TAs will not assign teams.**

The performance of each student in a design team will be peer-reviewed by their teammates during the semester. The peer evaluation may be considered in the student's grade of any document or demonstration at the professor's discretion when a student's performance may affect adversely the grade of the whole team.

In all three demonstrations and reports, the amount of work that a student did in either the demonstration or the report will be evaluated. In all groups, if the load among team members is not equally distributed, the final grade will be multiplied by a factor determined by the amount of work actually performed. If every member contributes equally, this multiplication factor is 1. If the person works less than others, the factor will be less than one, and it will be the fraction of work when measured against the work performed by the team peers.

A demonstration or report grade may also be affected by the resulting project complexity of the work performed by the students. Projects are accepted because they are deemed complex enough based on the information provided in the proposal. However, student actions, such as using online technologies that do the work for them or not following the proposed work method, can lessen the complexity of a project drastically. In this case, a student's grade will be multiplied by a factor between 0 and 1 depending on whether the complexity of the work performed meets Capstone standards.

7 Additional constraints

- **The capstone project must solve a real-world problem with real constraints and value proposition.**
- This is a design course; therefore, the project must show that an open-ended problem is solved using a design process in one of the following areas:
 - Software
 - Hardware
 - Communications
 - Combination of Software, Hardware, and Communications
- All the projects must comply with existing engineering standards which must be cited and referred to in the documents and reports. Any deviation from any currently applicable standard must be duly justified and documented in the reports.
- All the projects must have **an actual customer** or make a strong case for a realistic business opportunity. In the case of a realistic business opportunity, the student team must find an expert willing to be a consultant and judge of the project.
 - Please make sure that the customer knows the rules and regulations of Intellectual Property (IP) at UPRM. An agreement on the IP of all Software/Hardware design done in the capstone course must be reached with the client and among students participating in the project. Clear guidelines on the participation of students in the commercialization of the product prototype must be established at the beginning of the semester.
 - Student presentations are open to the public. **Disclosure of the system requirements and specifications is required as part of the course.** However, students in the course cannot divulge information from projects outside the classroom. This information is confidential and belongs only to the authors of the project.
 - An agreement of systems requirements must be signed by students and client at the end of the design phase.
 - Before the end of the semester, professors will request information to the clients on whether the final product was installed and if it is working within specifications. Once the client approves (in writing) the final product at the final site or server, the grade of the course will be awarded.
 - If the product results in a technical publication, students who have contributed significantly to the work and the proponent client are authors in the article.
- All the projects must follow a systematic engineering design process: problem analysis, presenting multiple alternatives, decision, and proposal based on an engineering analysis of the solutions, a feasible plan on how to complete the tasks, and a final prototype with analysis of results.
- A final working prototype is required. All projects must be delivered with final assembly in encasing.
- All the projects must follow and carry out a detailed testing plan for verifying system's compliance with specifications. These test plans are evaluated during oral exams.
- All projects involving Human Subjects or Animal Subjects must apply for IRB permission.
- Workload among team members should be evenly distributed. The scope of the project is determined based on the size of the team. Engineering technical skills must be demonstrated by this workload.

- All code will be graded from the course repository. Code contribution will be determined solely from the repository content.

8 Public health measures

A student presenting the symptoms of a contagious disease should stay at home, not attend public places, and call their primary doctor. The student should inform the professors by telephone or email of their condition and must not return to class until a physician certifies in writing that the student is back in a health condition suitable to attend classes.

If the symptoms appear while on campus, the student should go immediately to Medical Services or to their primary doctor and must not return to class until a physician certifies in writing that the student is back in a health condition suitable to attend public places.

Possible contagious conditions include covid 19, flu, conjunctivitis, smallpox, monkeypox, and measles, among others. It is expected that any student takes appropriate measures to avoid spreading the disease.

9 Military Services

According to the applicable laws, students who are activated for the armed forces or National Guard are guaranteed matriculation in the course for the next two (2) semesters. Students who are activated during the semester must communicate this activation to all the course professors. **Students are not required to work on coursework during their activations.** Course professors will decide if the student will require an incomplete in the course depending on the amount of time spent of the activation and work due in the course.

ICOM 5047: Computer Engineering Design

I, _____ (student's name), have read and understood all the policies and norms in this document. By signing this document, I acknowledge that I have received a copy of the "Policies and Norms for the course ICOM5047 – Design Project in Computer Engineering" and I have read it.

Student Signature

Date

This page must be signed and given back to the teaching assistants or professors.