

Policies and Norms for the courses ICOM5047 and INEL 5195 – Design Project in Electrical and Computer Engineering¹

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. 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. **There is a dress code for your protection: no short pants are allowed, closed shoes must be worn, no crocs or similar types of shoes are allowed and no sleeveless shirts, blouses or dresses are allowed. Students must not use clothes with metallic ornaments while working with electronic equipment.** 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. 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.

Access to the laboratory is exclusive to students registered in the course, faculty members and authorized personnel and only for activities and work directly related to the course. A student or team requiring to invite any other person should request authorization in writing to the professors and should specify the name of the person(s), the date and time the person(s) will be visiting the laboratory, the expected duration of and the justification for the visit. No visitors will be allowed until duly authorized by the professors. Failing to comply with this norm will result in access to the laboratory being revoked.

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.

Students can request equipment, devices and other elements for their projects. Students should fill a request form and sign it. The student signing the request form is responsible for the good care of all the elements loaned him/her. Damaged and lost elements will be replaced at the student's expense. If any of the devices, equipment or elements changes hands, students should inform the teaching assistants or the professors in writing about any such changes. Otherwise, the student who signed the request form will be held responsible for all the elements assigned to him/her. After the final presentation, the students should return to the laboratory **at the date specified by the faculty** all the elements, devices, and equipment assigned to him/her. Failure to comply with this may result in disciplinary action against the student or his/her UPRM account being declared delinquent.

The area assigned to each group must be clean at the end of the semester. Failure to clean the workstation area will result in an incomplete grade with F in the course.

Every effort will be made to assign each team a locker in the laboratory **with priority given to teams having hardware components in their projects**. Students should buy a lock and provide a copy of the key to the professors or the teaching assistants. This copy of the key will only be used in case of emergency and will be returned to the team after all the elements, devices, and equipment assigned to the team have been returned.

Students are not allowed to use any recording device to record the professor, lecturer, teaching assistants or classmates during lectures, seminars, workshops or lab discussions unless previously authorized.

2 Attendance

Attendance to class and team meetings is compulsory². Missing 50% or more of a lecture is equivalent to one absence. Missing 10 minutes to 50% of a lecture is considered as a quasi-absence. Three quasi-absences is equivalent to one absence.

Each absence will result in a deduction of one (1) point from attendance grade. Nevertheless, four or more absences to class without reasonable excuse constitute a grade of F in the course. More than eight total absences to class constitute 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.

² Class attendance and examinations. *Undergraduate Catalog 2014-2015*. University of Puerto Rico, Mayagüez Campus. Page 79.

Excuses should be submitted within the following week after returning to class. 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.

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 teaching assistants 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.

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

- individual student evaluation by the professor(s);
- request in writing by his/her 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 or unjustified absences to team meetings, but the decision of his/her 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 his/her team will have his/her access to the course laboratory removed and should return all the elements, devices and equipment assigned to him/her no later than **one** day after his/her dismissal. Failure to comply with this may result in a disciplinary action or his/her UPRM account being declared delinquent. A student dismissed from a team will obtain a grade of F in the course³.

4 ADA

In order to make the necessary arrangements, students must provide a letter for reasonable accommodation within the first **three** weeks of the beginning of the semester.

³ Evaluation of students' academic coursework. *Undergraduate Catalog 2014-2015*. University of Puerto Rico, Mayagüez Campus. Page 79.

5 Reports, presentations and practical demonstration examinations

The project proposal, progress and project report should be submitted on the date specified in the course calendar (see <http://ece.uprm.edu/~icom5047/>), 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.

All reports must contain a table of contents. This table of contents will list each section of the report. We require that all sections contain the name of the writer of this section. 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 present at least 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 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 are specified below:

- First practical demonstration: Complete detailed design of all the components both hardware and software; bill of materials and some implementations. Students must submit all the design documents, including technical specifications, diagrams, schematics, **software architecture**, and any other design document necessary to support design decisions. Design documentation must be submitted before or on the date and time set by the professors and posted on the course calendar. **A test plan is expected.**
- Second practical demonstration: Full implementation of all the components and modules of the system, individually tested and ready for integration and final testing. 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 design documents **updated**, together with all the unit-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: System fully integrated, 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 design documents **updated**, 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.

During all demonstrations an updated Gantt chart must be presented.

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 students' grade in the course. Therefore, a student's performance in each practical demonstration may become a deciding factor between her/his passing or failing the course. In every practical demonstration students are **individually evaluated and graded** by the team of the course professors. At the professors' discretion, the teaching assistants may become part of the evaluating team. Other persons **not associated with the course** may be invited to assist in the evaluation of a project when there is a need for expertise in a particular area. **This may include the client of the project.** Evaluation and grading criteria will be published on the course website at least one week before the practical demonstration date.

In all the demonstrations, every student is expected to have a sound knowledge of the whole system, and **must demonstrate a detailed in-depth knowledge of his/her 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 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 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.

The performance of each student in a design team will be peer-reviewed by his/her teammates three times during the semester. The peer evaluation may be taken into account in the student's grade of any document or demonstration at the professors' discretion when a student performance may affect adversely the grade of the whole team.

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:
 - For ICOM
 - Software (NOTE: Hardware considerations must be included)
 - Hardware
 - Combination of Software or Hardware
 - For INEL
 - Electronics
 - Communications/DSP
 - Electromagnetics
 - Control Systems
 - Power/Power Electronics
 - Combination of the areas above
- All the projects must comply with existing engineering standards which must be cited and referred to in the documents. Any deviation from any currently applicable standard must be duly justified.
- All the projects must have a real/actual customer or make a strong case for a realistic business opportunity.
 - Please make sure that the customer knows the rules and regulations of Intellectual Property (IP) at UPRM. UPRM has participation on the IP of all Software/hardware design done in the capstone course. Any element of the project used for commercial purposes must be approved by UPR.
 - Student presentations are open to the public. Disclosure of the system requirements and specifications is required as part of the course. Students should participate in the Open Capstone presentations.
 - All the projects must follow a systematic engineering design process: problem identification, formulation and analysis, generating and presenting multiple alternatives, the decision-making process together with the criteria used, and proposal based on an engineering analysis of the solutions. The process should include project management practices for implementation and delivery.

- o For all computer engineering projects a final working prototype is required. All projects must be delivered with final assembly in encasing.
- o For electrical engineering projects, some projects will require full simulations while others may require a prototype.
- o All the projects must follow and carry out a detailed testing plan for verifying the system's specifications compliance.
- o Workload among team members should be evenly distributed, and individual workloads must be adequate to the academic requirements of the course. The scope of the project is determined based on the size of the team.
- For ICOM students, all code will be graded from the course repository, hosted at the ECE department. Git will be used as the repository. Code contribution will be determined solely from the repository content.
- A proposal is expected in the course and must be approved by the faculty. If the proposal is not adequate after the second try, the professors will assign a project selected by the faculty to the team.
- Order for oral exams, presentations, and demos will be selected randomly.

8 Public health measures

A student presenting the symptoms of a contagious disease should stay at home, not attend public places and call his/her primary doctor. The student should inform the professors by telephone or email of his/her 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 public places.

If the symptoms appear while on campus, the student should go immediately to Medical Services or to his/her 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 flu, conjunctivitis, smallpox, and measles, among others. It is expected that any student takes appropriate measures to avoid spreading the disease.

9 Grading Scale

The grade of the course will be computed using the following scale:

100-90	A
80-89	B
79-70	C
69-60	D
Less than 60	F

