Policies and Norms for the course ICOM5047 – Design Project in Computer Engineering[1]

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. 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.

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 authorized to use the laboratory, 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, and 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.

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[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 that are available in the laboratory 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 to 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.

The students should return to the laboratory by the date specified by the faculty in the course calendar all the elements, devices, and equipment assigned to him/her. Failure to comply with this may result in disciplinary actions 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. 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.

2   Attendance

Attendance to class and team meetings is compulsory[2]. Missing 50% or more of a lecture or laboratory is equivalent to one absence. Missing 10 minutes to 50% of a lecture or laboratory is considered as a quasi-absence. Three quasi-absences are equivalent to one absence.

An attendance list will be circulated in each class and it is the student's responsibility to sign the list. Each absence will result in a deduction of one (1) point from attendance grade (1% of the final 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. The use of the cellular phone, tablets, or laptops during class time for purposes other than the completion of the project is considered an "activity not related to the lecture" and will be treated accordingly.

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[2] Class attendance and examinations. *Undergraduate Catalog 2016-2017*. University of Puerto Rico, Mayagüez Campus. **Page 80**.

Excuses should be submitted not later than a week after returning to the 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 demonstrations[2]. 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 **third** 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.

The use of a repository will be enforced. 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 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, endangering others and the laboratory environment, 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 course[3].

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[3] Evaluation of students' academic coursework. *Undergraduate Catalog 2015-2016*. University of Puerto Rico, Mayagüez Campus. **Page 79.**

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 by all parties, the reasonable accommodation will not take place.

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.

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 (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.

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. 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 are 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

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documentation must be submitted before or on the date and time set by the professors and posted on the course calendar.

- **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 his or her code 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 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**: 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 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 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 a sound knowledge of the whole system and 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 the table Table 1 below:

Table 1. Attempts and multiplying factors

Attempt	Factor
2nd	0.75
3rd	0.50
4th	0.25
Not functional after the 4th 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 his/her teammates during the semester. The peer evaluation may be taken into account in the student's grade of any document or demonstration at the professor's discretion when a student 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.

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:
    o For ICOM
      ▪ Software
      ▪ Hardware
      ▪ Communications
      ▪ Combination of Software, Hardware, and Communications

- o For INEL
  - ▪ Electronics
  - ▪ Communications
  - ▪ 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 and documented in the reports.
- ▪ All the projects must have an actual customer or make a strong case for a realistic business opportunity.
  - o 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. **Companies wishing to pursue a project in the capstone course must sign an Open Capstone agreement with the office of the Associate Dean of Academic Affairs of the College of Engineering and contribute with the corresponding amount of funding required to run 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.
  - o 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.
  - o An agreement of systems requirements must be signed by students and client at the design phase.
  - o Before the end of the semester, professors will request information to the clients on whether the final product was installed and is it working within specifications. Once the client approves the final product at the final site or server, the grade of the course will be awarded.
- ▪ 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, 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. 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 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.