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1. Introduction

The ECNG 3020-Special Project is regarded as the capstone course of the entire BSc. Electrical and Computer Engineering programme. ECNG 3020 is a student-driven project and does not involve regular classroom delivery and assessment (such as lectures, tutorials, final examinations, etc.). It is a year-long, 6-credit course that contributes 20% of the final weighted average used in the determination of honours.

Industry requires engineers who can design and innovate, as well as display exemplary professional conduct in many contexts. It is no longer sufficient to be competent in analyzing problems: engineers are called on to propose, design and implement solutions to problems and respond to opportunities created by the marketplace. ECNG 3020 responds to the needs of industry in two broad ways—by providing students with a forum for engineering practice and by cultivating the values and ethics necessary for professional conduct in the workplace.

ECNG 3020 Special Project aims to develop skills in the following areas:

- Design to specification
- Formulation of creative solutions to engineering problems
- Engineering analysis and enquiry
- Validation and testing against benchmarks
- Project management—concept development, planning, implementation and testing
- Time management—planning for unforeseen events and setting realistic goals
- Communication—writing technical reports and delivering professional presentations

It is expected that, in the completion of ECNG 3020, you will use the wide range of knowledge and engineering skills that you have gathered over the course of your degree programme. However, it is not unusual for students to rely on a body of knowledge outside that taught in the programme or, as has been the case on occasion, completely outside of Electrical and Computer Engineering. ECNG 3020 therefore presents the opportunity to build upon a core of learning and to broaden the scope of that knowledge.

All questions or concerns regarding the administration of ECNG 3020 should be directed to the course coordinator:

Ms Crista Mohammed  
Room 335, Block 1  
E-mail: Crista.Mohammed@sta.uwi.edu  
Tel/ext: (868)-662-2002 ext.82462
2. Enrolment

Students wishing to enrol for ECNG 3020 should have passed all Level 1 courses, and must have attempted all prescribed level 2 courses.

ECNG 3020 runs from September to April of each academic year. Where a student registered for ECNG 3020 has been asked to withdraw or takes leave of absence in semester 2, he or she will:

1. Be de-registered from ECNG 3020;
2. Register for the course in Semester I of the next academic year for which he or she is eligible to register; and
3. Be required to take-up a new project.

3. Project Categories

Projects are classified into four (4) broad categories as summarised in Table 1. The project category determines how the project will be evaluated. It is essential that you ascertain the category of your project before you begin, as the project type determines your deliverables.

Table 1: ECNG 3020 Project Categories

<table>
<thead>
<tr>
<th>Type</th>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Research</td>
<td>This project type requires theoretical analysis leading to new knowledge. It will entail extensive background preparation and comprehension of subject matter, clear thinking and sound logic.</td>
</tr>
<tr>
<td>II</td>
<td>System Development and Design</td>
<td>This type of project involves system design and implementation, requiring little knowledge outside of that obtained in the programme. This category of project focuses strictly on the application of engineering expertise and knowledge gained. A working prototype or simulation must support the design.</td>
</tr>
<tr>
<td>III</td>
<td>Analytical Study and Investigation</td>
<td>Type III projects entail extensive research into existing engineering systems and practices, leading to conclusions on various project aspects such as validity, scope and proposals for improvement.</td>
</tr>
<tr>
<td>IV</td>
<td>Investigation with System Development and/or Design</td>
<td>Type IV projects require more background research than the Category II project, but must also deliver a working prototype or simulation to support findings</td>
</tr>
</tbody>
</table>
4. Achieving Success in ECNG3020 Special Project

You are required to take complete ownership of your project and this necessitates a considerable shift in attitude, as the project demands that beyond the exercise of knowledge and skill you must be self-regulating in your time management and self-directed in your research. You are required to:

- **Maintain a logbook:** You should record your research in the logbook—circuit diagrams; designs; data; graphs; calculations; references; research results; flow charts; and any communication, in person, via telephone or written, that is relevant to your study. The logbook is to be signed and dated by your Supervisor at each meeting and brought to the oral presentations—both the progress presentation and final presentation (refer to Appendix I for a complete description of the logbook).

- **Consult with your Supervisor regularly:** It is recommended that you consult your Supervisor at least once every week. You are to keep an attendance record of meetings with your Supervisor (see Appendix II). Frequent consultation is common in industrial practice and is useful for detecting problems before they have an irreversible, deleterious impact. Infrequent consultation has been the most common cause of failure in the ECNG 3020 project. **Be sure to prepare notes in advance of your meetings.** Notes on your progress and difficulties, and lists of questions will ensure your meetings are productive.

- **Order Requisite Project Materials and Components:** If your project requires materials or components that have to be ordered make sure to place your order early. It is normal for an order to take two or more months for delivery. More information is given in Section 10.4 of this manual.

- **Manage your Project:** ECNG 3020 Special Project must not be seen as a laboratory exercise fully directed by academic staff. ECNG 3020 is a student-directed, research-based course for which the student is ultimately responsible. The Department provides a wide range of support. Make use of them.

4.1. Advice for the ECNG 3020 Student

The advice provided here is informed by problems students have encountered in the past. We trust that by sharing these, you can avoid the pitfalls encountered by others.

- **Your project should be fun!** You have to want to do it, enjoy doing it, and be proud you did it. Should this cease to be the case, you should seek help to get back on track. There is nothing worse than pursuing a project which is going nowhere: you will come to hate it, do a poor job, and feel badly about yourself.

- **Pin down your project definition within the first month of receiving the project.** Use this time to determine the resources required. This includes both human (your time and required effort) and material resources (computing resources; parts and components).

- **A comprehensive survey of relevant, scholarly literature** is essential to clarifying your project ideas. Reviewing literature identifies what was done previously and so can direct the paths that you can
take. During your intense and wide reading make sure to keep detailed notes, including bibliographic references, to which you can easily refer as the need arises.

- Typically, students defer the bulk of their project till the second semester: This approach is characteristic of poor project management and is ill-advised. Instead, you should try to **work at a steady pace throughout the entire year**. In addition, your efforts should be guided with the aid of project management tools, such as Gantt Charts, Software/Systems Requirement Documents, Bills of Materials. These are living documents to be continually reviewed throughout the project: they inform your project and need to be revised as your project progresses.

- Your job will be made easier if the **project can be decomposed into significant steps or milestones**. Your supervisor will verify these milestones as soon as they are achieved. With this approach you will have some definite results, if you are unfortunate enough to run out of time to complete your project.

### 5. Academic Honesty

ECNG 3020 must not be regarded merely as a means toward the award of a degree. Rather, is must be thought of as an **opportunity for professional and personal development and achievement**. You are to spare no effort in **ensuring the integrity of your work** (see Appendix III). You must:

- **Provide both in-text and bibliographic citation in accordance with the author-date system of the Chicago Manual of Style 16th Edition or later**. Failure to do so will be taken as an attempt to plagiarise. Plagiarism is a grave offence and will attract penalties as set out in the regulations of the University.

- Present **authentic research data**. Manipulation of results is regarded as a serious offence, whether it involves falsifying results or distorting them to fit expectations. Data manipulation will attract penalties as set out in the regulations of the University.

### 6. Project Outcomes

**6.1. Goals**

ECNG 3020 requires you to:

1. Formulate requirement specifications to solve a stated electrical and or computer engineering problem;

2. Analyse and select a method or methods to solve the problem;

3. Devise and implement a solution to the stated problem

4. Evaluate and or validate the methodology and solution;
5. Communicate effectively the problem, methodology and results;

6. Apply planning and project management tools to carry out the project.

6.2. Learning Outcomes
To successfully complete ECNG 3020 you will need to:

1. Apply mathematical, scientific, and engineering principles and techniques to describe the characteristics and behaviour of electrical and or computer systems.

2. Analyse the functional and performance characteristics of electrical and or computer engineering systems, sub-systems, and relevant processes.

3. Identify and formally define electrical and computer engineering problems.

4. Develop requirements specifications for electrical and computer engineering solutions.

5. Select appropriate techniques and tools to realize engineering designs.

6. Apply standard analytical tools in the implementation of engineering solutions.


8. Use technical information, crediting the origins of ideas and other intellectual property.

9. Demonstrate an understanding of professional and ethical responsibility in the work environment.

10. Use relevant business principles, such as efficient time and resource management, to achieve engineering objectives.

11. Communicate effectively, conveying technical material through a variety of media, such as written products, graphics, and oral presentations.

7. Project Selection
There are three ways by which you may secure a project:

1. **Student Project Proposal:** You may propose a project. Use the Special Project Portal (see Section 10.1) to submit your proposal. Include as many details as you can. The Department recognises that your proposal will need some refinement. After you have posted your proposal, seek out a Supervisor to
supervise you. Your proposal will be reviewed and the ECNG 3020 Course Coordinator will communicate with you regarding the status of your proposal.

2. **Directly Assigned Projects**: Staff will post projects on the Special Project Portal. The list of proposed projects will be available by 1\textsuperscript{st} September 2017. Once you have decided on your preferred projects, you should start consultations with the respective supervisors to find out more about them. These consultations take place during the first week of the semester. At this stage, projects will be assigned **solely at the discretion of supervisors**. Supervisors will assign the project using the Special Project Portal.

3. **Open Bidding**: Students can bid for projects, from the official list posted on the Portal, that have **not been assigned**. You can bid for up to a maximum of four (4) projects, using the bidding tool in the Portal. Bidding will be permitted from 14\textsuperscript{th} - 15\textsuperscript{th} September 2017. The bidding process is competitive. Projects are awarded based on your preparedness to undertake the project.

Final decisions on project assignments will be made by 18\textsuperscript{th} September 2017. The Head of Department or his/her nominee is the final adjudicator in the assignment of projects.

8. **Assessment**

A panel of three examiners will evaluate your project. The Project Supervisor will automatically be appointed as the First Examiner. The Second Examiner and Moderator shall be appointed by the ECNG 3020 Coordinator or his/her nominee. See Appendix IV for Examiner Terms of Reference. The evaluation of ECNG 3020 is normally based on four student submissions:

1. Progress report and oral presentation;
2. Final written report;
3. Project demonstration (mandatory for Category II and IV projects); and
4. Final oral presentation.

In keeping with Faculty Regulation 3.6 (C), the Department reserves the right to assess candidates further.

8.1. **Progress Report and Oral Presentation**

The progress report and oral presentation are mandatory. You will be evaluated on your understanding of the problem; the general requirements of the problem solution; the project management procedures used; and preliminary results obtained.

A written report, no more than **10 pages long**, must be submitted to your Supervisor on or before 12\textsuperscript{th} January 2018. Your supervisor and you are to agree to arrangements for the submission of your progress report.
Presentations are scheduled for 17th-19th January 2018. You are to provide two (2) printed copies of your report, just ahead of your presentation to the 1st and 2nd examiners.

The oral examination is twenty (20) minutes in duration. You will present in the first ten (10) minutes. In the remaining ten (10) minutes examiners may pose questions to candidates. Examiners will provide formative feedback.

For the oral presentations students will use multimedia facilities (laptop and projector) provided by the Department. Multimedia files must be in PowerPoint™ and brought to the presentation room on an USB Flash Memory Key.

The progress report should include:
1. The project title, project category and objectives;
2. The background, describing the significance of the problem, and a well-defined scope;
3. A detailed method of how the problem is being addressed, taking account of solutions proposed or implemented by others;
4. Preliminary results;
5. Plans for the completion of the solution;
6. Details of problems encountered; and
7. A Gantt chart which describes the sequence of the solution procedures.

8.2. Final Written Report
Guidelines on the writing of the final report are provided in the ECNG 3020 Writing Manual. Group and individual support in the writing of your report will be provided in workshops and consultations. Students will be notified about these via email.

Two hard copies of the final written report are to be submitted. Submission opens 2.00pm, April 3rd 2018 and ends 2.00pm, on April 5th 2018. Details about submission arrangements will be communicated to you in Semester II.

8.2.1. Late Submission Policy

• Reports will be accepted after the deadline of 2pm, up to the close of business at 4.30pm, on April 5th 2018. Such submissions will be deemed late. The report component of the overall assessment will be awarded zero.
• Reports will not be accepted after the close of business at 4.30 pm on April 5th 2018. Such cases will be treated as non-submissions, earning zero for the entire course and hence a failing grade.
• UWI regulations regarding extenuating circumstances apply.
8.2.2. Electronic Upload of Final Report
You are to upload an electronic copy of your report to myelearning by **2pm, on April 5th 2018**. To upload your report:
• Ensure that the file is 40MB or less.
• Use any of the following file types: doc; docx; pdf; zip.
• Use this format for naming your files: ID_3020 Final Report (for example 01200135_3020 Final Report)

Your 3020 report is subject to examination by an electronic plagiarism checker. You will be required to sign a declaration of academic honesty. Reports will not be accepted without signed forms. Students are not allowed to present any changes, addenda or new versions of their final reports after the deadline.

The following will be regarded as attempts to subvert the Department’s plagiarism checks and will be reported to the Head of Department for appropriate action, which may include at minimum, the award of zero for the entire course:
• Failing to upload your report by the submission deadline;
• Using images of text where actual text is expected;
• Uploading of files with content different from your report;
• Incorrect naming of files; and or
• Using unapproved file types.

If you experience difficulty in uploading your report please contact the Course Coordinator via email – Crista.Mohammed@sta.uwi.edu.

8.3. Demonstration
Demonstrations are mandatory for category 2 and 4 projects. Other project types may be demonstrated, but this is subject to your supervisor’s instructions. Demonstrations will be held from 9th - 13th April 2018. Each student is required to make arrangements with the first and second examiners for the demonstration of working prototypes/models/software systems.

8.4. Final Oral Presentation
You are required to present a dissertation of your project, during the period of 16th - 18th April 2018. Projects are examined by a panel comprised of the first examiner, the second examiner and a
moderator. The duration of the examination is forty (40) minutes; you will present in the first fifteen (15) minutes. You will be orally examined on your project. You will use multimedia facilities (laptop and projector) provided by the Department. Multimedia files must be in PowerPoint™ and brought to the presentation room on an USB Flash Memory Key.

8.5. Grading

The project is evaluated across seven categories: Conduct: Understanding and Comprehension: Approach and Methodology; Results; Report; and Oral presentation. Each of these is assessed using one of eight letter grades from Perfect (A++) to Fail (F). From this ranking, final marks are calculated using weights determined by the project category. Details are provided in Appendix V.

The final mark is decided by consensus of the examination panel. In the determination of final marks, the examiners will include their assessments of the final written report; the project demonstration, where applicable; and final presentation. Students are given a single opportunity to demonstrate and present their final project results. These components of the project may not be remarked. See Appendix VI for the Department’s re-mark policy.

9. ECNG 3020 Schedule

Table 2 provides the course schedule. Carefully note these dates.

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Posting of Approved List of Projects</td>
<td>1st September 2017</td>
</tr>
<tr>
<td>Deadline Project Selection</td>
<td>18th September 2017</td>
</tr>
<tr>
<td>Bidding</td>
<td>14th -15th September 2017</td>
</tr>
<tr>
<td>Posting of Project Assignment List</td>
<td>18th September 2017</td>
</tr>
<tr>
<td>Deadline for Progress Report Submission</td>
<td>12th January 2018</td>
</tr>
<tr>
<td>Progress Report and Oral Presentation</td>
<td>17th-19th January 2018</td>
</tr>
<tr>
<td>Final Written Report</td>
<td>2pm, April 5th 2018</td>
</tr>
<tr>
<td>Demonstrations</td>
<td>9th-13th April 2018</td>
</tr>
<tr>
<td>Final Oral Presentations</td>
<td>16th-18th April 2018</td>
</tr>
</tbody>
</table>
10. Resources

10.1. Special Project Portal
The ECNG 3020 Special Project Portal is a dedicated course-management tool. It is the central hub for all course related information and resources. The Portal provides you with the following:

- Access to Course Manuals and Project Lists
- Project Proposal facility, which you can use to propose your own project
- Project Bidding forms. If you choose to bid for a project you must use this form
- Progress Presentation and Final Presentation schedules.

To receive an account on the Portal, you must first be registered on Banner for ECNG 3020. You can request an account by emailing Crista.Mohammed@sta.uwi.edu. Please provide:

- Your first and surname ONLY, as they appear on your UWI Student Identification Card
- Your UWI Student Number
- Your local telephone contact (to be used in cases of emergency)
- Your UWI and personal email addresses (will be used to communicate with you regularly).

When you log into the ECNG 3020 Portal, you agree to the terms and conditions of using The UWI’s ICT resources (see http://sta.uwi.edu/resources/policies/Acceptable_Use_Policy.pdf).

10.2. Laboratory Provisions
The Department has reserved laboratory space exclusively for ECNG 3020 project work. This ECNG 3020 laboratory has stalls with the types of equipment usually required by the majority of hardware projects. Consult with the Chief Technician for bookings in the ECNG 3020 laboratory. The availability of this space does not preclude your use of other labs in the Department. The Chief Technician is to be consulted in this regard as well. Suitable arrangements should be made if the project is to be conducted outside of the Department. These arrangements are to be communicated to your Supervisor and recorded in your logbook.

10.3. ECNG 3020 Seminars
Monthly seminars will be mounted as part of the ongoing support provided to you. ALL students are expected to attend these seminars. See Tables 3 and 4.
### Table 3: ECNG 3020 Semester I Seminar Schedule

<table>
<thead>
<tr>
<th>Date and Time</th>
<th>Topic</th>
<th>Venue</th>
</tr>
</thead>
<tbody>
<tr>
<td>29th August 2017</td>
<td>Course Orientation</td>
<td>Room 101</td>
</tr>
<tr>
<td>10.00 – 12.00 pm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22nd September 2017</td>
<td>Scholarly Research – Accessing Resources</td>
<td>LT2, Block 13</td>
</tr>
<tr>
<td>2.00 – 3.00 pm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29th September 2017</td>
<td>Referencing using the Chicago Manual of Style</td>
<td>LT2, Block 13</td>
</tr>
<tr>
<td>2.00 – 3.00 pm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6th October 2017</td>
<td>Project Planning Tools</td>
<td>LT2, Block 13</td>
</tr>
<tr>
<td>2.00 – 3.00 pm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27th October 2017</td>
<td>Research Methods (Engineering Literature review)</td>
<td>LT2, Block 13</td>
</tr>
<tr>
<td>2.00 – 3.00 pm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd November 2017</td>
<td>Research Methods (Engineering Literature review)</td>
<td>LT2, Block 13</td>
</tr>
<tr>
<td>2.00 – 3.00 pm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10th November 2017</td>
<td>Refining your Writing</td>
<td>LT2, Block 13</td>
</tr>
<tr>
<td>2.00 – 3.00 pm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24th November 2017</td>
<td>Presenting the Progress Report</td>
<td>LT2, Block 13</td>
</tr>
<tr>
<td>2.00 – 3.00 pm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 4: ECNG 3020 Semester II Seminar Schedule

<table>
<thead>
<tr>
<th>Date and Time</th>
<th>Topic</th>
<th>Venue</th>
</tr>
</thead>
<tbody>
<tr>
<td>5th March 2018</td>
<td>Writing Workshop - The Final Report</td>
<td>LT2</td>
</tr>
<tr>
<td>9th April 2018</td>
<td>Oral Presentations- Presenting your Project</td>
<td>LT2</td>
</tr>
</tbody>
</table>

### 10.4. Components and Software

Components and software will ONLY be purchased in exceptional cases. Table 5 outlines the ordering process.

**ALL** of these conditions must be met if the Head of Department is to approve purchases:

- The Departments’ Stores does not have the component/software licence;
- There is no viable substitute for the component/software, readily available to the Department or already in the Department’s possession; and
The project requirements logistically prevent you from creating the software solution /assembling the component that is needed.

Aim to have in-hand your project components/software licence **AS SOON AS POSSIBLE.** In the past some international orders took an inordinately long time to arrive. Keep this in mind when scheduling, and make contingency plans in the event that your order does not arrive.

**DO NOT ASSUME** that resources normally used for teaching/labs (e.g. PIC microprocessors, programmers, computers) will be made available. For resources which are used by a large number of students, it may be necessary to get your own.

**The deadline for all orders is Friday 3rd November 2017. The total value of orders per student project should not exceed 800.00 TTD**

<table>
<thead>
<tr>
<th>Step</th>
<th>Departmental Order</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Review your project requirements with your supervisor</td>
</tr>
<tr>
<td>2.</td>
<td>Ascertain that the item/s are NOT available in the Department’s Stores</td>
</tr>
<tr>
<td>3.</td>
<td>Complete a “Request Form for Credit Card Purchases” (available at the Chief Technician’s Office)</td>
</tr>
<tr>
<td>4.</td>
<td>Attach any special justifications needed (see 12.4.1 below) to your completed purchase request.</td>
</tr>
<tr>
<td>5.</td>
<td>Have your Supervisor and another examiner where required (see 12.4.1 below) approve the purchase.</td>
</tr>
</tbody>
</table>
| 6.   | Obtain three quotations from three different suppliers and attach to your purchase request. Quotations should include the cost of the item/s and shipping and handling fees. Quotations are to be addressed to:  
  - The Head of Department  
  - ATTN: (insert the name of your Project Supervisor)  
  - Department of Electrical and Computer Engineering  
  - Faculty of Engineering  
  - The University of the West Indies, St. Augustine. |
| 7.   | Take the quotations to the Chief Technician, who will put the order through. |
| 8.   | Follow-up with the Chief Technician on the status of your order.  
  **NB: If you encounter undue problems with your order, draw it to the attention of the Coordinator, who will intervene where possible.** |
10.4.1. Additional Documentation for Orders

For Microprocessor-based solutions: The Department recommends the use of the PIC family of microprocessors, which are best suited to small scale complexity circuits. For more complex projects which require the use of devices, such as a DSP, an embedded development board, or a more powerful microprocessor, you must include a platform choice justification with your purchase request: These are to be reviewed and signed by your supervisor and at least one other examiner.

For Low-level logic designs: the Department recommends the use of programmable logic devices (PLDs), such as the Cool Runner II CPLD Starter Board, with which most students are familiar. However, if the design requires additional features or a more sophisticated FPGA, you must include a preliminary design justification (gate count) with your purchase request: These are to be reviewed and signed by your supervisor and at least one other examiner.

In-house PCB fabrication: Designs should be restricted to:
- Single-sided designs with primarily through-hole parts (double-sided can be fabricated, but the drill holes cannot be plated with copper)
- A maximum PCB size of 150mm x 110mm
- A track width (including drill hole annular rings) and track spacing greater than 15 mil (N.B. 15 mil == 0.38mm)
- Hole sizes measuring 25 mil (small leads), 35 mil (standard) and 45 mil (high wattage parts)
- A maximum clocking frequency of 10 MHz

These restrictions allow us to fabricate and populate boards in the lab.

More sophisticated designs (larger area, higher frequency, other drill hole sizes, thinner tracks, use of surface mount parts which necessitate solder masking, and/or the use of multiple layers) will need to be ordered. A SysRS-type justification (specifying board area, track resolution, use of surface mount parts, and number of layers) should be included with your purchase order: These are to be reviewed and signed by your supervisor and at least one other examiner.

Extensive software development/use: You are required to make use of software tools (development environments, planning tools, compilers, toolboxes, simulation environments) for which the Department has student licences, or that is available for use without charge. Where projects require use of restricted or limited availability licences you will be required to provide an SRS-type justification which with your purchase order: These are to be reviewed and signed by your supervisor and at least one other examiner.
10.5. **ICT Use**

If your project involves the use of the University’s ICT resources, please be guided by the UWI’s Acceptable Use Policy:

[http://sta.uwi.edu/resources/policies/Acceptable_Use_Policy.pdf](http://sta.uwi.edu/resources/policies/Acceptable_Use_Policy.pdf)

Where there is evidence of unacceptable use, the University may, among other courses of action, restrict or prohibit the use of its ICT resources. Violations of this policy shall be treated with in accordance with applicable University Statutes, Ordinances, Rules and Regulations.
Appendix I – Logbooks

All students of ECNG 3020 must keep a logbook. The following are stipulations for the maintenance of your logbook:

- The logbook must be a bound notebook, typically measuring 8.5” x 11”. Binders and clip-boards may not be used, as pages may be removed or lost.

- No pages are to be torn out. Cross out a page if it contains an error, but leave the contents legible.

- The contents should be clear to any technical reader, not just the author. Before you start working, it's often good to write a brief statement indicating what you are trying to accomplish with the task. Write a summary describing what went right and what went wrong with the task.

- Sign and date each page when you are through with that page. Draw a diagonal line through any portion of the page which remains blank.

- All communication relevant to your study, whether via phone, in person or by written means should be kept in the log.

- Calculations, sketches, theories, short software listings, lists of "Things to Do", and actual data belong in the logbook.

- Component data sheets, application notes, viewgraphs, handouts, reports, e-mails, and petty cash receipts (to name a few) are best kept in an indexed three ring binder: They do not belong in the logbook.

- The logbook must be signed by your supervisor at each meeting.
Appendix II – Attendance Record

The ECNG 3020 attendance record is intended to help both students and project supervisors manage and schedule their meetings. This record is to be kept by the supervisor and is to be made available upon request, by the Course Coordinator and or HOD and or either of their nominees. Students may reproduce a similar table as shown below and keep this as part of your Logbook.

<table>
<thead>
<tr>
<th>Date/Time of meeting</th>
<th>Outcomes of Meeting/ Actions to be taken (insert in point form)</th>
<th>Supervisor’s Initials</th>
<th>Student’s Initials</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

Student Name:

Supervisor:

Project Title:
Appendix III - Statement of Academic Honesty

Every student submission made to the Department of Electrical and Computer Engineering is subject to examination by an electronic plagiarism checker.

Cheating and plagiarism are both forms of academic dishonesty. Refer to following excerpts taken from the Under Graduate Regulations & Syllabuses 2015 – 2016, The Faculty of Engineering:

5.3: Guidelines for Staff and Students on Plagiarism

Plagiarism is frowned upon in the University and as such penalties will be applied to any person found guilty of plagiarism. The following is an extract from The University of the West Indies Policy on Graduate Student Plagiarism approved by the Board for Graduate Studies and Research at its meeting in October 2010:

DEFINITION OF PLAGIARISM:
Plagiarism is defined as the unacknowledged use of the words, ideas or creations of another. The principal categories of unacknowledged use are unacknowledged quotation, which is failure to credit quotations of another person’s spoken or written words; and unattributed borrowing, which is failure to credit another person’s ideas, opinions, theories, graphs or diagrams. Unattributed borrowing also includes the failure to credit another person’s work when paraphrasing from that work. Cosmetic paraphrasing is also plagiarism. This occurs when, even with acknowledgment, the words are so close to the original that what is deemed to have been paraphrased is, in fact a modified quote, but is not presented as such. A more technical form of plagiarism is wrongly attributed borrowing, where one does not acknowledge the work from which one obtained an idea, but quotes, instead, the original source without having read it. This may well convey a broader research effort than that actually expended and may perpetuate misinterpretation.

5.4: UNIVERSITY REGULATIONS ON PLAGIARISM

Application of these Regulations:

1. These Regulations apply to the presentation of work by a student for evaluation, whether or not for credit, but do not apply to invigilated written examinations.

Definition of plagiarism

2. In these Regulations, “plagiarism” means the unacknowledged and unjustified use of the words, ideas or creations of another, including unjustified unacknowledged quotation and unjustified unattributed borrowing; “Level 1 plagiarism” means plagiarism which does not meet the definition of Level 2 plagiarism; “Level 2 plagiarism” means plagiarism undertaken with the intention of passing off as original work by the plagiariser work done by another person or persons.

3. What may otherwise meet the definition of plagiarism may be justified for the purposes of Regulation 2 where the particular unacknowledged use of the words, ideas and creations of another is by the standards of the relevant academic discipline a function of part or all of the object of the work for evaluation whether or not for credit, for example:
   a. The unacknowledged use is required for conformity with presentation standards;
   b. The task set or undertaken is one of translation of the work of another into a different language or format;
   c. The task set or undertaken requires producing a result by teamwork for joint credit regardless of the level of individual contribution;
d. The task set or undertaken requires extensive adaptation of models within a time period of such brevity as to exclude extensive attribution;
e. The task set or undertaken requires the use of an artificial language, such as is the case with computer programming, where the use of unoriginal verbal formulae is essential.

4. It is not a justification under Regulations 2 and 3 for the unacknowledged use of the words, ideas and creations of another that the user enjoys the right of use of those words, ideas and creations as a matter of intellectual property.

Other definitions

5. In these Regulations, “Chairman” means the Chairman of the relevant Campus Committee on Examinations; “Examination Regulations” means the Examination and other forms of Assessment Regulations for First Degrees Associate Degrees Diplomas and Certificates of the University; “set of facts” means a fact or combination of facts.

Evidence of plagiarism

6. In order to constitute evidence of plagiarism under these Regulations, there shall be identified as a minimum the passage or passages in the student’s work which are considered to have been plagiarised and the passage or passages from which the passages in the student’s work are considered to have been taken.

Student Statement on Plagiarism

7. When a student submits for examination work under Regulation 1, the student shall sign a statement, in such form as the Campus Registrar may prescribe, that as far as possible the work submitted is free of plagiarism including unattributed quotation or paraphrase of the work of another except where justified under Regulation 3.

8. Quotation or paraphrase is attributed for the purpose of Regulation 7 if the writer has indicated using conventions appropriate to the discipline that the work is not the writer’s own.

9. The University is not prohibited from proceeding with a charge of plagiarism where there is no statement as prescribed under Regulation 7.

Electronic vetting for plagiarism

10. The results of any electronic vetting although capable, where the requirements of Regulation 7 are satisfied, of constituting evidence under these Regulations, are not thereby conclusive of any question as to whether or not plagiarism exists.

Level 1 plagiarism

11. In work submitted for examination where the Examiner is satisfied that Level 1 plagiarism has been committed, he/she shall penalise the student by reducing the mark which would have otherwise been awarded taking into account any relevant Faculty regulations.
Level 2 plagiarism

12. Where an examiner has evidence of Level 2 plagiarism in the material being examined, that examiner shall report it to the Head of Department or the Dean and may at any time provide the Registrar with a copy of that report. In cases where the examiner and the Dean are one and the same, the report shall be referred to the Head of the Department and also to the Campus Registrar.

13. Where any other person who in the course of duty sees material being examined which he or she believes is evidence of Level 2 plagiarism that other person may report it to the Head of Department or the Dean and may at any time report it to the Campus Registrar who shall take such action as may be appropriate.

14. Where a Dean or Head of Department receives a report either under Regulation 12 or 13, the Dean or Head of Department, as the case may be, shall:
   a. where in concurrence with the report’s identification of evidence of Level 2 plagiarism, report the matter to the Campus Registrar; or
   b. where not concurring in the identification of evidence of plagiarism, reply to the examiner declining to proceed further on the report; or
   c. where concluding that there is evidence of Level 1 plagiarism, reply to the examiner indicating that conclusion and the Examiner shall proceed as under Regulation 11.

15. Where a report is made to the Campus Registrar under Regulation 14a or 16, the Campus Registrar shall lay a charge and refer the matter to the Campus Committee on Examinations.

16. Where the Campus Registrar receives a report alleging Level 2 plagiarism from the Examiner or any other person except the Dean or Head of Department, the Campus Registrar shall refer the matter to a senior academic to determine whether there is sufficient evidence to ground a charge of plagiarism and where such evidence is found, the Campus Registrar shall proceed as under Regulation 15.

17. Where the matter has been referred to the Campus Committee on Examinations pursuant to Regulation 15, the proceedings under these Regulations prevail, over any other disciplinary proceedings within the University initiated against the student based on the same facts and, without prejudice to Regulation 21, any other such disciplinary proceedings shall be stayed, subject to being reopened.

18. If the Campus Committee on Examinations is satisfied, after holding a hearing, that the student has committed Level 2 plagiarism, it shall in making a determination on the severity of the penalty take into consideration:
   a. the circumstances of the particular case;
   b. the seniority of the student; and
   c. whether this is the first or a repeated incidence of Level 2 plagiarism.
19. Where the Campus Committee is of the view that the appropriate penalty for an offence of Level 2 plagiarism is for the student to be:

i. awarded a fail mark;

ii. excluded from some or all further examinations of the University for such period as it may determine;

iii. be dismissed from the University, it shall make such recommendation to the Academic Board.

**Clearance on a charge of Level 2 plagiarism**

20. A determination of the Campus Committee on Examinations that Level 2 plagiarism has not been found will be reported to the Campus Registrar who shall refer it to the Examiner and notify the student. Where the Committee has not identified Level 2 but has identified Level 1, it shall be reported to the Campus Registrar who shall refer it to the examiner.

**Level 2 plagiarism: Appeal to the Senate**

21. A student may appeal to the Senate from any decision against him or her on a charge of plagiarism made by Academic Board.

**Delegation by Dean or Head of Department**

22. The Dean or Head of Department, as the case may be, may generally or in a particular instance delegate that officer’s functions under these Regulations.

**Conflict of interest disqualification**

23. Any person who has at any time been an examiner of work or been involved in procedures for laying charges in relation to which an issue of plagiarism is being considered under these Regulations shall withdraw from performing any functions under these Regulations other than those of supervisor and examiner.
Appendix IV – Examiner Terms of Reference

Project Supervisors

Even though ECNG 3020 is a student-driven project, the student is not working in isolation. The role of the Project Supervisor is critical to the entire ECNG 3020 course. The Project Supervisor functions as mentor, key technical resource person, and primary assessor.

As mentor, the Supervisor is expected to:
- Provide moral support and encouragement
- Facilitate and support student reflection on the research process
- Refer students to relevant student support services, should such a need arise

While students are expected to be self-regulating and self-directed in their projects, the Supervisor acting as the key technical resource person in the ECNG 3020 process and informed by his/her research experience and disciplinary knowledge:
- Proposes projects; proposals for which specify the research problem/s, research scope, methodology, requisite background knowledge, hardware and software
- Advises students in their project selections
- Works with the candidate to set research milestones
- Directs student to relevant research, literature, and resources
- Acts in concert with other staff and the candidate in the ordering of requisite parts and components
- Meets regularly with candidates to review research progress—weekly meetings are advised
- Reviews and signs student logbooks and attendance records after each meeting
- Advises the ECNG 3020 Project Coordinator and the Administrative Assistant of student performance and attrition

Functioning as a primary assessor, the Project Supervisor:
- Ensures that all student material submitted for assessment is checked by an electronic plagiarism checker. Students, found to be contravening the UWI’s rules of Academic Honesty must be referred to the ECNG 3020 Coordinator and or Head of Department and or nominee of either for further action
- Reviews all assessment artefacts for adherence to citation conventions as specified in the Chicago Manual of Style 16th Edition or later. Student submissions, not meeting this requirement must be referred to the ECNG 3020 Coordinator and or Head of Department and or nominee of either for further action.
- Provides, in conjunction with the Second Examiner, formative feedback at the progress report presentation
- Ensures that there is agreement between him/herself and the 2nd Examiner regarding the focus, objectives, scope and deliverables of the project. This agreement is to be brokered and communicated to the student and ECNG 3020 Coordinator no later than one (1) week following Progress presentations. This requirement is to ensure that the student is not unduly disadvantaged by having to meet different, sometimes competing, expectations held by 1st and 2nd Examiners.
• Evaluates, in conjunction with the First Examiner, the **final written report**, **project demonstration** and **final oral presentation**, using the approved system of grading

• Justifies, by means of written comments on the prescribed mark sheet, scores awarded to projects

• Submits all score sheets and related documents to the ECNG 3020 Coordinator and or his/her nominee, immediately following the assessment period

• Submits all final reports, **immediately** after the assessment period, to the Administrative Assistant or his/her nominee for archiving

**Second Examiners**
Second Examiners are normally subject-matter experts, the basis of which qualifies them to assess projects within their fields of expertise.

The Second Examiner in his/her role, as external to the Supervisor- Student relationship, will:

• Provide, in conjunction with the First Examiner, formative feedback at the **progress report presentation**

• Evaluate, in conjunction with the First Examiner, the **final written report**, **project demonstration** and **final oral presentation**, using the approved system of grading

• Justify, by means of written comments on the prescribed mark sheet, scores awarded to projects

• Submit all score sheets and related documents to the ECNG 3020 Coordinator and or his/her nominee, immediately following the assessment period

• Submit all student final reports, **immediately** after the assessment period, to the Administrative Assistant or his/her nominee for archiving

**Project Moderators**
Each Moderator is expected to:

• Provide general supervision of each presentation - ensuring that presentations adhere to scheduling constraints

• Manage the question and answer period at the end of student presentations. Questioning is restricted to the **examining panel only**.

• Clear the examination room, allowing the examination panel to confer in privacy, at the end of each presentation

• Complete the final score sheet in collaboration with the First and Second Examiners

• Act as an arbiter, where there may be disagreement in the award of marks.
Appendix V - ECNG 3020 Project Grading Scheme

The grading system, which is essentially based on fuzzy logic and inferencing concepts, has the following characteristics:

1. Projects are divided into four types, each with different weightings per assessment area (see Table 6). This reflects the fact that not all projects can be judged in the same way - the emphasis on the Type II project is on the actual prototype design and implementation, while a Type I project has a strong emphasis on the comprehension of background theory and the approach taken to reach stated conclusions. The distribution of marks all sum to 100.

2. The grade assignments are fairly evenly spaced as shown in marking rubric (Table 7). An attempt has been made to align the letter values to current UWI grade assignments.

3. Quality descriptors have been characterized so as to reduce subjectivity. These are illustrated in Table 7.

4. Examiners will assign preliminary grades to all categories except "Presentation" before the actual oral examination. The final oral exam is used to determine the presentation grade and to modify the predetermined grade as a result of candidate responses.

Table 6: Project Category Weightings

<table>
<thead>
<tr>
<th>Category</th>
<th>Conduct</th>
<th>Understanding</th>
<th>Approach</th>
<th>Results</th>
<th>Report(s)</th>
<th>Presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Research</td>
<td>10</td>
<td>30</td>
<td>20</td>
<td>15</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>II. Development/ Design</td>
<td>10</td>
<td>15</td>
<td>25</td>
<td>30</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>III. Investigative</td>
<td>10</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>IV. Investigative &amp; Design</td>
<td>10</td>
<td>20</td>
<td>30</td>
<td>20</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>
### Table 7: ECNG 3020 Marking Rubric

(Instructions: From the rubric below circle the performance level per assessment category)

<table>
<thead>
<tr>
<th>Performance levels &amp; Grades</th>
<th>Conduct</th>
<th>Understanding &amp; Comprehension</th>
<th>Approach &amp; Methodology</th>
<th>Results</th>
<th>Report</th>
<th>Presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent A+ = 0.9</td>
<td>Regular, punctual, prepared at meetings, with very few exceptions. Managed time and resources commendably. Self-directed and highly motivated.</td>
<td>Advanced understanding of background theory, its application and limitations.</td>
<td>Advanced use and strong justification of methods &amp; approaches.</td>
<td>Exceeds anticipated deliverables. Outstanding results and strong support of conclusions.</td>
<td>Clear organisation; grammatical; and clear language. Adheres to writing conventions.</td>
<td>Comprehensive content. Clear command of the material. Strong delivery.</td>
</tr>
<tr>
<td>Very Good A = 0.81</td>
<td>Regular, punctual and prepared, at meetings, with few exceptions. Managed time and resources well. Self-directed and highly motivated.</td>
<td>Thorough understanding of background theory, its application and limitations.</td>
<td>Sound use and justification of methods &amp; approaches.</td>
<td>Supplies all deliverables. Presents above average results and conclusions are well-supported.</td>
<td>Organised, grammatical and clear for the most part. Adheres to writing conventions with few minor exceptions.</td>
<td>Content is complete, save minor omissions. Command of the material to a large degree. Effective delivery.</td>
</tr>
<tr>
<td>Good B+ = 0.73</td>
<td>Regular, punctual, prepared at meetings, with some exceptions. Managed time and resources well. Needed occasional direction and motivation.</td>
<td>Firm understanding, with minor deficiencies, of background theory, its application and limitations.</td>
<td>Conventional use and justification of methods &amp; approaches.</td>
<td>Supplies all core deliverables and expected results. Conclusions are mostly supported.</td>
<td>Fairly well-organised; some grammar errors. Adheres to writing conventions with a few major exceptions.</td>
<td>Content is complete, save a few omissions. Some command of the material. Somewhat effective delivery.</td>
</tr>
<tr>
<td>Satisfactory B = 0.67</td>
<td>Regular, punctual, prepared at some meetings. Managed time and resources to a fair extent. Needed guidance and motivation.</td>
<td>Reasonable understanding of background theory, its application and limitations.</td>
<td>Reasonable use and justification of methods &amp; approaches.</td>
<td>Supplies most core deliverables and expected results. Conclusions are supported to a fair degree.</td>
<td>Some organisation; incorrect grammar in a few significant instances. Adheres to writing conventions with major exceptions.</td>
<td>Content is complete, save for a few major omissions. Fair command of the material. Fair delivery.</td>
</tr>
<tr>
<td>Pass C = 0.55</td>
<td>Regular, punctual, and prepared at some meetings. Some attempt to manage time and resources. Needed frequent guidance and motivation.</td>
<td>Working understanding of background theory, its application and limitations.</td>
<td>Barely acceptable use and limited justification of methods &amp; approaches.</td>
<td>Supplies some core deliverables, and some expected results. Some support for conclusions drawn.</td>
<td>Some attempt at organisation; incorrect grammar in significant instances. Weak adherence to writing conventions.</td>
<td>Content is barely adequate. Minimal command of the material. Acceptable delivery.</td>
</tr>
<tr>
<td>Poor D = 0.38</td>
<td>Regularly absent, late, unprepared at meetings. Little effort to manage time and resources. Rarely responded to guidance and not motivated.</td>
<td>Weak understanding of background theory, its application and limitations.</td>
<td>Weak use and inadequate justification of methods and approaches.</td>
<td>Supplies few deliverables and weak results. Weak support of conclusions drawn.</td>
<td>Weakly organised; intrusive grammar errors. No adherence to writing conventions.</td>
<td>Content is incomplete. No command of the material. Weak delivery.</td>
</tr>
<tr>
<td>No Effort F = 0</td>
<td>Did not attend meetings. No attempt to manage time and resources. Did not respond to guidance and not motivated.</td>
<td>No understanding of background theory, its application and limitations.</td>
<td>No use and no justification of methods and approaches</td>
<td>Supplies no deliverables or results. Conclusions are unfounded.</td>
<td>No report.</td>
<td>No presentation.</td>
</tr>
</tbody>
</table>
Grade Calculation

The final grade (see worked example in Figure 1) is determined as follows:

1. Select the project category
2. Assign a letter grade to each evaluation category (e.g. Conduct: A, Approach: B etc.)
3. Sum the product of each Project Category weight and corresponding grade level
4. Round the result to the nearest integer.
Appendix VI - ECNG 3020 Project Re-mark Policy

In keeping with Section IV Of the UWI’s Examination Regulations (2011/2012), The Department permits re-marks of ECNG 3020.

In a re-mark of your project:

- The “conduct” and “presentation” marks earned from the initial evaluation of the project go forward in the re-mark.

- The independent marker will be supplied with the project proposal, so that he or she may determine the extent to which you have met the project objectives.

- The evaluation fields of “understanding & comprehension”; “approach & methodology”; “report”; and “results” will be evaluated based on the report only.

The burden of evidence thus lies with the report. You are encouraged to produce quality reports that accurately and comprehensively capture the work done. Students who have produced weak reports have little chance of earning a higher grade, in the event of a re-mark.