# ELECTRICAL & COMPUTER ENGINEERING

## ENGINEERING CLINICS

**Rowan University**

**Project Title:**

**Project Team**

PM Faculty Name:                                        PM Department:

Sponsor (if applicable) :                              Date Submitted:

*Project Students - Name, Dept, Banner ID #, and Signature*

| | | |
|---|---|---|
| Dept.: | ID# | |
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| Dept.: | ID# | |
| Dept.: | ID# | |
| Dept.: | ID# | |

*Use a second cover page, if project included more than five students*

## Table of Contents

| | Report Component | Pages | Weight |
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| **Engineering Design Process** (Graded as team based on the report) | **Preliminaries** | | |
| | Abstract | | 5 |
| | Introduction & problem statement | | |
| | Technical requirements, specifications, and deliverables, timeline (Gannt chart) | | |
| | References and acknowledgements | | |
| | **Constraints** | | 5 |
| | **Applicable Engineering Standards** | | 5 |
| | **Approach, Design and Validation: Solution of Complex Eng. Problems & Engineering Judgment** | | |
| | Background and main approach | | 45 |
| | Trade-offs, alternative solutions, iterative design, risks & opportunities for each | | |
| | Design and implementation of experiments, analysis of results and validation | | |
| | Evidence of appropriate design that meets specified requirements / constraints | | |
| | Discussions and conclusions - Use engineering judgment to to draw conclusions | | |
| | **Engineering Design Process – Project Team Grade from This Report** | | **Out of 60** |
| **Impact & Prof. Considerations** (Graded individually based on IPCS)◆ | **Impact Factors** (Enter consolidated answers in the report, submit separate IPCS for each student) | | |
| | Public health, welfare, safety | | Graded on IPCS (12) |
| | Global, social, and cultural factors | | |
| | Environmental factors | | |
| | Economic factors | | |
| | **Professional and Ethical Issues in Consideration of The Above-stated Factors** | | (10) |
| | **Teamwork, Lessons & New Knowledge Learned** | | |
| | Team members and their respective involvements | | (4) |
| | Main takeaways, lessons, new knowledge learned | | (4) |
| | **Effective Communication (from poster presentations)** | | (10) |
| | **Individual Considerations – Graded individually on IPCS** | | **40 %** |
| | **Total** | | **100 %** |

★ With their signature, each student affirms that they have worked on the project equally and measurably in the areas indicated under Teamwork, that they properly represent their work as their own and that they have properly cited the source of the content obtained from other sources.

◆ For all individual consideration topics, enter project wide answers in this report (and cite the page numbers here). However, your grade will come from the Impact & Professional Considerations Statement (IPCS).

All grading and evaluations are for faculty use only. Students enter other project information and page numbers as indicated above.

## GRADING COMPONENTS AND WEIGHTS

The clinic grade will consist of two components: an engineering design process grade (60%) that is given to the entire team, and an impact and professional considerations grade (40%) provided separately to each student based on the Impact and Professional Considerations Statement (IPCS). Your final grade will be based on the sum of the two. The breakdown of these two grade components is provided below. Note that – if in the judgement of the project manager / faculty, a student participates / contributes measurably less than other team members – that student's engineering design process grade may also be lower than the team grade.

For each category, you will be graded on a four-point scale rubric: Excellent (100 points), Proficient (75 points), Developing (50 points) and Unsatisfactory (0 points). These points will be multiplied by the category weights given on the cover page and below (in parentheses). Detailed descriptions and definitions are available on the grading rubric.

**Preliminaries** (5): Follows proper technical reporting process with clear definition and implementation of problem statement / definition; technical specs / requirements; timeline / tasks / deliverables; references and proper formal technical writing language;

**Multiple Realistic Constraints** (5) – must include multiple constraints, with reasoning, that limit your design, solution. Time and money – without sufficient justifications – cannot be the sole constraints.

**Applicable Engineering Standards** (5) – must include the published applicable standard, and how / where that standard was used in the design. Must cite the standard.

**Engineering Design Process – Approach, Design and Validation** (45 points) Solution of complex engineering problems and using sound engineering judgment  – must produce and articulate a design that meets the specified requirements and constraints, show analysis and synthesis with risks and trade-offs of multiple solutions and alternatives for an iterative design process, appropriate experiments, evaluation and validation to determine whether the design meets the requirements. Draw meaningful conclusions based on sound engineering judgment.

**Impact factors** (12 points) – must discuss – either in the Approach / Design or Discussion or in a separate section, the specific design decisions **you** have taken in consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors (these are connecting with "AND", meaning they all need to be considered).

**Effective Communications** (10 points) – must demonstrate effective communication skills with a range of audiences, using oral, written and/or poster formats. The discussions in each medium must have a suitable level of formal language and technical rigor for the intended audience. The oral presentation must be fluent and articulate. The report must follow established style guidelines.

**Ethical and Professional Responsibilities** (10 points) - Discuss what ethical issues may arise (or have risen) in the context of global, economic, environmental, societal factors, and how they can be addressed.

**Effective Functioning on a Team** (4 points) - Explain the role of each individual in the project, and how did s/he contribute to the team (leadership, establishing goals, planning, creating inclusive env., etc.). Individual contributions of each team member must be verified by the project manager and other team members.

**New Knowledge and Lifelong Learning** (4 Points) - A detailed explanation on what new knowledge and skills were gained, the mechanism for acquiring such knowledge/skills, and how were they applied to the project.