COLLEGE OF ENGINEERING
Department of Electrical Engineering

EngE 590 – Senior Project (I)
(Capstone Design)
Proposal Procedure

Proposals can be submitted by students, faculty or industry. The deadline for submission is First of September, and First of April. Each project will be completed under the supervision of one or more department or college staff members with expertise in the project area. Each student team will normally consist of Three to Four Department or college engineering seniors.

Each project must meet the following criteria:

1. Project can be completed during TWO semesters (ONE academic year.)
2. Project must meet ABET design criteria:
   a) Open ended
   b) Non-unique solutions
   c) Student decisions required
   d) Involve advanced engineering analysis
   e) Design configuration decisions required
   f) Visibility studies and market needs

The main emphasis of the project is design. If construction is involved it must not override the engineering design aspects of the project.

Each proposal should be outlined as listed below:

A. Proposer's name, address, phone number and affiliation.
B. Choice of faculty advisor if known.
C. Number of students desired and student design team choice if known.
D. Type of analysis that project may involve such as (Department specialties)…….
   ……..
E. State tentative project name followed by a description of the project not more than one page in length.
F. If the project is from industry please state what your company is willing to donate to the project to offset student travel, duplication expenses, etc. Estimated Budget around 5000 SR or budget accepted by the university

The proposals will be reviewed by the department and confirmed by the Advisory Board. Students will be assigned to selected projects early at 10th September and April

Please submit proposals with formal attached Form by Email to:

College Coordinator of Capstone Design
Dr. Refaat Khater
ref_khater@yahoo.co.uk,
Department Coordinator of Capstone Design
Name:……
Email: …….

COLLEGE OF ENGINEERING
Department of Electrical Engineering

Eng… 590 – Senior Project (I)
(Capstone Design)

Proposal Format

Academic year	**1440 – 1441 - 2019 –2020**
Semesters	**Fall / Spring**
Academic Level	**Nine / Ten**
Project Title	**Induction motor fault detection, protection and speed control using Arduino**
Supervisor(s)	**Dr. Slim Abid**
Number of Student Team	**5**

1- Introduction & Background

Today, the induction motor is the most extensively used in the industry. The faults in this type of motor may lead to breakdown of the induction motor and an increase in expense to the industry. So in this project we will develop a system which is cheap as compared to other systems and also cost effective. This system monitors the induction motor parameters like temperature, speed, current, voltage etc. Using these parameters we can easily detect faults such as overvoltage, over-current, overload, excessive heating, crawling and under-voltage. The developed system can analyze these faults and take the necessary actions especially under abnormal conditions for better reliability and efficiency. The data can be accessed from anywhere in the globe through Wifi.

2- Problem Statement and Objective (ABET – 3e)

The main objectives of this project as follows;

- Introduction to IOT.
- Faults in induction motor.
- Speed control of induction motor.
- Practical prototype.

3- Problem justification and Outcomes (ABET - 3e)

In this project we will develop a system which is cheap as compared to other systems and also cost effective. This system monitors the induction motor parameters like temperature, speed, current, voltage etc. Using

these parameters we can easily detect faults such as overvoltage, over-current, overload, excessive heating, crawling and under-voltage. The developed system can analyze these faults and take the necessary actions especially under abnormal conditions for better reliability and efficiency. The data can be accessed from anywhere in the globe through Wifi.

4- Literature Review (ABET – 3j)

- Monitoring and control of induction machine (IM).
- Faults detection in (IM).
- Faults analyzing in (IM).
- Practical prototype.

5- Problem Constraints (ABET - 3c)

- Students background in electronics and programming.
- Simulation using Matlab.

6- Design Approach and Methodology (ABET - 3a, 3b, 3e, 3k)

- Knowledge of IM principles.
- Principle of IOT.
- Detection and analyzing of Faults in (IM).
- Web controlled (IM)..
- Practical prototype.

7- Tasks and Time Schedule

(Level: 9, First Term, 143..)

Task No.	Task Name	Duration (Weeks)
1	Introduction to (IM).	2
2	Principle of IOT.	2
3	Technique used to detect and analyze faults in (IM)	3
4	Principle of Arduino Circuit.	2
5	Seminar 1	2

(Level: 10, Second Term,143..)

Task No.	Task Name	Duration (Weeks)
1	Simulation using Matlab/simulink	2
2	Programming and Hardware Assembling.	2
3	Practical prototype.	2
4	Practical prototype check.	3
5	Writing the project book and seminar.	2

8- Budget & Expenditures Sheet

Items	Description	Estimated Price
1	Arduino mega	130 SR

2	Ethernet module (or shield)	**100 SR**
3	Raspberry Pi 3 and other related components and relays.	**500 SR**

8- Visibility of the product and market needs (ABET -)

At the end of this project the data can be accessed from anywhere in the globe through Wifi. You will be able to monitor this (IM) from any device (mobile phone, pc, tablet) because the user interface is accessible through a browser window. Because of that, it supports all operating systems. You can also control the speed of your (IM).

Supervisors	
Name	**Signatures**
Dr. Slim ABID	

Senior Project (Capstone Design) Presentation

EngM 590 Case Study Presentations

I have invited Guest lecturers and students to provide you with actual projects or situations for your review.

- Review your notes and presentation slides
- Study the information
- Use what you have learned in project class to identify various issues/topics of interest

- Working in your teams, select one of the Guest Lecturer projects for review.
- Please identify why you have selected the guest lecture or video for case study review.
- Please identify the Engineering Challenges for the Case Study.
- Review and discuss the project within the framework of the course topics including:

  - Need Identification and Problem Definition
  - Project Planning
  - Technological Innovation
  - Concept Generation and Evaluation
  - Legal and Ethical Issues

Your Case Study review should be between 8 to 10 minutes. Because of time constraints, I may cut off teams in excess of 10 minutes. Therefore please plan your time wisely.

You should prepare your presentation with PowerPoint and have a copy on a USB memory stick. Please do not show up with a floppy disk and expect to load onto the computer. Please be prepared to present at your selected time. If you have a significant delay in setting up that effect the timing of other presentation, your score will be deducted.

A good rule of thumb is one slide per minute. Therefore, I recommend that you limit to more than 12 slides.

Recommended Presentation Outline

- Title Slide: Case Study Project,
- Team Members,
- Date
- Agenda – organization of the presentation materials
- Case Study Selection – Why you have chosen or selected this project for review
- Background – Provide summary or overview of the case study project
- Engineering or Technical Challenges – Identify the challenges as presented
- Case Study Review – Identify and discuss various course topics as they relate to the case study. You should be able to describe the Design Process or Methodology for your case.
- Summary/Conclusions, what is your outcomes, visibility, marketing
- References/Acknowledgements

Your presentation will be assessed by the following criteria:

- Organization and Style of Presentation
- Case Study Review – identification of topics, significance of review

JAZAN UNIVERSITY

ABET ACCREDITATION UNIT

EngM 590 – Senior Project
(Capstone Design)

Catalog Data: *EngE 590* – Senior Project. (4:6,0)
Continuous Assessment two semesters (Duration – 32 weeks)

Fall/Spring 1440/1441

Department of: Electrical Engineering

Senior Project Sign-Up Sheet

Project Title: **Induction motor fault detection, protection and speed control using Arduino**

Project Advisor: Dr. Slim ABID

	Name	ID
Team Leader	(1) JEHAD ALHUSAIN IBRAHIM JABRAH	201505853
Team Members	(2) ABDULLAH MAJED ABDU ALSAEGH	201600071
	(3) NASSER MOHAMMED ALI ALHARBI	201600337
	(4) OSAMA ALI YAHYA AWLAQI	201601387

Please identify the everyday item that will be addressed by the design project.
Your team will also address the Case Study assignment.
Please identify a Team Leader to address communication responsibilities.
Team must have a minimum of 3 members and no more than 5 members.

Signature

(1) …… (2) …… (3) ……. (4) ……..

[This page must be signed and returned no later than the start of the 2rd Session. Students who are not comfortable signing this document should meet with the course coordinator before the third week of the semester to review the requirements as necessary.]