ECET 402, Senior Project II

Course Notes and Forms

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Overview of Course and Frequently Asked Questions

There are three major **goals** for the course:

(1) Maintain or enhance the technical level of the projects designed in ECET 401.
(2) The course will continue to be student-driven particularly in terms of project review meetings, peer review of documents and presentations, and grading participation.
(3) Actual prototypes will be constructed and tested.

What will we be doing the **first day of class**?

(1) Check the master list of students in the class including names, phone numbers, email addresses and concentrations.
(2) Re-establish the **project review groups**
(3) Each group will present a brief progress/status report on their project. The report will include hardware, parts, software status, any problems, any changes in the project.
(4) Discuss the very important Partition/Test Procedures document and the schedule for the semester.

What is the policy on **attendance**?

Attendance is required and will contribute to the professionalism part of your grade. It must be this way because everyone must work together to make this course a success. When working in groups each person must participate and help: when designs and proposals are being reviewed everyone's input is needed, and when course and document requirements are being discussed no one can afford to be absent.

What are the expectations for the **prototype** construction?

The best situation is to end the semester with a working prototype. This can be achieved by: planning and considering all contingencies and dependencies; ordering parts immediately (if not already done) and having a quick response back up plan for bad or damaged parts); partitioning the project into hardware/software deliverables; and a genuine commitment of time and effort. If the final project does not fully work, students can still do well in the class **if and only if** they have completed the first three deliverables (including testing) on schedule.

Will I be **graded** as an individual or as part of a group?

Both. Performing a peer review, professionalism and progress reports are individual while other requirements, such as the major documents, are graded by group.

Course Objectives

Upon completion of ECET 402 you will be able to:

1. Finalize Design and Functional Specifications for a project
2. Monitor the progress of this project and make improvements.
3. Finalize the hardware/software deliverables and their test procedures
4. Apply your critical thinking, research and communication skills.
5. Build, test, troubleshoot the software and hardware of a prototype and redesign where necessary
7. Understand, appreciate and apply ethics, professionalism and life long learning.

Required Activities and Documents

The following activities and documents will be required. There are several documents but most of them are only a single page. Project teams are asked to submit complete and updated versions of their design specs and functional specs early in the semester. There are only two new major documents and they are listed below. Suggestion: get started on all the documents early. They are all related and composing them will help you in developing the project. ***Notice the due dates, in the syllabus, for all these documents. Lateness will <u>significantly</u> affect the grades.***

- **<u>Progress & Teamwork Reports</u>**
  The confidential written progress reports, submitted by email, are required from **each** student using the form given later in the notes. Save copies of the progress reports (they won't be returned) to create a log book. The oral progress reports will be graded as a team. ***No late progress reports will be accepted. .***

- **<u>Meeting Minutes</u>**
  Minutes of the Project Review Meetings (3). During the semester each student is required to write at least one set of minutes; write the agenda and send out notices for the project review meetings, with a copy to the instructor; and/or be a meeting facilitator

Required Activities and Documents continued

- **Update of Functional Specifications, Design Specifications and Outside World Project Summary**
  Each project team is required to fully update and resubmit the functional and design specifications from last semester and submit a hard copy by the second meeting. For your convenience the requirements are reprinted in these notes- but notice that the grading emphasis has changed, we're now looking for completeness! The Project Summary should be thoroughly rewritten and updated and well-presented as possible- this will be provided to the ECET Industrial Advisory Board.

- **Peer Review**
  Each student is required to write at least one peer review of a document produced by another project team. ***Major documents must be peer reviewed before submission and corrected as much as possible based upon the peer review. Attach the peer review to your document. See the Peer Review form later in this document. (***NOTE: Those doing the peer reviews must provide the group whose document is being reviewed **and** the instructor a copy of the review **a minimum of five days before the document is due**.)

- **Deliverable Test Report**
  Each student is required to write at least one deliverable test report for another project team.

- **Report on Professional Meeting Attendance or Professional Journal Article**
  In the interest of increasing student awareness and appreciation of professional societies and the value of life long learning, every student is required to attend at least one meeting of a professional society OR read and report on one relevant article from a technical journal (such as IEEE Spectrum, Circuit Cellar, EDN, Electronic Design, Communication News). Journals not listed need pre-approval. See the report forms for the society meeting (due one week after meeting)and technical article (none accepted after the twelve week) near the end of these notes.

The Two New Major Documents (specific requirements later in these notes):

- Deliverable/Test Procedures Document
- Technical Manual (an enhanced and updated version of the Design Specifications)

All major documents (except the outside-world project summary)must include:

- Title page (includes title of document, title of project, names of team members, date, and to whom submitted)
- Page numbers
- Table of contents and a list of figures with appropriate titles
- Brief introduction describing project
- References.
- Peer review

Functional Specifications and Product Prospectus (updated from ECET 401) (due week 2)

This document details what features and functions your product will provide in terms of what the whole device will do, not what the individual components will do. Diagrams are necessary to make the functional specifications clear. This document must include the following:

A. Introduction: describe the overall idea of your project and its intended use including the rational (what problem addressed and how solved)

B. General Requirements

1. Product Features
2. Physical Layout
3. Power
4. User Interfaces
5. Max Cost per Unit

C. Interfacing Requirements Descriptions

1. Peripherals for Visual Displays
2. Peripherals for User Input
3. Interfacing with other Equipment- PC's, remote control, pneumonic control, network devices, etc.

The grading distribution for this document is provided later in the these notes.

Design Specifications (updated from ECET 401)
(due week 2)

PART		CONTENT
1		**Introduction :**
	A	Summary of product
	B	Discussion of your contribution to design (MINIMUM 25 %)
2		**Requirements:** Functional Specs [This section indicates what (but not how) technical requirements are to be met by the design. The detail should be enough that both the design and its verification (testing) can be determined.]
3		**Requirements Specs:**
	A	Physical
	B	Major Signals (internal and external)
	C	Microcontroller specs
	D	I/O Peripherals
4		**Block Diagrams:**
	A	Top Level Block Diagram
	B	Explanation of top level diagram
	C	Second Level Block Diagram
	D	Explanation of second level diagram
5		**Software:**
	A	Program flowchart
	B	Subroutine descriptions
6		**Appendices:**
	A	Circuit Diagrams
	B	Coding with comments
	C	Potential problems and obstacles
	D	Bill of materials
	E	Any necessary calculations
	F	Data sheets (most critical 1-3 pages of each)
	G	List and cost of major expenses

The grading distribution for this document is provided later in the these notes.

Deliverable / Test Procedures Document Requirements (first draft due week 3) (due week 4)

This document will subdivide your project into four definable tasks (hardware/software deliverables) with a step-by-step test procedure for each task. The fourth deliverable is the final prototype. (Look at the Grading of Partition/Test Procedures form used by the instructor on page 17).

Read carefully what you need to include in your document:

- An introduction explaining your project including the problem you are addressing and how you will do it
- On a separate page, a table summarizing the deliverables in the following format:

Deliverable & its Title	Description (a couple sentences)	Number of steps in Testing	Due Date
1._____			
2._____			
3._____			
4._____			

- At least one page describing each hardware/software deliverable (including schematics, programs and due date) and one page each for the associated test procedures*, including test setup and necessary test equipment. Each deliverable must build on the previous deliverable. The test procedures are to be written for someone not associated with this project. Examine the Deliverable Test Report Form on page 17. **Deliverable # 4 and its test procedures must be specifically mapped to the Functional Specifications.**

- Five Appendices (Updated design specifications):
  (1) High level block diagram of project
  (2) Second level block diagram of project,
  (3) Schematics
  (4) Flow charts and software
  (5) Data sheets for parts used. If a particular part has many data sheets just give the 2 or 3 most important.

- Peer Review (required in all documents)

Marketing Project Summary
(due week 6)

Precise Requirements of this document (information should be taken from other documents):

- Total number of pages: minimum 2, maximum 3
- Type: Word, 12 point unless otherwise specified, Times New Roman
- Spacing: single
- Margins: left, right, top and bottom - 1 inch
- Title format: Name of Project (bold, 18 Point), centered
  Names of students in alphabetical order, 14 point, centered

The following titles and content must also be exactly as specified with the titles bold and underlined:

Problem Addressed: here you will describe clearly why your project is useful

Solution: here you will explain the basics of how your project works

Major Components: here you list and describe the major devices such as microcontrollers, power supplies, etc.

Software: here you list the programming language, the software platform, and the major parts of your program and what they do

Functions: here you list and describe the functions performed by your project

Diagrams: you must have at least one diagram to make your project understandable

Technical Manual Requirements
(due week 13)

This (an updated and enhanced version of the Design Specifications document) is the capstone document providing all the necessary information regarding your project and prototype. The document will consist of (See the grading scheme for the technical manual toward the end of the notes.):

I. A brief description of the project (problem addressed and how solved)

II. High level block diagram and second level block diagram with descriptions

III. The complete hardware design **and** a description of the hardware design

IV. Software description including:
   a. software environment/platform
   b. programming language used
   c. flow charts
   d. a list and description of the major modules (purpose, inputs, outputs)

V. Four appendices:
   A. Deliverable summary table, the four deliverables, their test procedures and test results
   B. The software code
   C. Parts list and data sheets
   D. Critical data sheets (include only necessary pages for your application)

VI. Peer Review (required in all documents)

NOTE: See the technical manual grading sheet later in this document

Grading for ECET 402 *(Late documents = - 20%/week)*	
Professionalism	25
Documents:	
Meeting Participation	10
Peer Review	10
Progress Reports	25
Project Prospectus	10
Partition and Test Procedure	30
Updated Functional Specs	15
Updated Design Specs	15
Technical Manual	30
Professional Journal or Meeting Report	20
hardware/software **Deliverables:**	
First	35
Second	35
Third	35
Final Presentation (includes the fourth deliverable)	45
TOTAL:	340

Notice the significant proportion(out of the total grading points) on areas related to the actual building and testing of your prototype (three deliverables, final presentation)

Oral Presentations and Meetings

Communications is a critical part of this course: communications between partners in a project group, with your peers in the class and with the instructor -all contribute to the success of your project.

Notice in the syllabus that there are times set aside for meetings with the instructor. It is up to the members of the group to arrange and be both prepared and on time for these meetings.There are also oral progress reports- check out the syllabus document and the evaluation from later in these notes to so what's expected. Also, there are three project review meetings. The minutes of these meetings must be submitted along with progress reports.

Final Project Presentations *(see grading sheet towards the end of these notes)*

The use of PowerPoint and any other media necessary will be expected. The topics covered must include:

- An explanation of what your prototype does and how it would be used
- The electrical and physical specifications
- Block diagram of the system with some schematics to explain how it works
- An overview of the software
- A listing of costs associated with building your prototype
- A discussion of problems encountered and how they were overcome
- What you would do differently if you started over
- What enhancements might be useful to your product
- Questions from the audience
- Actual demonstration of working prototype

Periodicals and Books for ECET 401/402
(Many below are available in the NJIT library)

PERIODICALS

Circuit Cellar Ink.
EDN
Electronic Design
IEEE Potentials, IEEE Spectrum, IEEE Technology and Society Magazine, and many IEEE Journals
Journal of Electronic Engineering
NASA Tech Briefs
Nuts and Volts

A FEW BOOKS

Project Development:

Angus and Gunderson, ***Planning, Performing and Controlling Projects***, Prentice Hall, 1997.
Haik, ***Engineering Design Process***, Thompson, 2003.
Dimarsico et al., ***Telecommunications Cost Management***, CRC Press, 2002.

Microcontrollers:

Ball, ***Analog Interfacing to Embedded Design***, Butterworth-Heinemann, 2001.
Haskell, ***Design of Embedded Systems Using 68HC12/11***, Pearson, 1999.
Huang, ***The HCS12/9S12: An Introduction to Software & Hardware Interfacing***, Thomson, 2006.
Kuhnert and Zahnert, ***Basic Stamp***, Newnes Publishing, 1997.
Mazidi, McKinlay,and Causey, ***PIC Microcontroller And Embedded Systems***, Pearson PH, 2008.
Pack and Barret, ***68HC12 Microcontroller Theory and Applications***, Prentice Hall, 2002.
Valvano, ***Embedded Microcomputer Systems***, Thomson, 2003.
Morton, ***Embedded Microcontrollers***, Pearson, 2000.
Van Sickle, ***Programming Microcontrollers in C***, LLH Tech. Publishing, 2000.

General Electronics:

Axelson, ***Making Printed Circuit Boards***, McGraw Hill, TAB Books, 1994.
Axelson, ***USB Complete: …Develop Custom USB Peripherals***, Lakeview Research, 1999.
Ciarcia, ***Ciarcia's Circuit Cellar, Vol. I - Vol. V***, McGraw Hill.
Mims, ***Engineer's Notebook***, Hightech Pub., 1992.

USEFUL WEB SITES FOR INFORMATION AND PARTS

allectronics.com

al-williams.com/pbx84.htm

bb-elec.com

cyberguys.com

cyberresearch.com

http://digi-key.com/

http://www.hosfelt.com/

http://www.lashen.com/

http://www.parallax.com/

expresspcb.com

http://www.matelectronics.com/

http://www.national.com/

http://www.newark.com/

http://www.8052.com/tut8051.phtml

http://www.faqs.org/faqs/microcontroller-faq/

http://www.mikroelektronika.co.yu/english/product

http://www.microchip.com

http://www.rentron.com/

http://www.maxim-ic.com/

Guidelines for Productive Meetings

Questions that must be answered before the meeting

When and where is the meeting to be held?

What is the purpose of the meeting?

How long will the meeting last?

What is the agenda and who is responsible for each item?

Who is leading the meeting?

What is the structure of the meeting? Anarchy? Individual speaking time limits?

What are the attendees responsible for bringing to (and preparing for) the meeting?

How will minutes be taken and by whom?

Issues that must be addressed during the meeting

Meeting must be kept "on-task"
Everyone should feel free to speak but no one should be allowed to monopolize the time
Private conversations are impolite and counterproductive
Any decisions reached must be made clear to everyone
Identify problems but do not try to fix them (no time)
Action items defined in terms of exactly what will be done, who will do it, and when
Next meeting date

What must be taken away from the meeting

- Notes of the meeting, including attendance, to be reported in minutes
- Precisely written action items

Constructive Criticism for Design Review Meetings

Project Title: _____ Date: _____

1. Is this device marketable? Yes / No

2. Do you believe this product is feasible Yes / No

3. Is it clear what the device will do? Yes / No

4. Is it clear what the major parts of this device are? Yes / No

5. Does the device seem too difficult to design? Yes / No

6. Does the device seem too simple for a senior project? Yes / No

7. What improvements would you recommend? _____

_____

_____

8. Would you design it differently and how? _____

_____

_____

9. What don't you like about the project? _____

_____

_____

10. What do you like about the project? _____

_____

_____

ECET 402 INDIVIDUAL CONFIDENTIAL PROGRESS REPORT & TEAMWORK FORM **DATE: _____**

Name: _____ Project Title: _____

Progress Report # (Circle): 1 2 3 4 Partner(s): _____

- **Status of Project**

Current Work (include research efforts):	**Due Dates**

- **Problems & Revisions to Project:**

- **Meeting(s): dates, participants, purpose, action items (what will be done and by whom)**

NOTES:
1. Fill in the progress report completely.
2. A progress report is a discussion of your project only - not seminars.
3. Submit via email (note: :progress reports will not be accepted late).
4. Also complete second page regarding teamwork

Teamwork Analysis Part of Progress Report

(Confidential: neither you nor the instructor will share this with your partner(s))

Below you are analyzing yourself and your partner. Be honest in both cases, teamwork problems need to be corrected early!

	Circle the appropriate number
Doing my part:	
In time spent	(not at all) 0 1 2 3 4 5 (Completely)
In effort extended	(not at all) 0 1 2 3 4 5 (Completely)
In research	(not at all) 0 1 2 3 4 5 (Completely)
In being accessible and willing	(not at all) 0 1 2 3 4 5 (Completely)
My partner _____ is doing his/her part:	
In time spent	(not at all) 0 1 2 3 4 5 (Completely)
In effort extended	(not at all) 0 1 2 3 4 5 (Completely)
In research performed	(not at all) 0 1 2 3 4 5 (Completely)
In being accessible	(not at all) 0 1 2 3 4 5 (Completely)
My partner _____ is doing his/her part:	
In time spent	(not at all) 0 1 2 3 4 5 (Completely)
In effort extended	(not at all) 0 1 2 3 4 5 (Completely)
In research performed	(not at all) 0 1 2 3 4 5 (Completely)
In being accessible	(not at all) 0 1 2 3 4 5 (Completely)

COMMENTS:

1. What my partner(s) can do to improve:

2. What I can do to improve myself:

3. What can be done to improve the course in terms of teamwork:

4. What can be done to improve the course in general:

Peer Review Form

A. Document Being Reviewed: _____

B. Project Title: _____

C. Names on Project: _____

D. Reviewer / date of Review: _____ / _____

1. **Document Format**

a. Is there a Table of Contents? Y / N
b. Are pages numbered? Y / N
c. Are all required sections present? Y / N

2. **Spelling and Grammar**

a. Was spelling checked and correct (poor) 0 1 2 3 4 5 (perfect)
b. Sentences make sense and are readable (poor) 0 1 2 3 4 5 (very clear)

3. **Content**

a. Is the overall project clear in terms of:
What the product is supposed to do? Y / N
How it will be accomplished? Y / N
What the major components are? Y / N

b. Does the document accomplish its task in terms of:
Partition/Test Procedure document, is the project clearly subdivided? (poor) 0 1 2 3 4 5 (very clear)
and the test methodology clear? (poor) 0 1 2 3 4 5 (very clear)
and do the deliverables build on each other (not at all) 0 1 2 3 4 5 (very much)
Technical Manual, could you duplicate the construction of the prototype?
(not at all) 0 1 2 3 4 5 (very clear)

c. Rate the document and project in terms of level:

Document	(low level)	0	1	2	3	4	5 (very professional)
Project	(low level)	0	1	2	3	4	5 (very professional)

4. **Specific Suggestions**

On the back of this sheet state:

a. **at least one** good and innovative aspect about this project
b. **at least one** aspect of the document needing improvement
c. **at least one** aspect of the project needing improvement

Final Functional Specifications Document Grading

Section of Document		Points
Grammar and Spelling		20
	Part	
(Introduction)	A	10
General Requirements	B	
1. Specific and Clear Product Features		20
2. Physical Layout		10
3. Power		10
4. User Interfaces		10
5. Max Cost per Unit		10
Interfacing Requirements Descriptions	C	
1. Peripherals for visual displays		10
2. Peripherals for user Input		10
3. Interfacing with Other Equipment (PCs, remote control, network devices, etc.)		10
Sufficient and Useful Diagrams		20
	TOTAL	140

Note: all documents must include table of contents with the pages numbered.

Name(s):		**Project Title:**	

Final Design Specifications Grading

		Points
Grammar and Spelling		10
Diagrams clear and useful		20
Section of Document	**Part**	
Introduction :	**1**	
Summary of product	A	20
Discussion of your contribution to design	B	20
Requirements:	**2**	
Functional Specs		20
Requirements Specs:	**3**	
Physical	A	10
Major Signals (internal and external)	B	10
Microcontroller specs	C	10
I/O Peripherals	D	10
Block Diagrams:	**4**	
Top Level Block Diagram	A	10
Explanation of top level diagram	B	10
Second Level Block Diagram	C	10
Explanation of second level diagram	D	10
Software:	**5**	
Program flowchart	A	10
Subroutine descriptions	B	10
Appendices:		
Circuit Diagrams	A	20
Coding with comments	B	20
Potential problems and obstacles	C	10
Bill of materials	D	5
Any necessary calculations	E	15
Data sheets (most critical 1-3 pages of each)	F	10
List and cost of major expenses	G	10
	TOTAL	270
Name(s)		
Project Title:		

Note: all documents must include table of contents with the pages numbered.

Deliverable # [ ] Test Report Form

NOTE: FILL IN THE DELIVERABLE TEST REPORT COMPLETELY. PRINT CLEARLY

Project Name: _____ **Date of test:** _____

Tester (name/signature): _____/_____

***** Submit With This Deliverable's Documentation *****

Rate the following statements on a scale of 0 to 10 with 10 being the best:

(0 2 4 6 8 10) 1. The deliverable agrees with the partition/test procedure document.

(0 2 4 6 8 10) 2. It is clear what test equipment to use and how to set up for testing – with diagrams.

(0 2 4 6 8 10) 3. The procedure for powering-up is clear.

(0 2 4 6 8 10) 4. The inputs and outputs are accessible and easy to use.

(0 2 4 6 8 10) 5. Every necessary step in the test procedure is clear.

(0 2 4 6 8 10) 6. There is an exact explanation of what to expect for results.

(0 2 4 6 8 10) 7. The software for this deliverable is provided and explained.

Fill in the following table (40 points):

Test #	Description of Test	Measured Values and /or what will be displayed	Pass / Fail
x.1			
x.2			
x.3			
x.4			
Comments:			

Final Score (instructor): _____ / 110 **(No hardware = automatic – 35 points)**

ECET 402 Oral Progress Report Evaluation

Date: _____ Evaluated by: Instructor ☐ Student ☐

Factor Evaluated	*Points*	*Points Earned & Comments*
Introduction		
Project Explanation	20	
Upcoming Deliverable		
Requirements Clear?	10	
Testing Clear?	10	
Will it be ready?	10	
Project Status		
Clear?	10	
Specific?	10	
Design Changes		
Clear?	10	
Specific?	10	
Problems		
Clear?	10	
Specific?	10	
Progress Made		
Enough?	10	
Diagrams & Actual Hardware		
Sufficient?	10	
Professional?	10	
Partners		X Y Z
Contribution	20	
Understanding	20	
Questions Answered	20	
TOTAL:	200	

Project Title: _____

Names: X:_____ **Y:**_____ **Z:**_____

Suggestions:

FINAL PRESENTATION EVALUATION

Presenter(s): _____ **Project:** _____

Date: _____ **Evaluated by:** **Instructor** ☐ **Student** ☐ **Guest** ☐

1. Presenter(s) appearance (0 - 2 each):
_____ … Presenter X _____ … Presenter Y _____ … Presenter Z

2. Presenter(s) preparation (0 - 4 each):
_____ … Presenter X _____ … Presenter Y _____ … Presenter Z

3. Was the **concept** of the project clear?
_____ (not very) 0 1 2 3 4 5 (very much)

4. Discussion of three previous deliverables and their test results.
_____ (incomplete) 0 1 2 3 4 5 (complete)

5. Presentation aides (2 points each) :
_____ a. enough? yes __ no __ b. clear? yes __ no __ c. grammar? yes __ no __
d. professional in appearance? yes __ no __ e. spelling correct? yes __ no __

6. Response to questions, demonstrated understanding of topics (0, 5, or 10 each)?
_____ … Presenter X _____ … Presenter Y _____ … Presenter Z

7. Evidence of **research** (other than web pages!) for project (0 - 10 total):
_____ References Provided? yes ___ no __ Clear that more than one reference used? yes __ no __

8. Was there evidence that the **design** was **finalized**?
_____ (none) 0 1 2 3 4 5 (substantial)

9. Did presenter(s) discuss the **costs** of the project?
_____ (not at all) 0 1 2 3 4 (substantially)

10. Did presenter(s) discuss the **possible enhancements** for the project?
_____ (not at all) 0 1 2 3 4 5 (substantially)

12. Did presenter(s) discuss **problems** in the development of the project?
_____ (not at all) 0 1 2 3 4 5 (substantially)

13. Was the **hardware** discussion **clear**?
_____ (not at all) 1 2 3 4 5 (very)

14. Was the **software** discussion **clear**?
_____ (not at all) 1 2 3 4 5 (very)

15. **Prototype Demonstration**:

_____ **Appearance?** (Sloppy) 0 1 2 3 4 5 (Professional) ____ **Sections / Parts labeled?** (Not at all) 0 1 2 3 4 5 (Fully)

_____ **Complete?** (Partially) 0 1 2 3 4 5 (Totally) ____ **In agreement with design?** (Not at all) 0 1 2 3 4 5 (Fully)

____ **Working to specs?** (Not at all) 0 1 2 3 4 5 (Fully)

Total Score (max = 100): X _____ ; Y _____ ; Z _____

Grading of *Partitioning & Test Procedures Document*

Name(s): _____

Project Title: _____

Date: _____

A. Standard document requirements (15 points)

_____ Table of contents, pages numbered, introduction to this document
_____ Project Description
_____ Grammar/Spelling

B. First Draft submitted on time with Peer Review (30 points)

_____ Present _____ Comments reflected in revised document

C. Summary Table (15 points)

D. Modules (60 points)

Module	Content	Test Procedures	Equipment List
1 _____ title			
2 _____ title			
3 _____ title			
4 (mapped to functional specs)			

E. Full Design in Five Appendices (30 points)

1. Top Level Diagram with Functional Explanation of Blocks	
2. 2nd Level Diagram with Explanation of Blocks and Signal Descriptions	
3. Schematics with Explanation	
4. Flow charts and Software with Explanation	
5. Data Sheets	

Total Points for document _____ / 150

Technical Manual Grading

Students: _____

		Points	Grading and Comments
First Draft on-time and with Peer Review		30	
Project Description	Problem Addressed	5	
	Solution Explained	10	
Block Diagrams	High level	10	
	Second level	10	
Hardware Design	Complete	10	
	Description Clear	10	
Software	Language	5	
	Platform/Environment	5	
	Flow charts	10	
	Modules Descr.	10	
Appendix A (four deliverables, test procedures and results)		10	
Appendix B (software code)		10	
Appendix C	Parts list & Costs	10	
	Data sheets	5	
	TOTAL =	150	

Report on Attendance at Professional Society Meeting

Your Name:	
Date and Time of Event:	
Location:	
Professional Society:	
Approx. Number of attendees:	
Presentation Topic:	
Presenter and his/her background:	
Summary of presentation:	

Technical Journal Article Report

Your Name:	
Journal:	
Date of Issue:	
Pages:	
Title of Article:	
Author:	
Why you chose this article:	
Summary of Important Points:	
References Given for Further Research	
What you liked and didn't like about the article	

SAMPLE ECET 402 PROGRESS REPORT FORM **DATE: 10/02/00**

Name: XYZ **Project Title:** Data Acquisition and Control

Progress Report # (Circle): 1 2 (3) 4 5 6 Partner(s): **BOB**

Status of Project

Current Work:	**Due Dates**
• Completion of installation / wiring of components.	10/01/00
• Manually testing control circuits.	10/08/00
• Complete Partition / Test Procedure document.	10/09/00
• Help present Deliverable #1 for testing.	10/09/00
• Write simulation software to present Deliverable #2.	10/15/00
• Test unit with software simulation and control of circuits.	10/16/00
• Work on software to scale analog input signal for proper resolution.	10/22/00

Problems & Revisions to Project:

- Revision of analog input wiring signal to shielded cable to prevent noise from being induced into the circuitry.

**** The revision has been updated. ****

- A revision to add an input simulator card to the PLC for test purposes will be incorporated. Plan to have this ready for Deliverable #2.

- Will need to work on analog input scaling. The analog input we are using has the following range (–10V to +10V), we are utilizing a 0-5V input signal and will need to scale this accordingly for proper resolution.

Meeting(s)
Include: dates, participants, purpose, action items (what will be done and by whom)

DATE	PARTICIPANTS	PURPOSE	ACTION ITEMS
10/02/00	BOB/ BRIAN	Test #1 status for delivery / testing.	Bob to complete manual testing and verify operation.
10/07/00	BOB/ BRIAN	Discuss & compare notes on Partition/Test Procedure.	Brian & Bob to finalize Partition / Test Procedure for delivery.
10/14/00	BOB/ BRIAN	Discuss and coordinate User's Manual for completion.	N/A
10/16/00	BOB/ BRIAN	Discuss progress / status of Temperature Sensor circuit.	Bob to deliver circuit to Brian for testing with PLC / Software.

Agenda

(Sample) GROUP #4 PROJECT REVIEW MEETING

Date: 10/02/00
Time: 6:00 PM to 8:05 PM
NJIT LIBRARY STUDY ROOM

Facilitator: Robert Docherty

Minute taker: Robert Docherty

Attendees: ***Group#4 Members: Robert Docherty, Fakir Iydroose and Dipen Shah***

Please bring: Individual Partition / Test Procedure Document (partial / completed), pen and paper

Agenda topics

6:00 - 6:15 PM	Introduction / Discussion of what is expected from group members	Robert Docherty
6:15 – 6:30 PM	Introduce and discuss individual project	Fakir Iydroose
6:30 – 6:45 PM	Comments / Suggestions for Fakir	Robert Docherty, Dipen Shah
6:45 – 7:00 PM	Introduce and discuss individual project	Dipen Shah
7:00 - 7:15 PM	Comments / Suggestions for Dipen	Robert Docherty, Fakir Iydroose
7:15 - 7:30 PM	Introduce and discuss individual project	Robert Docherty
7:30 - 7:45 PM	Comments / Suggestions for Robert	Fakir Iydroose, Dipen Shah
7:45 – 8:05 PM	Discuss Time / Place for next meeting and who will create the Agenda and who will take minutes	All

Group #4
(Sample) Meeting Minutes

Day of Week	Date	Location
Monday	10/23/00	NJIT Library

Members

Name	Project Name
Shah, Dipen (facilitator & minute taker)	Climate Control Device
Iydroose, Fakir	Voice Activated Telephone Dialer
Docherty, Robert	Data Acquisition and Controls

Introduction

Group #4 members gathered at the NJIT Library to discuss the status of their projects. Each member took turn updating the members on recent progress since the last meeting.
Members were informed prior to the meeting that they had to bring in a copy of status report indicating the time frame of their project. A copy of the schematics along with any relevant software code was also suppose to be included with the report.

Group#4 Meeting Activity

Responsible Party	Due Dates	Comments
Dipen Shah (Climate Control)	By Next Meeting	Hardware wiring approaching completion. Read manual handed by Robert to understand sensor circuit. Sample software code available for testing. Finish writing software program by Nov. 27th. Read the manual on Motorola 68EC000 to understand initialization sequence.
Robert Docherty (Data Acq.)	By Next Meeting	Completed construction/wiring of Temperature Sensor circuit. Porject was available at the meeting for demo. User's manual needs to be completed ASAP. Sensor circuit remains untested in the temperature chamber.
Fakir Iydroose	By Next Meeting	Received additional information from Mitel regarding DTMF chip. Successfully tested the voice chip as well as the microprocessor. Still needs to understand the assemble code used by Amtel to write the software program. Also needs to read the manual on writing code for LCD.

Appr. Time frame for meeting II	6:10 PM – 7:35 PM

Next Meeting Information

Day of Week	Date	Time	Location	Facilitator	Minute Taker
Monday	11/13/2000	6:00pm-7:45pm	NJIT Library	Fakir Iydroose	Fakir Iydroose

Current Groups and Meeting Assignments

Meeting Assignments

Meeting Topic	Week	Agenda		Facilitator		Minutes	
		I	II	I	II	I	II
Project Review Meeting I	3						
Project Review Meeting II	7						
Project Review Meeting III	10						

Meeting Groups

I. WF, PK, KL, RP, CO, SR

II. SV, SC, LJ, NC, JL

CURRENT STUDENT INFO/PROJECT LIST

Group #	Members	Concentration	e-mail	Project Title
I.				
II.				
III.				
IV.				
V.				