

**ITT Technical Institute**

**ET485T**

**Capstone Project**

**Onsite Course**

# **SYLLABUS**

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**Credit hours:** 4

**Contact/Instructional hours:** 60 (36 Theory Hours, 24 Lab Hours)

**Prerequisite(s) and/or Corequisite(s):**

Prerequisites: Completion of a minimum of 164 credits earned in the program of study including ET395T Modern Wireless Communications or equivalent and ET456T Digital Communication Systems II or equivalent

**Course Description:**

Each student will be assigned to a team of students to complete a communications project approved by the instructor. The project objectives will represent several areas of study from courses in the program and include the use of appropriate project management tasks.

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instructor

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office hours

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class hours

**I. MAJOR INSTRUCTIONAL AREAS**

- Choosing the project
- Forming teams
- Preparing and negotiating proposals
- Keeping a project log
- Planning the project (including scheduling, assigning roles, etc.)
- Searching information needed to implement the project designing
- Identifying and gaining access to tools, parts, equipment, and other material needs
- Designing and constructing the system (with circuits)
- Testing, troubleshooting, and adjusting the circuits, as needed, to achieve optimum performance
- Documenting the project data
- Demonstrating the final project

**II. COURSE OBJECTIVES**

Work effectively in teams to design, manage, and complete a project, which combines knowledge and skill from various courses in the curriculum. Project selection and criteria must be approved by the instructor. Circuits required will be coordinated with the corequisite circuit design course so that students are able to utilize lab time in both courses.

Make weekly progress reports and keep logbooks of all daily work, including what did not work as well as what did. Demonstrate the ability to record data from measurements, interpret that data, and form accurate conclusions, including all aspects of the problem solution in a final report.

### III. TEXT AND SUPPLIES

Students can use standard electronics test equipment as required throughout the program, such as multimeters, oscilloscopes, power supplies, signal generators and spectrum analyzers, cabling tools and test instruments, and circuit and system simulation software).

### IV. EVALUATION

Participation (periodic evaluation of logbooks)	20%
Labs (written progress reports)	40%
Final (final project written report)	25%
Other (demonstration of project)	15%

Final grades will be calculated from the percentages earned in class as follows:

A	90 - 100%	4.0
B+	85 - 89%	3.5
B	80 - 84%	3.0
C+	75 - 79%	2.5
C	70 - 74%	2.0
D+	65 - 69%	1.5
D	60 - 64%	1.0
F	<59%	0.0

### ET485 COURSE SNAPSHOT

Grading Category	Grade Book Category Weight (% of Course Total)	Unit	Activity/Graded Deliverable	Grade Allocation (% of Course Total)	Measuring Rubric	Rubric Alias
A. Participation	20%	1-10	(Evaluation of Logbooks)	10%	A-1-1	Communication
				10%	A-1-2	Teamwork
B. Labs	40%	1-10	Written Progress Reports	10%	B-1-1	Communication
				10%	B-2-1	Research
				10%	B-2-2	Critical Thinking
				10%	B-3-1	Technological Solutions
C. Final	25%	11	Project Report	8%	C-1-1	Communication
				8%	C-4-1	Technological Skills
				9%	C-5-1	Technological Systems
D. Project Demonstration	15%	11	Project Demonstration	5%	D-1-1	Communication
				5%	D-4-1	Technological Skills
				5%	D-5-1	Technological Systems
Total	100%			100%		

# COURSE GRADING RUBRIC

## ET485—Capstone Project

### (Electrical Engineering and Communications Technology)

Campus: \_\_\_\_\_

Faculty Name: \_\_\_\_\_

Student Name: \_\_\_\_\_

**Directions:** Please assign a percentage grade on the line for each subcategory.

#### A. Participation (20% of total grade)

##### Units 1 to 10—Evaluation of Logbooks

###### \_\_\_\_\_ A-1-1 Communication:

- 90-100%: Accurate and concise message effectively delivered through writing and/or speech with clarity, logical organization of thoughts and appropriate format/style for expected understanding by targeted audience
- 80-89%: Accurate message delivered through writing and/or speech with appropriate format/style for expected understanding by the target audience
- 70-79%: Intended message gets across to the target audience in writing or speech with necessary modification and/or polishing
- 60-69%: Most of the intended message gets across to the audience in writing and/or speech with some degree of ambiguity; lack of consistent format/style
- Below 60%: Disorganized thoughts with little evidence of logical structure in writing and/or speech; failure to get the intended message across to the audience

###### \_\_\_\_\_ A-1-2 Teamwork:

- 90-100%: Consistent active participation in team activities with obvious evidence of leadership (to lead without being a leader) and decision-making based on maximum team functions
- 80-89%: Consistent participation in team activities with weak evidence of leadership and decision-making outcomes
- 70-79%: Regular participation in team activities; able to complete all tasks as assigned
- 60-69%: Reactive and/or irregular participation in most team activities without obvious contributions to the team process and outcomes
- Below 60%: Reluctant or no participation in team activities; no evidence of contribution to team process

#### B. Labs (40% of total grade)

##### Units 1 to 10—Written Progress Reports

###### \_\_\_\_\_ B-1-1 Communication:

- 90-100%: Accurate and concise message effectively delivered through writing and/or speech with clarity, logical organization of thoughts and appropriate format/style for expected understanding by targeted audience

- 80-89%: Accurate message delivered through writing and/or speech with appropriate format/style for expected understanding by the target audience
- 70-79%: Intended message gets across to the target audience in writing or speech with necessary modification and/or polishing
- 60-69%: Most of the intended message gets across to the audience in writing and/or speech with some degree of ambiguity; lack of consistent format/style
- Below 60%: Disorganized thoughts with little evidence of logical structure in writing and/or speech; failure to get the intended message across to the audience

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**B-2-1 Research:**

- 90-100%: Selection of valid topic with clearly defined problem statement, substantial literature review, appropriate methodology, convincing conclusions, quality documentation and accurate bibliographical format/style
- 80-89%: Valid topic with clear problem statement, adequate literature review and specific methodology; meaningful conclusions with adequate documentation and proper bibliographical format/style
- 70-79%: Valid topic with adequate problem statement and minimum literature review; evidence of attempting with certain methodology; reasonable conclusions with required documentation and proper bibliographical format/style
- 60-69%: Loosely defined topic with unstructured problem statement and random literature review; weak evidence of specific methodology; lack of conclusion; poor documentation with inconsistent bibliographical format and style
- Below 60%: Largely undefined topic and no problem statement; little literature review; lack of methodology; no conclusion and no evidence of purposeful documentation

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**B-2-2 Critical Thinking:**

- 90-100%: Effective decision making based on qualitative and quantitative analysis of data and convincing reasoning; evidence of original creativity in providing solutions for challenging qualitative and quantitative problems
- 80-89%: Making decisions based on adequate research and reasoning that require a fair amount of analytical reading and critical thinking; capable of solving qualitative and quantitative problems
- 70-79%: Evidence of making decisions based on some research and analysis; able to solve normal qualitative and quantitative problems
- 60-69%: Making decisions by following the status quo; lack of evidence in strenuous research, analysis and reasoning in making a decision or solving qualitative and quantitative problems
- Below 60%: No evidence of making any decision based on analysis; incapable of solving specific qualitative and quantitative problems

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**B-3-1 Technological Solutions:**

- 90-100%: Student displays a thorough understanding and effective analysis in applying the knowledge acquired in the program to provide

effective technological solutions for given problems in the fields of electronics and communications engineering technology.

- 80-89%: Student displays an above-average understanding and analysis in applying the knowledge acquired in the program to provide effective technological solutions for given problems in the fields of electronics and communications engineering technology.
- 70-79%: Student displays average understanding and analysis in applying the knowledge acquired in the program to provide effective technological solutions for given problems in the fields of electronics and communications engineering technology.
- 60-69%: Student displays little understanding and analysis in applying the knowledge acquired in the program to provide effective technological solutions for given problems in the fields of electronics and communications engineering technology.
- Below 60%: Student cannot articulate an understanding and apply the knowledge acquired in the program to provide effective technological solutions for given problems in the fields of electronics and communications engineering technology.

### C. Final (25% of total grade)

#### Unit 11—Project Report

##### \_\_\_\_\_ C-1-1 Communication:

- 90-100%: Accurate and concise message effectively delivered through writing and/or speech with clarity, logical organization of thoughts and appropriate format/style for expected understanding by targeted audience
- 80-89%: Accurate message delivered through writing and/or speech with appropriate format/style for expected understanding by the target audience
- 70-79%: Intended message gets across to the target audience in writing or speech with necessary modification and/or polishing
- 60-69%: Most of the intended message gets across to the audience in writing and/or speech with some degree of ambiguity; lack of consistent format/style
- Below 60%: Disorganized thoughts with little evidence of logical structure in writing and/or speech; failure to get the intended message across to the audience

##### \_\_\_\_\_ C-4-1 Technological Skills:

- 90-100%: Student displays an effective and skillful ability in hardware and software technology to implement, maintain, and troubleshoot electronic systems at both component and system levels.
- 80-89%: Student displays a hands-on ability in hardware and software technology to implement, maintain, and troubleshoot electronics and communications systems at both component and system levels.
- 70-79%: Student displays minimal hands-on skills in hardware and software technology to implement, maintain, and troubleshoot electronics and communications systems at both component and system levels.

- 60-69%: Student displays little ability on hands-on skills in hardware and software technology to implement, maintain, and troubleshoot electronics and communications systems at both component and system levels.
- Below 60%: Student cannot display hands-on skills in hardware and software technology to implement, maintain, and troubleshoot electronics and communications systems at both component and system levels.

\_\_\_\_\_ **C-5-1 Technological Systems:**

- 90-100%: Student clearly articulates a comprehensive understanding, effective analysis, and proper design of BOTH electronics AND communications systems including industrial process control, embedded systems, electronic and digital communications, data and network communications.
- 80-89%: Student articulates an above-average understanding, analysis, and design of BOTH electronics AND communications systems including industrial process control, embedded systems, electronic and digital communications, data and network communications.
- 70-79%: Student articulates a basic understanding, analysis, and design of BOTH electronics AND communications systems, including industrial process control, embedded systems, electronic and digital communications, data and network communications.
- 60-69%: Student articulates little understanding, analysis, and design of EITHER electronics OR communications systems, including industrial process control, embedded systems, electronic and digital communications, data and network communications.
- Below 60%: Student cannot articulate understanding and analysis, and design of electronics and communications systems including industrial process control, embedded systems, electronic and digital communications, data and network communications.

## D. Project Demonstration (15% of total grade)

### Unit 11—Project Demonstration

\_\_\_\_\_ **D-1-1 Communication:**

- 90-100%: Accurate and concise message effectively delivered through writing and/or speech with clarity, logical organization of thoughts and appropriate format/style for expected understanding by targeted audience
- 80-89%: Accurate message delivered through writing and/or speech with appropriate format/style for expected understanding by the target audience
- 70-79%: Intended message gets across to the target audience in writing or speech with necessary modification and/or polishing
- 60-69%: Most of the intended message gets across to the audience in writing and/or speech with some degree of ambiguity; lack of consistent format/style

- Below 60%: Disorganized thoughts with little evidence of logical structure in writing and/or speech; failure to get the intended message across to the audience

\_\_\_\_\_ **D-4-1 Technological Skills:**

- 90-100%: Student displays an effective and skillful ability in hardware and software technology to implement, maintain, and troubleshoot electronic systems at both component and system levels.
- 80-89%: Student displays a hands-on ability in hardware and software technology to implement, maintain, and troubleshoot electronics and communications systems at both component and system levels.
- 70-79%: Student displays minimal hands-on skills in hardware and software technology to implement, maintain, and troubleshoot electronics and communications systems at both component and system levels.
- 60-69%: Student displays little ability on hands-on skills in hardware and software technology to implement, maintain, and troubleshoot electronics and communications systems at both component and system levels.
- Below 60%: Student cannot display hands-on skills in hardware and software technology to implement, maintain, and troubleshoot electronics and communications systems at both component and system levels.

\_\_\_\_\_ **D-5-1 Technological Systems:**

- 90-100%: Student clearly articulates a comprehensive understanding, effective analysis, and proper design of BOTH electronics AND communications systems including industrial process control, embedded systems, electronic and digital communications, data and network communications.
- 80-89%: Student articulates an above-average understanding, analysis, and design of BOTH electronics AND communications systems including industrial process control, embedded systems, electronic and digital communications, data and network communications.
- 70-79%: Student articulates a basic understanding, analysis, and design of BOTH electronics AND communications systems, including industrial process control, embedded systems, electronic and digital communications, data and network communications.
- 60-69%: Student articulates little understanding, analysis, and design of EITHER electronics OR communications systems, including industrial process control, embedded systems, electronic and digital communications, data and network communications.
- Below 60%: Student cannot articulate understanding and analysis, and design of electronics and communications systems including industrial process control, embedded systems, electronic and digital communications, data and network communications.



