ARIZONA STATE UNIVERSITY

GENERAL STUDIES COURSE PROPOSAL COVER FORM

Course information:

*Copy and paste **current** course information from Class Search/Course Catalog.*

Academic Unit: **Electrical Engineering** Department: **School of ECEE**

Subject: **EEE** Number: **488** Title: Senior Design Laboratory I Units: 3

Is this a cross-listed course? No
If yes, please identify course(s)

Is this a shared course? No If so, list all academic units offering this course

Course description:

Requested designation: Literacy and Critical Inquiry-L

*Note- a **separate** proposal is required for each designation requested*

Eligibility:

Permanent numbered courses must have completed the university's review and approval process.
For the rules governing approval of omnibus courses, contact Phyllis.Lucie@asu.edu or Lauren.Leo@asu.edu.

Submission deadlines dates are as follow:

For Fall 2015 Effective Date: October 9, 2014 For Spring 2016 Effective Date: March 19, 2015

Area(s) proposed course will serve:

A single course may be proposed for more than one core or awareness area. A course may satisfy a core area requirement and more than one awareness area requirements concurrently, but may not satisfy requirements in two core areas simultaneously, even if approved for those areas. With departmental consent, an approved General Studies course may be counted toward both the General Studies requirement and the major program of study.

Checklists for general studies designations:

Complete and attach the appropriate checklist

- Literacy and Critical Inquiry core courses (L)
- Mathematics core courses (MA)
- Computer/statistics/quantitative applications core courses (CS)
- Humanities, Arts and Design core courses (HU)
- Social-Behavioral Sciences core courses (SB)
- Natural Sciences core courses (SQ/SG)
- Cultural Diversity in the United States courses (C)
- Global Awareness courses (G)
- Historical Awareness courses (H)

A complete proposal should include:

- ☒ Signed General Studies Program Course Proposal Cover Form
- ☒ Criteria Checklist for the area
- ☒ Course Catalog description
- ☒ Course Syllabus
- N/A ☐ Copy of Table of Contents from the textbook and list of required readings/books

Respectfully request that proposals are submitted electronically with all files compiled into one PDF. If necessary, a hard copy of the proposal will be accepted.

Contact information:

Name: James T. Aberle Phone: 5-8588

Mail code: 5706 E-mail: aberle@asu.edu

Department Chair/Director approval: *(Required)*

Chair/Director name (Typed): Stephen Phillips Date: 1/16/14

Chair/Director (Signature):

Rev. 1/94, 4/95, 7/98, 4/00, 1/02, 10/08, 11/11/ 12/11, 7/12, 5/14

Arizona State University Criteria Checklist for

LITERACY AND CRITICAL INQUIRY - [L]

Rationale and Objectives

Literacy is here defined broadly as communicative competence—that is, competence in written and oral discourse. **Critical inquiry** involves the gathering, interpretation, and evaluation of evidence. Any field of university study may require unique critical skills that have little to do with language in the usual sense (words), but the analysis of written and spoken evidence pervades university study and everyday life. Thus, the General Studies requirements assume that all undergraduates should develop the ability to reason critically and communicate using the medium of language.

The requirement in Literacy and Critical Inquiry presumes, first, that training in literacy and critical inquiry must be sustained beyond traditional First Year English in order to create a habitual skill in every student; and, second, that the skill levels become more advanced, as well as more secure, as the student learns challenging subject matter. Thus, two courses beyond First Year English are required in order for students to meet the Literacy and Critical Inquiry requirement.

Most lower-level [L] courses are devoted primarily to the further development of critical skills in reading, writing, listening, speaking, or analysis of discourse. Upper-division [L] courses generally are courses in a particular discipline into which writing and critical thinking have been fully integrated as means of learning the content and, in most cases, demonstrating that it has been learned.
Notes:

1. ENG 101, 107 or ENG 105 must be prerequisites
2. Honors theses, XXX 493 meet [L] requirements
3. The list of criteria that must be satisfied for designation as a Literacy and Critical Inquiry [L] course is presented on the following page. This list will help you determine whether the current version of your course meets all of these requirements. If you decide to apply, please attach a current syllabus, or handouts, or other documentation that will provide sufficient information for the General Studies Council to make an informed decision regarding the status of your proposal.

Revised April 2014

Proposer: Please complete the following section and attach appropriate documentation.

ASU - [L] CRITERIA

TO QUALIFY FOR [L] DESIGNATION,THE COURSE DESIGN MUST PLACE A MAJOR EMPHASIS ON COMPLETING CRITICAL DISCOURSE--**AS EVIDENCED BY THE FOLLOWING CRITERIA:**

YES	NO		Identify Documentation Submitted
☒	☐	**CRITERION 1:** At least 50 percent of the grade in the course should depend upon writing assignments (see Criterion 3). Group projects are acceptable only if each student gathers, interprets, and evaluates evidence, and prepares a summary report. *In-class essay exams may not be used for [L] designation.*	syllabus grading rubrics

1. Please describe the assignments that are considered in the computation of course grades--and indicate the proportion of the final grade that is determined by each assignment.

2. **Also:**

Please **circle, underline, or otherwise mark** the information presented in the most recent course syllabus (or other material you have submitted) that verifies **this description** of the grading process--and label this information **"C-1".**

C-1

YES	NO		Identify Documentation Submitted
☒	☐	**CRITERION 2:** The writing assignments should involve gathering, interpreting, and evaluating evidence. They should reflect critical inquiry, extending beyond opinion and/or reflection.	syllabus grading rubrics

1. Please describe the way(s) in which this criterion is addressed in the course design.

2. **Also:**

Please **circle, underline,** or **otherwise mark** the information presented in the most recent course syllabus (or other material you have submitted) that verifies **this description** of the grading process--and label this information **"C-2".**

C-2

YES	NO		Identify Documentation Submitted
☒	☐	**CRITERION 3:** The syllabus should include a minimum of two writing and/or speaking assignments that are substantial in depth, quality, and quantity. Substantial writing assignments entail sustained in-depth engagement with the material. Examples include research papers, reports, articles, essays, or speeches that reflect critical inquiry and evaluation. Assignments such as brief reaction papers, opinion pieces, reflections, discussion posts, and impromptu presentations are not considered substantial writing/speaking assignments.	syllabus grading rubrics

1. Please provide relatively detailed descriptions of two or more substantial writing or speaking tasks that are included in the course requirements

2. **Also:**

Please **circle, underline,** or **otherwise mark** the information presented in the most recent course syllabus (or other material you have submitted) that verifies **this description** of the grading process--and label this information **"C-3".**

C-3

ASU - [L] CRITERIA

YES	NO		Identify Documentation Submitted
☒	☐	**CRITERION 4:** These substantial writing or speaking assignments should be arranged so that the students will get timely feedback from the instructor on each assignment in time to help them do better on subsequent assignments. *Intervention at earlier stages in the writing process is especially welcomed.*	screen capture from BB grading rubrics

1. Please describe the sequence of course assignments--and the nature of the feedback the current (or most recent) course instructor provides to help students do better on subsequent assignments

2. **Also:**

Please **circle, underline,** or **otherwise mark** the information presented in the most recent course syllabus (or other material you have submitted) that verifies **this description** of the grading process--and label this information **"C-4".**

C-4

Course Prefix	Number	Title	General Studies Designation
EEE	488	Senior Design Laboratoryl	L

Explain in detail which student activities correspond to the specific designation criteria. Please use the following organizer to explain how the criteria are being met.

Criteria (from checksheet)	How course meets spirit (contextualize specific examples in next column)	Please provide detailed evidence of how course meets criteria (i.e., where in syllabus)
1	50% of grade for corse derived from technical communications.	Attached syllabus indicates that 50% of course grade is based on technical communications. Attached grading sheets show the nature of these assignments.
2	Writing assignments involve written and oral reports on student's senior capstone project.	Attached grading sheets show the nature of these assignments describing progress on student's senior capstone project for electrical engineering.
3	The syllabus indicates that stusdents are preparing three wriitten and two oral reports.	Attached grading sheets show the nature of these assignments describing progress on student's senior capstone project for electrical engineering.
4	Technical communications assignments are distributed throughout the semester, and later assignments build on earlier ones.	Screen capture from Blackboard shows typical semester schedule. Attached grading sheets show how later assignments build on earlier ones and incorporate feedback received on them.

EEE 488

SENIOR DESIGN LABORATORY I

Course Overview:

EEE 488 and EEE 489 comprise a two-semester capstone senior project for Electrical Engineering students. During the first semester (EEE 488), teams are formed, projects are selected, and the first phase of the project is completed. The major deliverable at the end of the first semester is a comprehensive proposal that includes details of the background research, tasks, timelines, budget, preliminary feasibility studies, and project deliverables in the second semester.

Class Meetings:

The entire EEE 488 class meets together once per week for a 75 minute period. In addition, each student team selects a design project and a Faculty Advisor. Each team is required to meet with their Faculty Advisor at once per week.

Course Coordinator:

Jim Aberle, Ph.D., Assoc. Prof. of EE
Telephone:
(480) 965-8588
Office:
GWC 326
E-mail:

Catalog Description:

Design process: research, concept, feasibility, simulation, specifications, benchmarking, and proposal generation. Technical communications and team skills enrichment. Lecture, lab. Fee.
Pre-requisites: Engineering BS/BSE student and a D or better in EEE 334 or ECE 334 AND a D or better in EEE 203 or 303 AND a D or better in EEE 241 or 340 AND a D or better in EEE 352 or ECE 352 or co-enrolled AND a D or better in EEE360 or co-enrolled.
General Studies: L
3 cr hr.

Textbook:

None.

Course Objectives:

1. Students can define and plan an engineering project involving multiple tasks and contributors.
2. Students can communicate and critically evaluate technical information.

Course Outcomes:

1. Students can define an engineering project, setting objectives that are appropriate for the project purpose and scope and that incorporate most of the following considerations: economic; environmental; sustainability; manufacturability; ethical; health and safety; social; and political.
2. Students can plan an engineering project involving multiple tasks and contributors.
3. Students can communicate technical information in writing.
4. Students can communicate technical information in oral presentations.
5. Students can provide informed and constructive criticism on engineering projects.

Course Performance Indicators:

1. Students can prepare a feasible statement of work (SOW) identifying project objectives and deliverable items.
2. Students can prepare a project schedule identifying planned start and completion dates for major tasks and milestone events by which project progress can be assessed.
3. Students can identify risks intrinsic in a project plan and project schedule and develop a Risk Management Plan.
4. Students can develop realistic labor estimates and a labor management plan projecting the person-hour contribution of each member of a project team to each major project task.
5. Students are able to develop a realistic project budget.
6. Students can write a proposal defining a technical project.
7. Students can write progress reports that describe project progress, issues and modifications clearly and concisely.
8. Students are able to design and deliver oral project proposals and reports involving team presentation in a small group setting.
9. Students can prepare poster presentations and real-time project demonstrations suitable for a large public forum.
10. Students can expertly reply to questions concerning their projects.
11. Students are able to write constructive critiques of other student projects after observing their progress throughout the semester.

Design Team Formation:

Each design team will consist of three or four students. Students are allowed to form their own teams. The Course Coordinator will assist students in forming

teams if requested. The team will remain intact for both EEE 488 and EEE 489 (which must be taken sequentially). Responsibility for the overall completion of the design project rests entirely with the student design team. Each team should rotate the selection of a group facilitator who acts as the project manager.

Design Project Selection:

A list of possible design projects is given on the class website along with the advisor willing to sponsor the project. Note that some faculty members are willing to mentor more than one group doing the same project. Sign-ups for a particular project are first-come first-serve basis with the faculty advisor.

You also have the option of generating your own project idea and finding an EE faculty member who would be willing to mentor such a project in their area of expertise (see guidelines below).

1. The design problem should be a comprehensive problem that integrates those major areas covered in the student's coursework.

2. The problem should be open-ended, encourage creativity, and require making assumptions, evaluating alternatives, and justifying the final solution.

3. The problem size should be appropriate for a small group.

Grading:

Your grade for this class is based on:

1. Contribution of the individual to the team (weighting factor)
2. Technical communication: written reports and oral presentations (50%)
3. Technical performance: assessment of the group's technical work (50%)

Grades will reflect the following percentages:

Technical Performance	50%
Technical Communications	
Team Progress Report 1	5%
Oral Presentation	5%

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	1	
	Team Progress Report 2	8%
	Oral Presentation 2	7%
	Individual Summary	10%
	Design Proposal	15%

Weighting factor

This factor will be determined by the Course Coordinator with input from the students. Students will be asked at the end of the semester to "grade" each of their team members (including themselves).

Technical communication

This portion of the grade is based on the Course Coordinator's evaluation of the team's oral and written reporting.

All written submissions must be typed and all oral presentations must make use of computer-generated slides. Writing assistance is available at the Engineering Tutoring Center, ECF 102.

Written reports are simultaneously submitted to both the course coordinator and the technical advisor. Reports must be submitted prior to the specified time on the due date. Late submissions will be penalized.

Technical performance

This portion of the grade is based on input from the Faculty Advisor.

Course requirements

As part of the Electrical Engineering Department's assessment of its undergraduate program, student work and faculty mentor performance is evaluated. Part of this assessment process involves student completion of various assessment forms during the semester. Non-completion of ANY required form is grounds for award of an incomplete grade.

Academic Integrity:

Although there are no exams in this class, ASU's Academic Integrity Policy is still applicable. *Academic integrity* refers to each student's obligation to act with honesty and integrity and to respect the rights of others in carrying out all academic assignments. Violations of the University Academic Integrity Policy will not be ignored. Penalties include reduced or no credit for submitted work, a failing grade in the class, a note on your official transcript that shows you were punished for cheating, suspension, expulsion and revocation of already awarded degrees. The University requires that should I implement any penalty for violations of the academic integrity policy, I must report the matter to the Dean's office. The University has a Student Academic Integrity Policy, which will be followed in this class.

Reimbursable Expenses:

It is not likely that students will incur reimbursable expenses during EEE 488. However, some projects may require the purchase of electronic components or other materials. At the end of the second semester (EEE 489), students will be reimbursed for actual cost up to a total of $100 per project (not per student) for material expenses approved by their Faculty Advisor. Students will need to present receipts for all reimbursable expenses. Transparencies and copying costs are not reimbursable expenses.

E-Mail Communication:

Announcements and other information may be disseminated to students via the myASU website and/or by email. Thus, students are required to check the website and their ASU email on a regular basis.

Screen capture from BB

C4

- **Important Dates for EEE 488**
- Posted on: Friday, January 10, 2014 11:59:00 PM MST
- Jan. 31 - Team Establishment Form due
- Feb. 7 - Oral Presentation Time Slot Selection Form due
- Feb. 14 - First written report due
- Feb. 17-21 - First oral presentations
- Mar. 24-28 - Second oral presentations
- Apr. 4 - Second written report due
- **Apr 25 - Individual Semester Summary (ABET Assessment Report) due**
- May 2 - Final proposal due
- May 2 - Requests for additional funding due (optional)
- May 5 - Intra-Team Evaluation Form due

Info only

EEE 488/489 - Senior Design Laboratory

Team Establishment Form

Project Title: _____

Technical (Faculty) Advisor:
_____

Student Design Team:

Member	Student Name	Affiliate ID
#1		
#2		
#3		
#4		

Weekly Meeting Info with Technical Advisor:

Day of Week: _____ Meeting Location: _____

Time of Day: _____

Signature of Technical Advisor:

_____

Info Only

EEE 488 - Senior Design Laboratory I

Oral Presentation Time Selection Form

Project Title: _____

Project Technical (Faculty) Advisor: _____

Design Team:

Member	Student Name	Posting ID
#1		
#2		
#3		
#4		

The first oral presentations will be held the week beginning Feb 17, 2014. The second oral presentations will take place the week beginning Mar 24, 2014. Your oral time slot selection applies to both oral presentations.

As a team, determine the days and times that you will be available to make your oral presentations. The following rules will apply:

1. Three groups will present during each 75 minute slot.
2. All members of each group must be present for the entire period.
3. Each group will be expected to question and critique the other groups' presentations.

In the matrix below, place an 'X' in any time slots for which your team is unavailable. ***Make sure you strike out all times for which any member of your group has another class or commitment (such as work). If you do not strike out a particular time slot, you are responsible for making whatever arrangements are necessary to ensure your presence during that time slot, should your team be placed into that slot.***

TIME	MONDAY	TUESDAY	WEDNESDAY	FRIDAY
12:00 – 1:15 PM				
1:30 – 2:45 PM				All teams considered available
3:00 – 4:15 PM				
4:30 – 5:45 PM				

TIME	THURSDAY
9:00 – 10:15 AM	
10:30 – 11:45 AM	

C1, C2, C3,

General Instructions for Progress Report 1 ("White Paper")

In many cases, a funding agency will request or be open to receiving relatively short "white papers" that can commence the process of defining and selecting research areas or projects that are worthy of funding.

For the senior design project class, the first progress report which is written in the style of a "white paper" serves as a means by which the teams can receive some feedback on their project's definition and direction early in the project. The purpose of the white paper is to ensure that the team has adequately defined their project scope, and has thought about the actions required to successfully complete the project as well as the constraints under which success must be achieved. It is essential that each team understand that the purpose of the white paper is to *define their specific senior design project.*

The pre-proposal must meet the following general requirements:

- Title Page, Executive Summary, Body, and Tables and Figures must not exceed 6 pages all together; References (if any) and Appendices (if any) may increase the total number of pages to greater than 6 but in no case more than 9.
- No font smaller than 12 point is used anywhere in the document except possibly for Figures and in an Appendix.
- Document conforms to all requirements given in the White Paper Checksheet.
- Document is submitted in hardcopy before the due date and time.

C1, C2, C3, C4

Check Sheet for Progress Report 1 (White Paper)

Team Reviewed:_____

The following check sheet describes the criteria that will be used to grade the project pre-proposal. The pre-proposal is worth a total of 100 points as indicated below. However, these point distributions are soft metrics; severe problems in any one of these areas can result in more points being taken off than is indicated for that section.

Format, Editing, and Mechanics (25 Points)

	Title Page – Project title – Team name – Team member names – Project mentor name(s) – Date
	Executive Summary does not exceed one page nor share pages with other sections.
	Pages are numbered consecutively beginning with Executive Summary.
	Margins, headings, and paragraph spacing are consistent.
	A coherent and consistent heading style is used.
	Visuals (charts, tables, and graphs) are used correctly: – Visuals are set apart from the surrounding text by whitespace. – A caption accompanies each visual. – Tables are labeled Table 1, Table 2, and so on consecutively through the document; remember, table headers go on top. – All other visuals are labeled Figure 1, Figure 2, and so on consecutively through the document; figure captions go on the bottom. – In the text, tables are referred to as Table 1, Table 2, and so on. – In the text, figures are referred to as Figure 1, Figure 2, and so on.
	The document is edited for style: – Style is clear and readable (not awkward) – The document tone is professional – Unnecessary wordiness is avoided – Words are used correctly-the text is clear and accurate
	Spelling is correct.
	Grammar is correct. – **Do NOT use any first or second person pronouns.**
	References are in IEEE Transactions format. – The References section starts on a new page.

Structure (15 Points)

	The report as a whole is frontloaded—the structure is clear and the material is accessible. – The main points are clearly stated up front. – A clear roadmap for the report is given. – Reader cues (headings, whitespace) guide the reader through the material.
	The body of the report is structured in a logical manner. – The main points of each section are clearly stated up front. – Reader cues (headings, whitespace) guide the reader through the material.

Content (60 points)

Executive Summary (15 Points)

	Project scope is clearly stated.
	Summary (written in a non-technical way) of the main points of the proposal (including technical, schedule, and budget).
	Clearly and concisely written.

Introduction (10 Points)

	Quick overview of the "big picture".
	Problem statement clearly defined.
	Project objective (*not* approach) clearly stated.

Report Body (25 Points)

	Describes previous work in this area: – Adequate credit given to earlier work in the area. – Industrial state-of-the-art presented. – If the project is considered "unique," explains what research was done to come to that conclusion.
	Discusses project scope in detail. – States target specifications. – Describes what will be done to meet these specifications. – Presents a vision of the final project demo. – Identifies the novelty of the project.
	Describes team capabilities and facilities. – Describes facilities necessary to conduct the project. – Describes processing abilities/needs necessary to conduct the project. – Demonstrates that the team has the necessary capabilities (or has identified subcontractors with the capabilities) for the project.

Conclusion (10 points)

	Highlights important points from body.
	Executive Summary, Introduction, and Conclusion should have enough information for the reader to understand the entire project.

C1, C2, C3

General Instructions for Progress Report 2 (Pre-Proposal)

In many cases, a funding agency will issue a call for formal pre-proposals related to a desire to fund research in a specific area. Responses to this call are reviewed, and the authors of those responses deemed worthy are invited to submit a "full proposal" to the funding agency. Even when the pre-proposal is "rejected" by the funding agency, the reviewer's comments can be useful to the authors in several ways. The authors can revise the pre-proposal and submit it again under another appropriate call, or they can decide to submit it to a more appropriate funding agency.

For the senior design project class, the pre-proposal serves as a means by which the teams can receive some feedback on their project's direction prior to the submission of the full proposal. The purpose of the pre-proposal is to ensure that the team has adequately defined their project scope, has thought about the actions required to successfully complete the project as well as the constraints under which success must be achieved, and has begun to take the necessary steps toward ensuring that success. Because senior design projects also involve "soft" engineering issues, it is also required for each team to discuss briefly how their project addresses three to four specific EC2000 Criterion 4 Considerations.

The pre-proposal must meet the following general requirements:

- Title Page, Executive Summary, Body, and Tables and Figures must not exceed 8 pages all together; References (if any) and Appendices (if any) may increase the total number of pages to greater than 8.
- No font smaller than 12 point is used anywhere in the document.
- Document conforms to all requirements given in the Pre-Proposal Checksheet.
- Document is submitted in hard copy.

C1, C2, C3, C4

Check Sheet for Progress Report 2 (Pre-Proposal)

Team Reviewed:_____

The following check sheet describes the criteria that will be used to grade the project pre-proposal. The pre-proposal is worth a total of 100 points as indicated below. However, these point distributions are soft metrics; severe problems in any one of these areas can result in more points being taken off than is indicated for that section.

Format, Editing, and Mechanics (25 Points)

	Title Page – Project title and/or team name – Team member names – Faculty advisor's name – Date
	Executive Summary does not share pages with other sections.
	Pages are numbered consecutively beginning with Executive Summary.
	Margins, headings, and paragraph spacing are consistent.
	A coherent and consistent heading style is used.
	Visuals (charts, tables, and graphs) are used correctly: – Visuals are set apart from the surrounding text by whitespace. – A caption accompanies each visual. – Tables are labeled Table 1, Table 2, and so on consecutively through the document; remember, table headers go on top. – All other visuals are labeled Figure 1, Figure 2, and so on consecutively through the document; figure captions go on the bottom. – In the text, tables are referred to as Table 1, Table 2, and so on. – In the text, figures are referred to as Figure 1, Figure 2, and so on.
	The document is edited for style: – Style is clear and readable (not awkward) – The document tone is professional – Unnecessary wordiness is avoided – Words are used correctly-the text is clear and accurate
	Spelling is correct.
	Grammar is correct. – **Do NOT use any first or second person pronouns.**
	References are in IEEE Transactions format. – The References section starts on a new page.

Structure (15 Points)

	The report as a whole is frontloaded—the structure is clear and the material is accessible. – The main points are clearly stated up front. – A clear roadmap for the report is given. – Reader cues (headings, whitespace) guide the reader through the material.
	The body of the report is structured in a logical manner. – The main points of each section are clearly stated up front. – Reader cues (headings, whitespace) guide the reader through the material.

Content (60 points)

Executive Summary (15 Points)

	Project scope is clearly stated.
	Summary (written in a non-technical way) of the main points of the proposal (including technical, schedule, and budget).
	Clearly and concisely written.

Introduction (10 Points)

	Quick overview of the "big picture".
	Problem statement clearly defined.
	Project objective (*not* approach) clearly stated.

Report Body (25 Points)

	Describes previous work in this area: – Adequate credit given to earlier work in the area. – Industrial state-of-the-art presented. – If the project is considered "unique," explains what research was done to come to that conclusion.
	Discusses project scope in detail. – States target specifications. – Describes what will be done to meet these specifications. – Presents a vision of the final project demo. – Identifies the novelty of the project.
	Describes team capabilities and facilities. – Describes facilities necessary to conduct the project. – Describes processing abilities/needs necessary to conduct the project. – Demonstrates that the team has the necessary capabilities (or has identified subcontractors with the capabilities) for the project.
	Briefly discusses three to four selected EC2000 Criterion 4 Considerations and their relationship to the project.

Conclusion (10 points)

	Highlights important points from body.
	Executive Summary, Introduction, and Conclusion should have enough information for the reader to understand the entire project.

C1, C2, C3,

ABET Assessment Assignment (AAA)

The purpose of this assignment is to assess the senior design students in some of the areas required for ABET accreditation. In order to accomplish this goal while remaining within the framework of the senior design curriculum students will discuss some aspect of their own work as a member of the design team which reflects their abilities as an engineer.

Submit a 2-3 page essay or personal narrative (single-spaced, 12 point font, hard-copy)

Possibilities include, but are not limited to:

- A design specific problem that could only be overcome through the use of critical thinking, teamwork, and creativity
- An inter-personal problem within the group which required communication, empathy and understanding as peers within the engineering community to overcome
- Any concept that you did not understand prior to this project that you have come to understand through your own research and the help of your design team

This assignment is not a technical report. This is a personal narrative or essay; it is a chance for you to show your abilities as an engineer and how you have grown as an engineer from working with your team to complete your senior design project.

There is a rubric which accompanies this assignment showing the areas related to ABET accreditation for the senior design sequence. You have been asked to participate in ABET assessments throughout your undergraduate coursework at ASU; often it is integrated into the curriculum as an examination or as part of a laboratory assignment. In this case, you are asked to write a paper in the form of a narrative. This is intended to make you think critically about your role as an engineer. You are encouraged to look back on your time as a student, and reflect on how you have grown as an engineer.

The rubric includes some concepts that relate directly to the work demonstrated in your senior design project. These will be assessed primarily using your written reports and oral presentations. Therefore your AAA paper does not need to address these areas directly. The rubric also includes some concepts that are not addressed by the reporting requirements for your senior design project. These relate to considerations one makes as an engineer which transcend the work you do on any design project. Your AAA paper should strive to address these issues:

- Problem Solving
- Ethics and Professionalism
- Communication
- Global and Societal Impact
- Contemporary Issues
- Life-Long Learning

C1, C2, C3

ABET Assessment Assignment: Rubric

Teacher Name: Dr. Aberle

Student Name: _____

CATEGORY	5: Above Standards	4: Meets Standards	3: Approaching Standards	2/1: Below Standards	Score
Core Principles	Demonstrates an excellent understanding of engineering principles and understands their role as an engineer	Demonstrates an understanding of engineering principles; shows some understanding of their role as an engineer	Demonstrates some understanding of engineering principles; fails to understand their role as an engineer	Demonstrates inadequate understanding of engineering principles	
Experimental Design	Demonstrates an excellent ability to design efficient experiments that yield useful results	Demonstrates an ability to design experiments that yield useful results	Demonstrates an ability to design experiments; results are interesting but not always useful	Demonstrates an inadequate ability to design experiments	
Experimental Analysis	Demonstrates an excellent ability to analyze and understand experimental results; able to learn from this analysis	Demonstrates an ability to analyze and understand experimental results.	Demonstrates an ability to analyze experimental results; unable to understand or learn from this analysis	Demonstrates an inadequate ability to analyze experimental results	
System Design	Demonstrates an excellent ability to design complex systems (independently or as members of a design team)	Demonstrates an ability to design complex systems (with supervision or instruction) and simple systems (independently...)	Demonstrates an ability to design systems (with supervision or instruction)	Demonstrates an inadequate ability to design systems	
Component Design	Demonstrates an excellent ability to design complex components (independently or as members of a design team)	Demonstrates an ability to design complex components (with supervision or instruction) and simple processes (independently...)	Demonstrates an ability to design components (with supervision or instruction)	Demonstrates an inadequate ability to design components	
Process Design	Demonstrates an excellent ability to design complex processes (independently or as members of a design team)	Demonstrates an ability to design complex processes (with supervision or instruction) and simple processes (independently...)	Demonstrates an ability to design processes (with supervision or instruction)	Demonstrates an inadequate ability to design processes	

C1, C2, C3

Hardware and Software	Demonstrates an excellent ability to use and modify hardware and software to solve engineering problems	Demonstrates an ability to use hardware and modify software to solve engineering problems	Demonstrates an ability to use hardware and software to solve engineering problems	Demonstrates an inadequate ability to use hardware and software to solve engineering problems	
Problem Solving	Demonstrates an excellent ability to identify formulate and solve practical problems	Demonstrates an ability to identify formulate and solve simplified problems	Demonstrates an ability to solve problems once they have been identified	Demonstrates an inadequate ability to solve problems	
Ethics and Professionalism	Demonstrates an excellent understanding of engineering ethics and the importance of professionalism	Demonstrates a good understanding of ethics and the importance of professionalism	Demonstrates an understanding of the importance of professionalism, but a limited understanding of ethics	Demonstrates an inadequate understanding of the importance of ethics and professionalism	
Communication	Demonstrates excellent written and oral communication in formal and informal settings	Demonstrates good written and oral communication in a formal setting but lacks confidence in informal settings	Demonstrates good communication but writing requires revisions and oral delivery lacks confidence	Demonstrates inadequate written and oral communication skills	
Global and Societal Impact	Demonstrates an excellent understating of the global and societal impact of engineering issues	Demonstrates a limited understanding of the global and societal impact of engineering issues	Demonstrates a narrow understanding of societal impacts of engineering issues but not in a global context	Demonstrates a lack of understanding of the global and societal impact of engineering issues	
Contemporary Issues	Demonstrates an excellent understanding of contemporary issues in engineering	Demonstrates a good understanding of many contemporary issues in engineering	Demonstrates an understanding of some contemporary issues in engineering	Demonstrates an inadequate understanding of contemporary issues in engineering	
Life-Long Learning	Demonstrates an excellent understanding and appreciation of the importance of life-long learning and how this is necessary for engineers	Demonstrates a good understanding and appreciation of the importance of life-long learning	Demonstrates an understanding, but lacks an appreciation for, the importance of life-long learning	Demonstrates a lack of understanding for the importance of life-long learning	

C1, C2, C3

Individual Semester Summary Report Assignment
EEE 488

The summary should be a maximum of one single-spaced page in length (with a minimum font size of 11pt). The report should not be a collection of lists, but rather a narrative.

One purpose of this summary is to demonstrate your ability to gather, evaluate, and present evidence. Another purpose of the summary is for you to examine your accomplishments and contributions to your design project and for you to describe what you have learned.

Your summary should address one or more aspects of the following major areas.

Teamwork and Professionalism

- Your specific contribution(s) to the project.
- How well you functioned on the team.
- What you did incorrectly, and how you are working to fix the problem(s).
- What you would do differently if you had the project to do over.
- Surprises (good or bad) that you encountered during the semester.

Lifelong Learning

- The most important things you learned during the semester. You might go beyond the purely technical aspects of the project to include:
  - project management.
  - writing skills.
  - speaking ability.
  - other categories.
- How your education has prepared you to learn material beyond that presented in classes.
- A critical examination of how you can improve any weak engineering skills.
- What you want to be able to put on your resume in 5 years?
- How you think you will apply any of the skills obtained this semester in your future plans.

Societal Context and Contemporary Issues

- The effect your project could have on society.
- Societal issues that will affect the success or failure of your project.
- How does your project relate to contemporary local, national, or international events?

C1, C2, C3

General Instructions for Proposal

The proposal must meet the following general requirements:

- Title Page, Executive Summary, Body, and Tables and Figures must not exceed 15 pages all together; References (if any) and Appendices (if any) may increase the total number of pages to greater than 15, but under no circumstances shall the total document be more than 20 pages in length.
- No font smaller than 12 point is used anywhere in the document.
- Document conforms to all requirements given in the Proposal Checksheet.
- Document is submitted in hard copy on or before deadline.

C1, C2, C3, C4

Check Sheet for Project Proposal

Team Reviewed: _____

The following check sheet describes the criteria that will be used to grade the project proposal. The proposal is worth a total of 100 points as indicated below. However, these point distributions are soft metrics; severe problems in any one of these areas can result in more points being taken off than is indicated for that section.

Format, Editing, and Mechanics (30 Points)

	Title Page – Project title and/or team name – Team member names – Faculty advisor's name – Date
	Table of Contents begins on a new page.
	List of Illustrations begins on a new page.
	Executive Summary does not share pages with other sections.
	Executive Summary is no more than one page.
	Pages are numbered consecutively beginning with the Table of Contents.
	Margins, headings, and paragraph spacing are consistent.
	A coherent and consistent heading style is used.
	Visuals (charts, tables, and graphs) are used correctly: – Visuals are set apart from the surrounding text by whitespace. – A caption accompanies each visual. – Tables are labeled Table 1, Table 2, and so on consecutively through the document; remember, table headers go on top. – All other visuals are labeled Figure 1, Figure 2, and so on consecutively through the document; figure captions go on the bottom. – In the text, tables are referred to as Table 1, Table 2, and so on. – In the text, figures are referred to as Figure 1, Figure 2, and so on.
	The document is edited for style and readability: – Style is clear and readable (not awkward) – The document tone is professional – Unnecessary wordiness is avoided – Words are used correctly-the text is clear and accurate
	Spelling is correct.
	Grammar is correct. – **Do NOT use any first or second person pronouns.**
	References are in IEEE Transactions format.
	References begin on a new page.

Structure (15 Points)

	The report as a whole is frontloaded-the structure is clear and the material is accessible – The main points are clearly stated up front. – A clear roadmap for the report is given in the introduction.
	Each major section of the report is frontloaded – The main points of the section are clearly stated up front. – A clear roadmap of the section is given.

Content (55 points)

Executive Summary (10 Points)

	Frontloaded-introduces the project topic first. Contains information about the project "big picture."
	Summary (written in a non-technical way) of *all* the main points of the proposal (including technical, schedule, and budget).
	Clearly and concisely written.

Introduction (10 Points)

	Quick overview of the "big picture".
	Problem statement and scope clearly stated.
	Project objective (*not* approach) clearly stated.

Report Body (25 Points)

	Describes previous work in this area: – Adequate credit given to earlier work in the area. – Industrial state-of-the-art presented. – If the project is considered "unique," explains what research was done to come to that conclusion.
	Discusses project scope in detail. – States target specifications. – Describes what will be done to meet these specifications. – Presents a vision of the final project demo. – Identifies the novelty of the project.
	Describes the technical work done this semester: – Results of research (including appropriate references for sources). – Results of design activities: system designs, circuit designs, model designs, etc. – Results of prototype implementation and testing.
	Describes the technical work to be done next semester: – Breaks the work into tasks that need to be completed. – Identifies milestones that will be used to judge progress. – Provides a schedule for these tasks, including any contingency plans necessary to insure the success of the project. – Milestones and schedule include progress and final reports and presentations.
	Describes team capabilities and facilities. – Describes facilities necessary to conduct the project. – Describes processing abilities/needs necessary to conduct the project. – Demonstrates that the team has the necessary capabilities (or has identified subcontractors with the capabilities) for the project.
	Presents a projected budget: – Expenditures during this semester are described and justified. – Expected expenditures during the *Spring* semester are described and justified. – Person hours are described and justified (but not included in the expenditures).
	Discusses how three or four selected EC2000 Criterion 4 Considerations are addressed by the project.

Conclusion (10 points)

	Highlights important points from body
	Introduction and Conclusion should have enough information for the reader to understand the entire project.

Info Only

EEE 488/489 INTRA-TEAM EVALUATION FORM

Name: _____ Date: _____

Project: _____ Technical Advisor: _____

Please rate each member of your design team (including yourself) according to the following criteria by marking the appropriate box. You may attach additional sheets for comments if desired.

Ratings:
5 - Strongly Agree
4 - Agree
3 - Neutral
2 - Disagree
1 - Strongly Disagree
N/A - Cannot Evaluate

Evaluation Criterion	Team Member Ratings: Yourself			
This student made an *essential technical contribution* to *his/her portion* of the project				
This student made an *essential technical contribution* to the *overall* project				
This student made an *essential organizational contribution* to the overall project				
This student was *reliable* in *attending* planned *meetings*				
This student *completed all tasks assigned* to him/her and was *reliable* in *meeting promised deadlines*				
This student was *able to communicate* his/her thoughts to the group				
This student showed interest, attention and a positive direction in the completion of the project--*a team player!*				
Total points received/Total points possible	/35	/35	/35	/35
Percentage contribution to project by this student (this is not the above fraction). ***Total for this entire row should equal 100%.***	%	%	%	%

Comments: _____

_____

_____

EEE 488 - Senior Design Laboratory I Spring 2015

Course description: Design process: research, concept, feasibility, simulation, specifications, benchmarking, and proposal generation. Technical communications and team skills enrichment.

Enrollment requirements: Prerequisite(s): Fulton ECEE, SEMTE, or BHSE undergraduate student; ENG 102, 105 or 108, EEE 241; EEE 334; EEE 350; three courses from the following list: EEE 304, 333, 335, 341, 352 or 360

Units: 3
Repeatable for credit: No
General Studies: L
Offered by: Ira A. Fulton Schools of Engineering

EEE 488

SENIOR DESIGN LABORATORY I

Course Overview:

EEE 488 and EEE 489 comprise a two-semester capstone senior project for Electrical Engineering students. During the first semester (EEE 488), teams are formed, projects are selected, and the first phase of the project is completed. The major deliverable at the end of the first semester is a comprehensive proposal that includes details of the background research, tasks, timelines, budget, preliminary feasibility studies, and project deliverables in the second semester.

Class Meetings:

The entire EEE 488 class meets together once per week for a 75 minute period. In addition, each student team selects a design project and a Faculty Advisor. Each team is required to meet with their Faculty Advisor at once per week.

Course Coordinator:

Jim Aberle, Ph.D., Assoc. Prof. of EE

Telephone:

(480) 965-8588

Office:

GWC 326

E-mail:

aberle@asu.edu

Catalog Description:

Design process: research, concept, feasibility, simulation, specifications, benchmarking, and proposal generation. Technical communications and team skills enrichment. Lecture, lab. Fee.

Pre-requisites: Engineering BS/BSE student and a D or better in EEE 334 or ECE 334 AND a D or better in EEE 203 or 303 AND a D or better in EEE 241 or 340 AND a D or better in EEE 352 or ECE 352 or co-enrolled AND a D or better in EEE360 or co-enrolled.

General Studies: L

3 cr hr.

Textbook:

None.

Course Objectives:

1. Students can define and plan an engineering project involving multiple tasks and contributors.
2. Students can communicate and critically evaluate technical information.

Course Outcomes:

1. Students can define an engineering project, setting objectives that are appropriate for the project purpose and scope and that incorporate most of the following considerations: economic; environmental; sustainability; manufacturability; ethical; health and safety; social; and political.
2. Students can plan an engineering project involving multiple tasks and contributors.
3. Students can communicate technical information in writing.
4. Students can communicate technical information in oral presentations.
5. Students can provide informed and constructive criticism on engineering projects.

Course Performance Indicators:

1. Students can prepare a feasible statement of work (SOW) identifying project objectives and deliverable items.
2. Students can prepare a project schedule identifying planned start and completion dates for major tasks and milestone events by which project progress can be assessed.
3. Students can identify risks intrinsic in a project plan and project schedule and develop a Risk Management Plan.
4. Students can develop realistic labor estimates and a labor management plan projecting the person-hour contribution of each member of a project team to each major project task.
5. Students are able to develop a realistic project budget.
6. Students can write a proposal defining a technical project.
7. Students can write progress reports that describe project progress, issues and modifications clearly and concisely.
8. Students are able to design and deliver oral project proposals and reports involving team presentation in a small group setting.
9. Students can prepare poster presentations and real-time project demonstrations suitable for a large public forum.
10. Students can expertly reply to questions concerning their projects.
11. Students are able to write constructive critiques of other student projects after observing their progress throughout the semester.

Design Team Formation:

Each design team will consist of three or four students. Students are allowed to form their own teams. The Course Coordinator will assist students in forming

teams if requested. The team will remain intact for both EEE 488 and EEE 489 (which must be taken sequentially). Responsibility for the overall completion of the design project rests entirely with the student design team. Each team should rotate the selection of a group facilitator who acts as the project manager.

Design Project Selection:

A list of possible design projects is given on the class website along with the advisor willing to sponsor the project. Note that some faculty members are willing to mentor more than one group doing the same project. Sign-ups for a particular project are first-come first-serve basis with the faculty advisor.

You also have the option of generating your own project idea and finding an EE faculty member who would be willing to mentor such a project in their area of expertise (see guidelines below).

1. The design problem should be a comprehensive problem that integrates those major areas covered in the student's coursework.

2. The problem should be open-ended, encourage creativity, and require making assumptions, evaluating alternatives, and justifying the final solution.

3. The problem size should be appropriate for a small group.

Grading:

Your grade for this class is based on:

1. Contribution of the individual to the team (weighting factor)
2. Technical communication: written reports and oral presentations (50%)
3. Technical performance: assessment of the group's technical work (50%)

Grades will reflect the following percentages:

Technical Performance	50%
Technical Communications	
Team Progress Report 1	5%
Oral Presentation	5%

	1	
	Team Progress Report 2	8%
	Oral Presentation 2	7%
	Individual Summary	10%
	Design Proposal	15%

Weighting factor

This factor will be determined by the Course Coordinator with input from the students. Students will be asked at the end of the semester to "grade" each of their team members (including themselves).

Technical communication

This portion of the grade is based on the Course Coordinator's evaluation of the team's oral and written reporting.

All written submissions must be typed and all oral presentations must make use of computer-generated slides. Writing assistance is available at the Engineering Tutoring Center, ECF 102.

Written reports are simultaneously submitted to both the course coordinator and the technical advisor. Reports must be submitted prior to the specified time on the due date. Late submissions will be penalized.

Technical performance

This portion of the grade is based on input from the Faculty Advisor.

Course requirements

As part of the Electrical Engineering Department's assessment of its undergraduate program, student work and faculty mentor performance is evaluated. Part of this assessment process involves student completion of various assessment forms during the semester. Non-completion of ANY required form is grounds for award of an incomplete grade.

Academic Integrity:

Although there are no exams in this class, ASU's Academic Integrity Policy is still applicable. *Academic integrity* refers to each student's obligation to act with honesty and integrity and to respect the rights of others in carrying out all academic assignments. Violations of the University Academic Integrity Policy will not be ignored. Penalties include reduced or no credit for submitted work, a failing grade in the class, a note on your official transcript that shows you were punished for cheating, suspension, expulsion and revocation of already awarded degrees. The University requires that should I implement any penalty for violations of the academic integrity policy, I must report the matter to the Dean's office. The University has a Student Academic Integrity Policy, which will be followed in this class.

Reimbursable Expenses:

It is not likely that students will incur reimbursable expenses during EEE 488. However, some projects may require the purchase of electronic components or other materials. At the end of the second semester (EEE 489), students will be reimbursed for actual cost up to a total of $100 per project (not per student) for material expenses approved by their Faculty Advisor. Students will need to present receipts for all reimbursable expenses. Transparencies and copying costs are not reimbursable expenses.

E-Mail Communication:

Announcements and other information may be disseminated to students via the myASU website and/or by email. Thus, students are required to check the website and their ASU email on a regular basis.