

IET 499C – Senior Project
Syllabus – Spring 2006
Department of Industrial and Engineering Technology
College of Science and Technology
Morehead State University



Catalog Description: (1-4-3); I, II. Prerequisite: Senior standing and completion of 18 hours in option. The student will solve a problem using the scientific method of inquiry in conjunction with faculty members from his/her major area of study. The problem should include the statement of the problem, background of the problem, parameters of the problem, methods and procedures for problem solution.

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IMPORTANT:

1. You are **registered** for this class at MSU but you **MUST ALSO ELECTRONICALLY ENROLL** for the class online at <http://moreheadstate.blackboard.com/>.
2. Enrolling on Blackboard for IET 499C is not optional and **MUST** be completed immediately.
3. If unfamiliar with this process, go to the online tutorial about getting started in Blackboard at: <http://www.moreheadstate.edu/units/distance/MSUBlackboardGettingStarted.pdf>.
4. Login to Blackboard at <http://moreheadstate.blackboard.com/>, find IET 499C, and click **Enroll**.
5. Once enrolled, access the course online and click **Student Tools**, then **Personal Information**, then **Edit Personal Information** to update your email address and other information.
6. It is **VERY IMPORTANT** to complete the Blackboard enrollment step and especially updating your email address on Blackboard.

Course Purpose: The course purpose is to determine the ability of the student to develop and solve an appropriate technical problem, write a project report, and orally present the final report. The course will enhance students' abilities to communicate effectively in a formal setting, to research and present information efficiently, and to think at higher levels required of industrial professionals.

Course Competencies: Upon successful completion of the course, the student will be able to:

1. Develop a problem statement;
2. Develop a proposal for a solution to the established problem;
3. Perform research into the background of the problem;
4. Apply methods of scientific inquiry using logical reasoning;
5. Make sound decisions based on technical, moral, aesthetic, and practical considerations;
6. Use appropriate references and equipment (if applicable) to solve the problem;
7. Defend the problem solution in written and oral formats; and,
8. Professionally present and exhibit the project to faculty and other students.

The successful student will gain the following **competencies**:

- Demonstrate the ability to identify a technical problem and a potential solution **(evaluated in Problem and Solution Statement - Proposal)**.
- Demonstrate the ability to maintain a schedule of regular technical progress **(evaluated in weekly (w/instructor) and biweekly (w/instructor and advisor) Progress Reports)**.
- Demonstrate the ability to follow the Scientific Method in the completion of an extensive written report **(evaluated in written Project Report)**.
- Demonstrate the ability to make sound technical decisions based on practical considerations **(evaluated in written Project Report and Problem and Solution Statement - Proposal)**.
- Demonstrate the ability to present technical results both orally and by poster exhibition **(evaluated in Oral Presentation and Poster Exhibition)**.

Course Schedule, Due Dates, Deadlines:

Week	Tasks
1	Introduction, review syllabus and course requirements, discuss problem statement.
2	Problem statement due, discuss problem statement, start logbook.
3	Solution approach and references due, discuss solution approach, organized project notebook due.
4	Final problem statement and solution approach due, weekly work schedule due.
5	<p><u>Weeks 5 - 14 (includes week of Spring Break)</u></p> <ul style="list-style-type: none"> • Work on project with weekly updates to 499C instructor and biweekly updates to the student's academic advisor (must be shown in logbook). • Develop project report progressively to be checked on weekly basis. <p><u>Weeks 13 - 14</u></p> <ul style="list-style-type: none"> • Revise project report with weekly updates to instructor and advisor. • Finalize project report. • Final project report due week #14
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15	Finalize project oral presentation and poster exhibition.
16	Exhibit poster due, begin final project oral presentations.
17	Continue final project oral presentations.

Due Dates:

- Problem statement
 - DraftFriday, January 27
 - Final versionFriday, February 10
- Solution approach
 - DraftFriday, February 3
 - Final versionFriday, February 10
- Project written reportFriday, April 21
- Poster exhibitionWednesday, May 3
- Oral presentation.....Friday, May 5 and Wednesday, May 10

Deadlines: All students must meet the designated deadlines on the course schedule above. Any student who does not meet any of the deadlines will result in a score of zero (0) for the particular late item, unless the student provides a legitimate medical excuse for the day the item was due. This excuse must be presented on the weekday immediately following the missed deadline.

IET 499C Senior Project - Timeline/Schedule	Semester week																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Activity/task	Project week >>>																
Review syllabus, course requirements	█																
Problem statement due, start logbook		█															
Solution approach due, organize notebook			█														
Final problem & solution statement, timeline due				█													
Project work, report development					█	█	█	█	█	█	█	█	█	█	█		
Develop presentation and poster exhibition															█	█	
Exhibit project poster, begin oral presentations																█	█
Continue oral presentations to faculty & students																█	█

Timeline diagram showing key milestones:

- 1st draft - problem statement (week 4)
- 1st draft - solution approach (week 5)
- Final problem statement & solution approach, timeline due (week 5)
- Final report due at end of week #14, project week #10.

Textbook and References: No Required Textbook.

Recommended readings: all textbooks, references, handbooks, manuals, journals, catalogs and other suitable information from IET courses, MSU Library, and on-line resources. Each student is **required** to use a minimum of five (5) references from three (3) of the above list and provide full citations in an appropriate format (MLA, APA, etc.).

Problem Statement

The problem statement must be typed, 1.5-2 line spacing, one-inch margins, contain the 'Problem Statement' title, project title, and student name centered at the top of the page. The problem statement must not exceed one (1) page, front only and must contain the following elements:

- purpose or intent of project;
- clear and thorough, yet concise description of problem;
- need for solution of problem; and,
- basic solution approach including a list of five to eight (5 - 8) major steps to be accomplished with a brief description (1-2 sentences for each step).

Technical analysis potential within each of the five to eight major project steps must be evident and clear. Additionally, the associated IET department option area and estimated time in weeks must be identified for each major project step.

Solution Approach

The solution approach must be typed, 1.5-2 line spacing, one-inch margins, contain the '*Solution Approach*' title, project title, and student name centered at the top of the page. Based on the overview and major project steps described in the problem statement, the Solution Approach must contain a detailed explanation of steps or tasks to be performed to solve the problem. The major project steps must contain technical analysis elements from at least two (2) IET option areas (computer design, construction, electronics, manufacturing, telecommunications, or technical management). For each major project step (5 - 8), the explanation must contain measurable and objective statements that are sufficiently detailed to clearly identify the work to be done. Use bold headings to identify each project step separately and at the end of each description, include the following information:

- IET option area (ITCD, ITCG, ITCM, ITEC, ITMT, or Technical Management); and,
- estimated time to perform the work in weeks.

At least three (3) references to relatively current technical sources must be cited in the context of the Solution Approach. The references must support the methods of analyses chosen for the project, not just cited for future reference. All references must be cited within the project step or task descriptions in standard format for technical papers (i.e., *Smith, p. 127*). Full citations (APA or MLA format) for each reference must be provided in a list format at the end of the Solution Approach. A project timeline in horizontal bar chart format (Excel© preferred) must be developed to include the five to eight major project steps and their associated scheduled time within the ten-week project time.

Report content: The project report is developed/written progressively during the semester. It must be divided into sections described in the student's *Solution Approach* activities/tasks (5 - 8 sections). Each section must contain a detailed written description (i.e. narrative) of analytical methods used. Each section must be developed and completed according to the timeline (in bar chart format) in the student's *Solution Approach* during the ten-week project time (i.e. weeks #5 - 14). In other words, the report must be written and individual sections completed as the project progresses. The developing project report must be shown to instructor during weekly updates. Student must complete work and provide written report (i.e. tables, drawings, computations, charts, written descriptions of analytical approaches) in individual sections as the project progresses on a weekly basis. For example, assume *Research and Measurement* is specified as a project task and is to be completed by end of 1st week in project (according to student's timeline - 10 weeks total). At the end of week #1 in the weekly update meeting with the IET 499C instructor, the student must provide evidence of the:

- research completed in the form of a detailed written description with appropriate references; and,
- measurements taken with data placed in an appropriate format (i.e. table) and a detailed written description.

If CAD drawings are contained within the report, all work must be formally approved for content and format quality by ITCD professors.

Report format: All written work shall be contained within a new, white, single three-ring binder. The binder and internal report must have an appropriate title page with project and student name displayed. The report shall be fronted with a title page and a table of contents and be appropriately divided with tabs to easily find various sections as described. The report must be progressively developed and updated throughout the semester. It must be typed on white paper using double-spaced 12 point text, normal fonts, and normal margins. Use plastic protection sheets **only** for graphic items such as drawings and photographs, not for typed pages. The final report is due during week #14. No late report will be accepted without a documented and validated medical excuse. The report must be turned into the instructor on or before the designated date personally by the student.

Poster Exhibition: Students shall prepare a poster of the senior project by Wednesday during the week prior to final exams. The poster exhibition must thoroughly yet concisely explain your senior project on one (1) standard size (36" height by 48" width) tri-fold cardboard poster (supplied to students by IET Department). Use of color and graphics is greatly encouraged. The student name and project title must be prominently shown on the poster.

Oral Presentation: Students shall present to other IET 499C students, IET faculty advisors, and others on the date specified by the IET 499C instructor. Students shall develop a report presentation that integrates computer projection (PowerPoint or equivalent software) into their presentation. A computer (with CD drive), and projection system will be available to students during their presentations. Students must upload their presentation to the IET computer (exceptions approved by instructor **only**) and conduct a “test” presentation prior to their official presentation.

The oral presentations require the use of PowerPoint or equivalent. The first slide must include at least the title of the project, student name, and degree program (i.e. Industrial Technology with option area, Industrial Education, or Engineering Technology). The second slide must include at least the names of the two IET technical option areas emphasized in the project. Subsequent slides must include a mix of text and graphics, and without sound effects. The presentation must be 8.5 to 10 minutes long (no more and no less). The typical number of PowerPoint slides might be 15 to 20, but more or less are possible. Graphics such as pictures and drawings, pertinent to the project are highly encouraged. Remember the adage of the worth of a picture.

Progress Reporting: Each student is required to maintain frequent and ongoing contact with the IET 499C instructor and academic advisor. Both versions (draft and final) of the problem statement and solution approach must be reviewed and approved by the academic advisor prior to submitting to the course instructor. During the ten-week project duration (weeks #5-14), each student must meet with the course instructor weekly and academic advisor biweekly. There are no exceptions to this “progress meeting” requirement.

Grading – Total 500 points

1. Proposal (75 points possible)

- a) Problem statement.....25
- b) Solution approach50
 - Specific method/approach for solving problem which must include two or more areas from technical options (ITCD, ITCG, ITCM, ITEC, ITMT) and/or other IET content areas (i.e. technical management).
 - Must provide full citations for at least 3 references to be used in project.
 - Plans for completion of project by weekly timetable (bar chart format).

2. Project Written Report (250 points possible)

- Well organized with table of contents and tabs.....25
- Proposal – problem statement and proposed solution [above]
- Detailed solution description for each technical option150
- Drawings and illustrations.....50
- Five (5) references in report context minimum – full citations given.....25
- Logbook of weekly time spent on project [below]

3. Poster exhibition.....50

- Name and project title
- Minimum eight (8) sheets (8.5" by 11" or equivalent) utilized
- Use of color and graphics evident
- Project problem, solution approach, and solution description provided in concise yet thorough manner.

4. Oral presentation75

- Attire
- Preparation
- Clearly spoken
- Posture and eye contact
- Content
- Time limit
- Topic understanding
- Use of technology

5. Progress50

- Weekly e-mail and/or personal contacts
- Logbook clarity/completeness – IET faculty initials/dates documented

Assessment Scoring and Grading Scale: From the preceding list, the primary components being assessed in this class are the: (1) problem statement and solution approach; (2) project written report; (3) poster exhibition; (4) oral presentation; and, (5) progress reports to class instructor and academic advisor. Each of these individual components is required and must be satisfactorily met. Of the components listed, a **minimum score** for the “problem statement and solution approach” is 75% (or 56.25 of a possible 75 point combined score) and a **minimum score** for the “progress reports to class instructor and advisor” is 80% (or 40 of a possible 50 point score).

For the total points accumulated by each student, the following grading scale will be applied:

≥ 90% to ≤ 100%	→	A
≥ 80% to ≤ 90%	→	B
≥ 70% to ≤ 80%	→	C
≥ 60% to ≤ 70%	→	D
≤ 60%	→	E

IET 499C grades will not vary from this scale. No grading curve will be applied at all, regardless of the grade distribution. Note: All IET students must complete IET 499C with a grade of “C” or higher to graduate.
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CIT Exam: Each student is required to show evidence of completing the exam for *Certified Industrial Technologist* or CIT administered by the National Association of Industrial Technology (NAIT). The student is encouraged to make every effort to pass the NAIT CIT exam; however, students are not required to pass the exam to become a Certified Industrial Technologist in order to complete IET 499C. The requirement for this class is for students to provide printed evidence that the CIT exam has been taken. This requirement is a pass/fail requirement for IET 499C. In other words, students cannot pass IET 499C without showing printed evidence of completing the CIT exam.

Attendance: This is a senior-level course; therefore, perfect and punctual attendance is mandatory. Consistent tardiness is unacceptable. In the unlikely event that a student should miss a class or planned meeting with the instructor, it is the student’s responsibility to immediately contact the instructor to explain the absence and plan another meeting.

Policy for Accommodating Students with Disabilities: Professional staff from the MSU Academic Services Center coordinates efforts to address accessibility needs and class accommodations with instructors of students who have learning or physical disabilities. Faculty in the Department of Industrial and Engineering Technology will cooperate with the Academic Services Center staff to accommodate the needs of students taking departmental courses.

CLASS PLANNING CALENDAR, SPRING 2006

WEEK	M	T	W	TH	F
			CONVOCAATION	CLASS SCHEDULING	
1		JAN.	11	12	13
2	MW	16	17	18	20
3	TTH	23	24	25	27
4	MW	30	31	FEB 1	3
5	TTH	6	7	8	10
6	MW	13	14	15	17
7	TTH	20	21	22	24
8	MW	27	28	MAR 1	3
9	TTH	6	7	8	10
10	MW	13	14	15	17
11	20 Spring Break 21 22 23 24				
12	TTH	27	28	29	31
13	MW	APRIL 3	4	5	7
14	TTH	10	11	12	14
15	MW	17	18	19	21
16	TTH	24	25	26	28
17	MW	MAY 1	2	3	5
18	8 FINALS 9		10	11 FINALS 12	

Holidays: Martin Luther King's Holiday:
 Monday, January 16 (no day or night classes)
 Spring Break: Monday-Friday, March 20-24

Reading Day: Wednesday, May 10, 2006
 Commencement: Saturday, May 13, 2006

MW Week



TTh Week



Convocation &
Class Scheduling



Holiday

