Research Techniques in Technical Areas
ENGINEERING 590
Course Syllabus
Spring Semester 2009
3 Semester Hours
Dr. Ralph Dirksen

Classroom: 330 Knoblauch Hall Office KH 335
Ph. 298-2388 837-3493
Office Hours: 4-5 p.m. Tue; 8:30-10:00 a.m., Mon and Wed; additional hours by appointment

Catalog Description: Application of various research techniques in technical subjects. Practice in selection, application, and reporting of technological research.


Objectives: As a result of the learning experiences in this course, the student will be able to:
1. Recognize good technical writing and research, and data collection.
2. Write technical reports in accordance win an accepted style manual (APA).
3. Organize and collect technical information and propose and/or conduct research in written and oral form.
4. Present technical reports and research studies.
5. Understand technical report publishing methods and practices.
6. Be familiar with the APA style manual.
7. Write three Engr. 592/601 proposals as defined by the Engineering Technology Dept. Graduate Committee.

Course Content:
1. Reports, written communications, research studies, surveys
   a. What are they?
   b. Types and forms

2. Collection of information for research
   a. Organization for collection of information
   b. Publications
   c. Using bibliographical material, library research
   d. Questionnaires
   e. Interviews

3. Planning the investigation and report
4. Mechanics of Style, word usage, editing, etc.
5. Format and arrangement
6. Tubular presentation versus graphic presentation
7. Preparation of illustrations
8. Outline drafts
9. Letter reports, short reports, memos, explanations of processes
10. Formal reports, final reports of a study thesis
11. Writing for magazine publication; journal guidelines
12. Papers for technical groups; conference presentations
13. Oral presentation of reports and technical papers
14. Copying, printing and duplicating methods and requirements in publication. Computer assisted writing and editing
15. Engr. 601/592 Requirements
16. Engr. 601/592 Proposal and 580 Proposals
17. APA style – and other style manuals
18. Research – to search again; to find anew

Student Evaluation: Course grades will be based on a percentage of total possible points. The grading scale will approximate the normal break-off points so as to accommodate clusters closest to a category.

100%-90% = A
89%-80% = B
79%-70% = C
69%-60% = D
59%-0% = F

Achievement will be based upon class participation, oral assignments, tests and written assignments. Three tests and a final exam will count 50% while three proposals, written exercises, classroom discussion, and oral presentations will count 50%.

For your information in realizing the many areas in which 580 and 592 proposals may be written.

ENGR 580

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>580-1</td>
<td>Drafting Technology</td>
<td>2-3 hrs.</td>
</tr>
<tr>
<td>580-3</td>
<td>Graphic Arts Technology</td>
<td>2-3 hrs</td>
</tr>
<tr>
<td>580-5</td>
<td>Industrial Education</td>
<td>2-3 hrs</td>
</tr>
<tr>
<td>580-7</td>
<td>Industrial Wood Technology</td>
<td>2-3 hrs</td>
</tr>
<tr>
<td>580-9</td>
<td>Fluid Power Technology</td>
<td>2-3 hrs</td>
</tr>
<tr>
<td>580-11</td>
<td>Automotive Technology</td>
<td>2-3 hrs</td>
</tr>
<tr>
<td>580-13</td>
<td>Metals Technology</td>
<td>2-3 hrs</td>
</tr>
<tr>
<td>580-15</td>
<td>Electronics Technology</td>
<td>2-3 hrs</td>
</tr>
<tr>
<td>580-17</td>
<td>Computer-Aided Technology</td>
<td>2-3 hrs</td>
</tr>
<tr>
<td>580-19</td>
<td>Manufacturing Technology</td>
<td>2-3 hrs</td>
</tr>
<tr>
<td>580-21</td>
<td>Construction Technology</td>
<td>2-3 hrs</td>
</tr>
</tbody>
</table>
Test Dates:

Quiz 1 – February 3, 2009
Quiz 2 – February 24, 2009
Quiz 3 – March 31, 2009
Quiz 4 – April 21, 2009

Final Exam:

Tuesday, May 12 – 6:00 p.m.

Selected Assignments:


2. Check out from the library and review at:
   a. Research Methodology Book
   b. Technical Writing Book
   c. M.S. Thesis
   d. Report of a Study (as published in a journal, NTIS, ERIC, NSF, etc.)

3. Check out from Dr. Dirksen on the Library (Archives) and review an Industrial technology M.S. Study.

4. Propose three of your own studies, write the proposals, and conduct bibliographic data search and present one to the class.

5. Review and report once to the class on a Word Processing Program, a Desktop Publishing Package, a statistical package, an editing package, or project management, reading level, etc. as a tool for the researcher.

6. Attend any scheduled Engr. 592/601 presentations during the semester.

7. Complete four quizzes and one final exam during the semester.
   Quiz 1- Feb. 3, Quiz 2- Feb. 24, Quiz 3- March 31, Quiz 4 – April 21, Final Exam - May 12 -6:00 p.m.

8. Review research and statistical procedures used in similar studies for technical writing and research techniques.

9. Critique proposal work-up by fellow students. Participate in discussion and critique.

10. If ready, submit your 592 proposal to the graduate Committee for approval.
11. Work on a team project to develop a proposal for a study. Seek outside assistance as need for suggestions on research design, statistical treatment, research procedures and methodology, etc.

12. Keep a time log of your work. Save your marked-up proposals to show documentation of your progress. Do not discard marked copies.

13. Use the services on campus of the writing center, research office, and the library.

14. Master style and work usage by making corrections on three writing exercise sheets.

15. Locate a magazine article on technical writing, abstract it, and report on it in class.