

ECE 3030: Technical Communications and Writing for Engineers

Credits and Contact Hours: 3.0 Credit Hours

15 weeks: Two 80-minute lectures per week

Instructor's Name: Ryan B. Brown

Text Book(s) and/or Required Material:

- Assigned Readings authored by engineers and scientists (e.g., Laplace, Feynman, Hawking, Zamyatin, various IEEE authors, etc.)
- IEEE Editorial Style Manual, IEEE Periodicals (2014)
- M. Markel, Technical Communication, Tenth Ed., Bedford/St. Martin's, 2012

Catalog Description: This course is designed to prepare students for writing and communication efforts specific to their careers in engineering. Students will develop written and oral communication skills through shorter in-class and homework assignments, a lengthier IEEE-style article, and oral presentations. A combination of writing and oral presentation exercises will emphasize delivering information in a clear, concise fashion. Students will learn to tailor messages to different audiences: colleagues and mentors, the general public, government agencies and the media. Teamwork, ethical considerations and organizational issues will also be addressed.

Prerequisites:

- C or better in: WRTG 2010: Intermediate Writing-Academic Writing and Research; and
- Full major status in Computer Engineering

Designation: Required

Contribution of Course to Meeting the Requirements of ABET Criterion 5: Communication skills are crucial to career success and contributing to knowledge (CE objectives, College mission statement, and University mission statement), and to entrepreneurial activities (College and University mission statements).

Specific Outcomes of Instruction:

In this course students will come to understand and employ the following principles:

1. Compositional conventions for engineers and scientists
2. Proper grammar and punctuation for formal writing
3. Purpose and audience (context, detail, diction)
4. Organization and structure (cumulative order, visuals, citations)
5. Research (literature review, efficient searching and source gathering)
6. Drafting (planning, outlining, time management, psycholog. strategy)
7. Revision (critiquing, editing, proofreading, peer review)
8. Preparation of oral presentations (slides, drafting, rehearsal)
9. Delivery of oral presentations (credibility, eye-contact, attire)
10. Teamwork (constructive feedback, work ethic, conflict response)
11. Ethics (Laplacian determinism vs. free will; plagiarism; copyright)

Relationship of the Course to the Program Outcomes:

- (d) *An ability to function on multidisciplinary teams.* This course teaches students to provide appropriate peer and team feedback. This course also explores issues of team work ethic, team conflict response, team formation, and group hierarchy. Finally, this course asks students to prepare and deliver group presentations.
- (f) *An understanding of professional and ethical responsibility.* This course contrasts Laplacian determinism with quantum uncertainty. After concluding Laplace was wrong, this course explores the letter, spirit, and consequences of plagiarism in engineering contexts. This course then compares nebulous and highly dangerous conceptions of plagiarism with strictly delimited copyright law, and notes that both professionally personally speaking, plagiarism is more dangerous to engineering careers than copyright. This course concludes with simple rules which, if followed, will avoid both plagiarism and copyright violations.
- (g) *An ability to communicate effectively in written and oral form.* This course instructs students in both written and oral communication. This course teaches written communication as follows: First, students are required to analyze difficult assigned readings on a weekly basis. Second, lectures pick up where reading assignments left off, and emphasize the principles of strong technical writing. Third, students are asked to apply what they have learned by completing numerous written assignments that specifically underscore principles taught during lecture and illustrated in readings.

With respect to oral communication, ECE 3030 pedagogy is based on the Socratic method in which students are questioned directly by the instructor, in front of their peers. Second, ECE 3030 requires students to prepare lengthy public speeches on engineering topics.

- (i) *A recognition of the need for, and an ability to engage in, life-long learning.* This course enjoys an almost singular position in the ECE curriculum, as it demands students read articles and chapters of books outside students' field of study. This course also challenges students to engage in new and unfamiliar pedagogical methods (e.g., the Socratic method), which opens new vistas of learning. This course includes one unit on engineering and general creativity, founded on the writings of creative engineering and scientific polymaths.
- (j) *A knowledge of contemporary issues.* Assignments in this course focus on contemporary technological problems. Thus, students must propose a research topic comprising an unsolved, contemporary technological problem for lengthier written and oral assignments. Only once the topic has been approved can students begin researching and planning their IEEE-style articles and subsequent oral presentations. Furthermore, this course emphasizes ethos: Thus, when it comes time for research, literature review, and citation, students are required to locate and use six or more contemporary peer-reviewed sources to buttress their arguments.

Topics Covered in the Course:

- Please see items under "Course Objectives."