TECM 4700—Writing in the Sciences

Success in the professional scientific world hinges not only on good data but also on good communication. Language and writing are used by scientists and engineers to communicate findings and explain research results. A biologist might need to report the results of an experiment in which *Dictyostelium discoideum* was essential in learning that cytoskeletal proteins have overlapping functions, and an engineer the feasibility of building a special computer to monitor cardiac output by non-invasive means.

This course offers a hands-on approach to constructing the professional text produced by scientists and engineers. By the end of this course you should be able to

- use the writing process to develop rough and final drafts of scientific documents.
- determine audience, considering levels of understanding.
- synthesize scientific materials and communicate the main points effectively, using plain language.
- employ critical analysis of data using the methods of comparison and contrast, cause and effect, and problem solution.
- determine appropriate structures for reporting general information and specific data for a variety of scientific contexts.
- create computer-generated graphics, such as tables and graphs, to use scientific data to support a point.

Texts

There's no assigned textbook for this class. All required readings are linked to the "Schedule" page of Engrade.

However, I would suggest you invest in an introductory technical writing textbook by Markel, Lannon, or Anderson (they are all titled Technical Communication).

Assignments

Below is a list of the major assignments you will complete in this course and their grade weights.

- Critical Review, 10%
- Abstracts, 15%
- Process Explanation, 10%
- White Paper, 25%
- Briefing Note, 10%
- Oral Presentation, 10%
- Poster Presentation, 10%
- Homework and Participation, 10%
The following briefly describes these assignments. Detailed assignment descriptions are available on Engrade.

**Critical Review**
Select and critique a journal article that is important to your area of research. Read the article, analyze it, and evaluate the quality and originality of the research.

**Abstracts**
Write two abstracts for a journal article (i.e., the one you selected for the critical review). The *traditional abstract* is a 250-300-word summary of the entire paper. The *structured abstract* is 750-1000 words and includes distinct, labeled sections (e.g., introduction, methods).

**Process Explanation**
Choose an object or a process with which you are reasonably familiar and describe it to two different audiences via two different documents: a non-technical audience and a specialized audience.

**White Paper**
White papers are short documents that argue a specific position or propose a solution to a problem. Write a 6-8 page white paper on an approved topic of your choice.

**Briefing Note**
A briefing note is a short paper that quickly and effectively informs a decision-maker about an issue. Write a 2 page briefing note on the topic used for the white paper.

**Oral Presentation**
A 5-7 minute presentation on your white paper/briefing note topic.

**Poster**
A poster presentation is a condensed but highly visual way of delivering your research findings to audiences. Create a poster that overviews your research approaches and findings from the white paper and briefing note.

**Homework and Participation**
In addition to the major assignments, you will complete a series of homework assignments and in-class activities.

**Grading**
The following criteria serve as general guidelines for all assignments submitted in this course. Please take the time to familiarize yourself with these guidelines.
"A" (90-100%): A manager would be impressed and would remember the work when a promotion is discussed. In this course, that means work that is a pleasure to read, with excellent content, grammar, sentence structure, mechanics, and visual design. In addition, work is thorough, complete, coherent, well organized, supported sufficiently, and demonstrates a superior understanding of audience, purpose, and rationale.

"B" (80-89%): A manager would be satisfied with the job, but not especially impressed. This means that papers are well written and well produced, and demonstrate a substantial addition to the learning process. Work is sufficiently developed, organized, and supported, and demonstrates a solid understanding of audience, purpose, and rationale.

"C" (70-79%): A manager would be disappointed and ask you to revise or rewrite sections before allowing clients and others to see the work. In other words, the paper may have clear, but underdeveloped ideas, or the paper might not engage or affect the reader. The paper may contain some errors in grammar, mechanics, or logic.

"D" (60-69%): A manager would be troubled by the poor quality of work. This level of work forces the reader to work too hard to understand the main ideas. The paper may contain incomplete information, have serious grammar and mechanical problems, lack clear organization, or be conceptually unclear.

"F" (0-59%): A manager would start looking for someone to replace you. In particular, work fails to address the tasks of the assignment, is so underdeveloped as to demonstrate incompetence, and is mechanically and grammatically incomprehensible. This grade will also be assigned for any evidence of plagiarism.

**Schedule**

Below is a tentative schedule for TECM 5175. The schedule is subject to change pending our progress this semester.

<table>
<thead>
<tr>
<th>Date</th>
<th>Agenda</th>
<th>Readings Due</th>
<th>Assignments Due</th>
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</thead>
<tbody>
<tr>
<td>August 26</td>
<td>Intro to scientific writing, first-day memo</td>
<td>Anderson's &quot;Communication and Your Career&quot; (Ch. 1), Penrose's &quot;Science as a Social Enterprise&quot; (Ch. 1), &quot;Facebook science&quot; article</td>
<td>Previous writing samples (email)</td>
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<tr>
<td>August 28</td>
<td>Assign critical review, disambiguating near-synonyms</td>
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<tr>
<td>September 2</td>
<td>Reading a scientific journal article, hedges and boosters</td>
<td>Penrose's &quot;Reviewing Prior Research&quot; (Ch. 5)</td>
<td>Identify article for critical review (hardcopy)</td>
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<td>Date</td>
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<td>Assignments Due</td>
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<tr>
<td>September 4</td>
<td>Sentence- and paragraph-level organization, direct quoting and</td>
<td>Alred's &quot;Organizing Your Information&quot; (Ch. 2), Hoffman's &quot;References and</td>
<td>Hedges and boosters homework (homework)</td>
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<td></td>
<td>paraphrasing,</td>
<td>Plagiarism&quot; (Ch. 8)</td>
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<tr>
<td>September 9</td>
<td>Guided workshop for critical review</td>
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<td>Critical review (complete draft)</td>
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<td>September 11</td>
<td>Correspondence case study (direct/indirect writing styles), assign</td>
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<td>Critical review (final)</td>
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<td>abstracts</td>
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<tr>
<td>September 16</td>
<td>Abstract review, assign white paper, citation signals</td>
<td>Hoffman's &quot;Abstract&quot; (Ch. 14), Stelzner's &quot;A Primer on White Papers&quot; (Ch. 1)</td>
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<td>September 18</td>
<td>Library research demo</td>
<td>Hofmann's &quot;Figures and Tables&quot; (Ch. 9)</td>
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<tr>
<td>September 23</td>
<td>Guided workshop for abstracts</td>
<td></td>
<td>Abstracts (complete draft)</td>
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<tr>
<td>September 25</td>
<td>Technical graphics case study (figures and tables and document design</td>
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<td>Abstracts (final)</td>
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<td>basics)</td>
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<td>September 30</td>
<td>RFP exercise</td>
<td>Penrose's &quot;Writing Research Proposals&quot; (Ch. 7)</td>
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<td>October 2</td>
<td>Process explanations, linking adverbials</td>
<td>Reep's &quot;Writing Process Explanations&quot;</td>
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<td>October 7</td>
<td>Process reports</td>
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<td>Progress report on white paper topic</td>
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<tr>
<td>October 9</td>
<td>Guided workshop on process explanation</td>
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<td>Process explanation (complete draft)</td>
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<td>October 14</td>
<td>Boettger at IPCC (no class)</td>
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<td>Process explanation (final)</td>
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<td>October 16</td>
<td>Job applications, review white paper assignment</td>
<td>&quot;How to Write a Briefing Note&quot; (handout)</td>
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<td>October 21</td>
<td>Guided workshop on white paper</td>
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<td>White paper (complete draft)</td>
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<tr>
<td>October 23</td>
<td>Guided workshop on white paper</td>
<td></td>
<td>White paper (complete draft)</td>
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<tr>
<td>October 28</td>
<td>Assign briefing note assignment</td>
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<td>White paper (final)</td>
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<td>Date</td>
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<td>Assignments Due</td>
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<tr>
<td>October 30</td>
<td>Effective PowerPoint presentations</td>
<td>Hofmann's &quot;Oral Presentations&quot; (Ch. 28)</td>
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<td>November 4</td>
<td>Effective poster presentations</td>
<td>Hofmann's &quot;Posters&quot; (Ch. 27)</td>
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<td>November 6</td>
<td>Guided workshop on briefing note</td>
<td></td>
<td>Briefing note (complete draft)</td>
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<td>November 11</td>
<td>Graphics demo</td>
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<td>Briefing note (final)</td>
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<td>November 13</td>
<td>Junk science v. peer-reviewed science</td>
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<tr>
<td>November 18</td>
<td>Guided workshop on oral presentation</td>
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<td>Presentation slides (complete draft)</td>
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<td>November 20</td>
<td>Presentations on white paper (7)</td>
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<td>Oral presentations</td>
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<tr>
<td>November 25</td>
<td>Presentations on white paper (7)</td>
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<td>Oral presentations</td>
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<tr>
<td>November 27</td>
<td>Thanksgiving – No Class</td>
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<tr>
<td>December 2</td>
<td>Presentations on white paper (6)</td>
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<td>Oral presentations</td>
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<tr>
<td>December 4</td>
<td>Final class wrap up, poster workshop</td>
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<td>Poster (complete draft)</td>
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<tr>
<td>December 9</td>
<td>Presentations on white paper (8), final exam period 10:30am-12:30pm</td>
<td></td>
<td>Oral presentations, poster (final, email by 12:30pm)</td>
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</table>

**Policies**

These policies provide you with the formal regulations governing Dr. Boettger's sections of TECM 4700. Submission of your first assignment indicates you have read, understood, and agreed to the policies.

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Attendance

Your presence in this course is mandatory not optional. I take roll at the beginning of each class.

Any student who accumulates more than 3 absences during the semester will have his/her overall course grade lowered one letter.

Any student who accumulates 6 absences during the semester will be dropped from the course via a formal written request to the college dean. You will be notified at absence #5 that a drop is pending. If you have missed 6 classes, you have missed 20% of the semester. You will not have received sufficient exposure to the material to meet the goals and learning outcomes of the course.

Lates (tardies): These may be logged and can result in a lowered grade should they begin to accumulate. If, for example, a participation grade or quiz is given during the first 15 minutes and a student arrives late, a grade of zero (0) will be received for that assignment.

Leaving Class: Any student who leaves before the class has ended without my prior approval will automatically receive an absence for that day.

General Technology Requirements

As this is a graduate-level course, you are expected to be familiar with the day-to-day operation of computers including email (and sending attachments) and standard software. If you need to develop your computer skills, please consider signing up for the courses offered by the Computer and Information Technology Center.

You are also expected to have regular access to computing technology whether it be your computer at home or the computers provided by the Library. There are 14 computer labs on campus, including one 24-hour lab should the library be closed.

It is your responsibility to ensure that the computer(s) and disk(s) you use are functional and that you have, in the case of technological failure, backed up your data.

As a student at UNT, you can back up data, up to 25 GB, through SkyDrive. A corrupted disk or crashed hard drive does not constitute an excuse for late or unsubmitted work. If you need to bring electronic files to class, please email them to yourself as attachments or use the SkyDrive available through your EagleConnect account.

All students must have a valid UNT email address. You can forward your UNT email to your regular account (Hotmail, Yahoo, etc.), should you not wish to directly check your UNT account. It is also your responsibility to check your email regularly. I often use email to send class emails, including notices, updates, and advisories.
Assignment Submission

Format
I only accept assignments through email unless specified otherwise.

Deadlines
Your assignments must be emailed at beginning of class on the designated due date unless specified otherwise.

You will lose one letter grade (or 10%) per calendar day late for major assignments. If extenuating circumstances apply, your work will be due the day after you return from your athletic event or the day after you attend the emergency appointment or funeral.

You will fail the class if you do not attempt and submit ALL major assignments. Assignments more than a week (7 days) late automatically receive a grade of zero (0). It is your responsibility to turn in your work on time. Computer-related excuses will not be accepted.

Lastly, you may not use program templates (e.g., Word templates) to format any of your documents — these don’t encourage you to learn the programs and generally result in dull, unpersuasive documents.

Classroom Behavior

Student behavior that interferes with an instructor’s ability to conduct a class or other students’ opportunity to learn is unacceptable and disruptive and will not be tolerated in any instructional forum at UNT. Students engaging in unacceptable behavior will be directed to leave the classroom and the instructor may refer the student to the Center for Student Rights and Responsibilities to consider whether the student’s conduct violated the Code of Student Conduct. The university’s expectations for student conduct apply to all instructional forums, including university and electronic classroom, labs, discussion groups, field trips, etc. The Code of Student Conduct can be found at <www.unt.edu/csrr>.

Academic Dishonesty & Integrity

It is your responsibility to become familiar with UNT’s Policy of Academic Dishonesty.

This policy defines the following forms of academic dishonesty:

- **Cheating** intentionally using or attempting to use unauthorized materials, information, or study aids in any academic exercise. The term academic exercise includes all forms of work submitted for credit or hours.
• **Plagiarism** the deliberate adoption or reproduction of ideas, words, or statements of another person as one's own without acknowledgement.
• **Fabrication** intentional and unauthorized falsification or invention of any information or citation in an academic exercise.
• **Facilitating** academic dishonesty intentionally or knowingly helping or attempting to help another to violate a provision of the institutional code of academic integrity.

If any course material is submitted that violates this policy of academic dishonesty, the assignment will receive a grade of "F" and appropriate judicial action will be filed. This action includes a report of academic misconduct to your college Dean and possible dismissal from The University of North Texas. There are no first-offense warnings regarding plagiarism.

As this is a graduate-level course it is expected that plagiarism and the correct use (citation) of other's ideas (including print, digital, images, and other media) are fully understood. Contact me if you're ever confused about what constitutes academic dishonesty. Misunderstandings, miscommunication, oversights, or lack of comprehension as to what constitutes academic dishonesty is not accepted in this course.

**Accommodations (Special Arrangements)**

**UNT Office of Disability Accommodations**

Any student who, because of a disability, may require special arrangements in order to meet course requirements should contact me as soon as possible to make necessary accommodations.

UNT's Office of Disability Accommodations offers a variety of services but require qualified students to follow an application process. Please check their Web site for more information on these procedures and their deadlines.

New ODA policy – *The University of North Texas is on record as being committed to both the spirit and letter of federal equal opportunity legislation; reference Public Law 92-112 – The Rehabilitation Act of 1973 as amended. With the passage of new federal legislation entitled Americans with Disabilities Act (ADA), pursuant to section 504 of the Rehabilitation Act, there is renewed focus on providing this population with the same opportunities enjoyed by all citizens.*

**Religious Holidays**

Students needing to miss class due to the observance of an officially recognized religious holy day are asked to consult with me in advance so we can schedule missed work accordingly.

**Instructor Information**

TECM 4700 Syllabus – Page 8 of 9
Instructor: Dr. Ryan Boettger
E-mail address: ryan [dot] boettger [at] unt [dot] edu
Office number: AudB 317/314
Office hours: By appointment