

# Technical Writing 1

## Course Syllabus

### Course Description

In this course, students will develop the scientific and technical reading and writing skills they need to understand and construct research articles. The course will be divided into two parts. In Part One of the course, students will learn the basic principles of writing in science and engineering. First, they will consider what research is and how it differs from the study that they will normally do in school or university. They will also learn about the research process and how it is reflected in the writing of a research paper. Next, students will look at six fundamental aspects of writing and learn how they apply to research papers in science and engineering. These are audience, purpose, organization, flow, style, and presentation. In Part Two of the course, students will plan and carry out a short research project and then write up the results of the project as a research paper. First, students will be guided in choosing a topic to investigate and then instructed on how to narrow the focus of the topic before constructing a working-title. Next, they will learn about the characteristic features of research paper introductions, and see how expert writers summarize previous work using references and citations. Then, the focus will move to the materials and methods section. Here, students will learn how to explain materials, methods, and processes in the correct tense and voice. Next, students will learn how to write up the results and discussion of their research, visualizing data in the form of tables and charts, explaining trends and patterns in their data, and adjusting the strength of their options with hedging devices. Finally, students will learn how to summarize their entire research paper in the form of a short one or two paragraph abstract.

### Course Goals

- Understand the concepts of research and the research process
- Understand the importance of audience, purpose, organization, flow, style, and presentation in the construction of a science and engineering research paper
- Understand research journal “Instructions for Authors” guides
- Write the title, introduction, materials and methods, results, and discussion sections of a research paper
- Explain information in figures and charts
- Know how to strengthen or weaken interpretations of research findings using hedging devices
- Follow common conventions for citing and referencing information in a research paper to avoid plagiarism

### Textbook and Materials

Course materials will be distributed in the first lesson of the course.

### Grading

Student evaluations will be based on a series of written reports, class participation, and an end of term report. Students will be evaluated based on a portfolio of work comprising of:

1. A end-of term paper describing an individual or group research project carried out during the course (80%).
2. In-class participation / Textbook exercises / Homework (20%)

## Course Schedule

Week 1	Introduction to Science and Engineering (1): What is research? How do you structure a research paper?
Week 2	Introduction to Science and Engineering (2): analyzing research papers in specialized fields
Week 3	Writing at the Macro Level (1): audience, purpose, organization
Week 4	Writing at the Macro Level (2): audience, purpose, organization
Week 5	Writing at the Micro Level (1): flow, style and presentation
Week 6	Writing at the Micro Level (2): flow, style and presentation
Week 7	Writing a research paper proposal: brainstorming topics, narrowing the scope, finalizing the decision
Week 8	Writing a research paper title: keywords, noun phrases, and prepositions
Week 9	Writing a research paper introduction (1): characteristic features and structure of introductions
Week 10	Writing a research paper introduction (2): explaining the situation, describing problems/limitations, describing the response
Week 11	Writing a research paper methods section: explaining methods and processes
Week 12	Writing a research paper results section: deciding the type of visual aid, explaining figures and tables
Week 13	Writing a research paper discussion/conclusion section: summarizing results, adjusting the strength of interpretations using hedging
Week 14	Writing a research paper abstract: choosing between indicative and informative abstracts
Week 15	Wrap-up: Summary of course Final report submission details

## Other

1. Students are expected to attend each class, and actively participate in group and class discussions. Students will also be required to complete all homework exercises, and submit an extended report at the end of the semester.
2. Bringing an advanced English/Japanese dictionary to class is recommended.
3. Students should bring a sample of their writing from a previous course (e.g. CBD1/2) to the first class if available.

## End-of-Term Paper Grading Rubric

Grade	Details
A+	<p>Overall&gt; Shows fluency in both language use and ideas.</p> <ul style="list-style-type: none"> <li>• Mechanics <ul style="list-style-type: none"> <li>➤ Follows the journal template (headings/presentation/layout)</li> <li>➤ Spell and grammar checked</li> </ul> </li> <li>• Citation/References <ul style="list-style-type: none"> <li>➤ Cites all sources and references these correctly</li> <li>➤ Uses all appropriate and high level sources (at least one journal article)</li> </ul> </li> <li>• Paragraphs <ul style="list-style-type: none"> <li>➤ Writes in paragraphs of over 3 sentences</li> <li>➤ Paragraphs include topic sentences</li> <li>➤ Paragraphs are linked with logical connectors</li> </ul> </li> <li>• Style <ul style="list-style-type: none"> <li>➤ Shows good understanding of formal academic writing style (correct verb usage, no run on expressions, no slang, preciseness, no contractions, limited use of “I” “You”, no direct questions)</li> </ul> </li> <li>• Grammar <ul style="list-style-type: none"> <li>➤ Shows good understanding of tense/voice usage in different sections of a paper</li> <li>➤ Complex sentence structure is used</li> <li>➤ Discussions are hedged</li> <li>➤ Shows good understanding of article usage</li> </ul> </li> <li>• Organization <ul style="list-style-type: none"> <li>➤ Titles: detailed and structured correctly</li> <li>➤ Introduction: discusses background/past research and the problems (with citations)</li> <li>➤ Methods: written in correct tense/voice; procedure is clear, search engines and sources or materials and procedures described</li> <li>➤ Results: describes main points in figures/tables</li> <li>➤ Discussion: discusses results with correct hedging</li> </ul> </li> </ul>
A	<p>Overall&gt; Very well written paper with clear ideas and clear language but with minor errors.</p> <ul style="list-style-type: none"> <li>• Mechanics <ul style="list-style-type: none"> <li>➤ Follows the journal template with only minor errors</li> <li>➤ Spell and grammar checked but there may be minor mistakes</li> </ul> </li> <li>• Citation/References <ul style="list-style-type: none"> <li>➤ Sources are cited and referenced correctly</li> </ul> </li> <li>• Paragraphs <ul style="list-style-type: none"> <li>➤ Writes in paragraphs of over three sentences</li> <li>➤ Paragraphs include topic sentences</li> <li>➤ Sentences are usually connected but there may be minor errors in logical connectors</li> </ul> </li> <li>• Style <ul style="list-style-type: none"> <li>➤ Shows an understanding of formal academic writing style but there are minor mistakes</li> </ul> </li> <li>• Grammar <ul style="list-style-type: none"> <li>➤ Shows understanding of tense/voice usage</li> <li>➤ Correct sentence structure is used; little or no awkward phrasing is seen</li> <li>➤ Hedging is used</li> <li>➤ Shows an understanding of article usage but minor mistakes exist</li> </ul> </li> <li>• Organization <ul style="list-style-type: none"> <li>➤ Titles: detailed and structured correctly; some minor mistakes may exist</li> <li>➤ Introduction: discusses background/past research and the problems (with citations); some minor mistakes may exist</li> <li>➤ Methods: written in correct tense/voice; some minor mistakes may exist; procedure is clear, search engines and sources or materials and procedure described</li> <li>➤ Results: describes main points in figures/tables; some minor mistakes may exist</li> <li>➤ Discussion: discusses results with correct hedging; some minor mistakes may exist</li> </ul> </li> </ul>
B	<p>Overall&gt; Macro issues (purpose, organization, paragraph structure) are all strong but micro issues (grammar, sentence structure) may be problematic.</p> <ul style="list-style-type: none"> <li>• Mechanics <ul style="list-style-type: none"> <li>➤ Follows the journal template with some errors</li> <li>➤ Various spelling and grammar mistakes are noticeable but overall meaning is clear</li> </ul> </li> <li>• Citation/References <ul style="list-style-type: none"> <li>➤ Most sources are correctly cited and referenced but may show problematic formatting</li> </ul> </li> <li>• Paragraphs <ul style="list-style-type: none"> <li>➤ Most paragraphs are at least three sentences long</li> <li>➤ Most paragraphs have good topic sentences</li> <li>➤ Many sentences are disjointed or use a very limited number of logical connectors</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>• Style <ul style="list-style-type: none"> <li>➤ Attempts to write in formal academic writing style but problems remain (logical connectors, no contractions, no run-on expressions, limited use of “I” “You”, no direct questions)</li> </ul> </li> <li>• Grammar <ul style="list-style-type: none"> <li>➤ Tense/voice problems are evident but sentence meaning is clear</li> <li>➤ Basic sentence structure is good but there is some awkward phrasing</li> <li>➤ Hedging is weak</li> <li>➤ Various article mistakes are noticed</li> </ul> </li> <li>• Organization <ul style="list-style-type: none"> <li>➤ Titles: some structure links and/or content are not appropriate</li> <li>➤ Introduction: limited discussion of background/past research with little citation making the section unconvincing</li> <li>➤ Methods: mistakes in tense/voice and several steps are not clear; procedure is mostly clear, search engines and sources are basically described</li> <li>➤ Results: limited use of figures/tables with only brief explanation</li> <li>➤ Discussion: discusses results in simple fashion with little hedging</li> </ul> </li> </ul>
C	<p>Overall&gt; Problems exist with macro issues and poor sentence construction make meaning difficult to follow; however, the paper shows evidence of understanding of the material presented in class</p> <ul style="list-style-type: none"> <li>• Mechanics <ul style="list-style-type: none"> <li>➤ The template is largely ignored</li> <li>➤ Various spelling and grammar mistakes are noticeable and overall meaning is not always clear</li> </ul> </li> <li>• Citation/References <ul style="list-style-type: none"> <li>➤ Citation and/or referencing are very limited or problematic.</li> </ul> </li> <li>• Paragraphs <ul style="list-style-type: none"> <li>➤ Paragraphs are less than three sentences long.</li> <li>➤ Topic sentences are often missing</li> <li>➤ Few or no logical connectors are used</li> </ul> </li> <li>• Style <ul style="list-style-type: none"> <li>➤ Little attempt to write in a formal academic writing style (logical connectors, no contractions, no run-on expressions, limited use of “I” “You”, no direct questions)</li> </ul> </li> <li>• Grammar <ul style="list-style-type: none"> <li>➤ Tense problems are clear</li> <li>➤ Hedging is very weak or non-existent</li> <li>➤ Many article mistakes are apparent</li> </ul> </li> <li>• Organization <ul style="list-style-type: none"> <li>➤ Titles: overly simple and some structure links and/or content are not appropriate</li> <li>➤ Introduction: limited discussion of background/past research with little citation making the section unconvincing</li> <li>➤ Methods: mistakes in tense/voice and several steps are not clear</li> <li>➤ Results: limited use of figures/tables with only brief explanation</li> <li>➤ Discussion: discusses results in simple fashion with no hedging</li> </ul> </li> </ul>
F	<p>Overall&gt; Paper does not demonstrate an understanding of macro issues, and significant micro errors make understanding difficult.</p> <ul style="list-style-type: none"> <li>• The final report is not submitted or outline was not approved</li> <li>• The final report shows evidence of plagiarism (more than 20% with no evidence of an attempt to paraphrase and cite when using original or translated sentences)</li> <li>• The final report does not match the content of the in-class project</li> <li>• Mechanics - the template is ignored and the overall meaning is not clear</li> <li>• Citation/References are missing completely</li> <li>• Paragraphs - are less than three sentences long and topic sentences are missing</li> <li>• Style - No attempt to write in a formal academic writing style</li> <li>• Grammar - Tense problems are clear. Hedging is non-existent. Most sentences contain article mistakes</li> </ul>