

Technical Writing, B.S.

The B.S. in Technical Writing

The B.S. in Technical Writing (TW) is one of the oldest undergraduate technical communication degrees in the country with a history that stretches back to 1958. The program prepares students to produce clear and effective communication that translates complex scientific and technical information for diverse audiences. Whether students come from writing backgrounds seeking to engage with STEM fields, or from STEM disciplines looking to develop the communication skills employers demand, the degree offers a flexible, individually tailored course of study. Students engage in intensive practice in writing, editing, and user-centered design alongside technical and scientific coursework.

This interdisciplinary curriculum positions graduates for a field defined by ongoing shifts in media, tools, and communication practice. Career paths include technical writing, science and medical communication, UX writing, content strategy, and information design, among others.

Program Learning Outcomes

- **Professional Writing Proficiency:** Produce professional documents across standard genres (correspondence, reports, instructions, proposals) and platforms (print and digital media) that demonstrate mastery of writing conventions, including grammar, clarity, concision, and organization.
- **Rhetorical Knowledge and Analysis:** Apply rhetorical theory and principles to analyze communication as a complex rhetorical process; evaluate existing documents, identify strengths and weaknesses, and adapt information for different audiences, purposes, and contexts.
- **Visual Communication and Document Design:** Apply principles of document design, typography, and visual hierarchy to create professional documents that effectively integrate textual and visual elements; use relevant design software to produce print and digital media.
- **Research Methods:** Utilize appropriate methods to gather, evaluate, and develop information from primary and secondary sources; incorporate research effectively into professional documents; and conduct basic user and usability testing to evaluate communication effectiveness.
- **Professional and Ethical Practice:** Apply professional writing ethics, particularly the responsible use of information; demonstrate professional workplace behaviors including collaborating effectively, meeting deadlines, and addressing organizational concerns in communications.
- **Technical Foundation:** Apply fundamental technical skills (calculus, statistics, computer programming, etc.) in the creation and evaluation of technical communication, with track-specific depth in either specialized technical fields (TC track (<https://www.cmu.edu/dietrich/english/academic-programs/technical-writing/tw-primary-major.html>)) or scientific disciplines (SMC track (<https://www.cmu.edu/dietrich/english/academic-programs/technical-writing/tw-primary-major.html>)).

Technical Writing Tracks

The B.S. in TW recognizes the important changes taking place in communication-based careers and includes two distinctive tracks, one in Technical Communication (TC) and one in Scientific and Medical Communication (SMC). Both tracks begin with a common core of foundation courses, as well as a shared set of prerequisites in math, statistics, and computer programming. The two tracks differ in the set of theory/specialization courses beyond the core, with each track including a specialized set appropriate to its focus, as well as with electives outside of the Department of English to deepen their area of specialty in their track.

In both tracks, TW students:

- work on real projects for actual clients,
- learn group interaction and management skills,
- and develop a flexible repertoire of skills and strategies to keep up with advances in software and technology.

Above all, they focus on developing structures and information strategies to solve a broad range of communication and information design problems.

TW students are able to draw on exceptional resources on and off campus to enhance their education. Most obvious are the course offerings of

Carnegie Institute of Technology, the Mellon College of Science, and the School of Computer Science. Additional course offerings in business, organizational behavior, policy and management, psychology, history, and design are also encouraged. TW students can also apply for grants and fellowship through the **Office of Undergraduate Research and Scholar Development** (<https://www.cmu.edu/uro/>) to work on independent research projects with faculty.

While the TW major appeals to students with strong professional interests, both core and elective requirements develop the broad intellectual background one expects from a university education and prepare students to either enter the workplace upon graduation or pursue graduate study in fields as diverse as communications, business, instructional design, information design, education, and science and healthcare writing. Additionally, all TW students are required to enroll in Professional Seminar (76-300), which meets once a week during the fall term and provides majors with the opportunity to meet and network with practicing professionals in a range of communications fields.

The Technical Communication (TC) Track

The Technical Communication track (TC) prepares students for careers in the rapidly changing field of technology, digital media, and information design. Students learn the fundamentals of visual, verbal, and on-line communication as well as the technical skills needed to design, communicate, and evaluate complex communication systems and to manage the interdisciplinary teams needed to develop them. Students become fluent in both print-based and electronic media across a variety of information genres and learn to design information for a range of specialist and non-expert audiences. The TW/TC major can be pursued as a primary major within Dietrich College or as an additional major for students in other Colleges with an interest in combining their specialized subject matter knowledge with strong writing and communications skills. Graduates of this track are likely to follow in the footsteps of previous TW students from Carnegie Mellon who are currently employed as technical writers, content designers, and information consultants in a range of technology and communication-based organizations including Salesforce, Google, Apple, IBM, Oracle, and Microsoft.

The Scientific and Medical Communication (SMC) Track

The Scientific and Medical Communication track (SMC) is designed for students who seek careers that focus on communication and information design problems in health, science, and medicine. It should appeal to students with interests in the health care professions, science and public policy, patient education, science journalism and related fields. Like the TC track, the SMC track is designed to provide both the technical and the communication skills needed to analyze and solve complex communication problems. Students learn the fundamentals of visual, verbal, and on-line communication as well as the technical skills needed to design, communicate, and evaluate complex information systems and to manage the interdisciplinary teams needed to develop them. Students become fluent in both print-based and electronic media across a variety of information genres and learn to design information for a range of specialist and non-expert audiences. The TW/SMC major can be pursued as a primary major within Dietrich College or as a secondary major for students in other Colleges, such as the Mellon College of Science, with an interest in science or medicine.

Curriculum

In addition to fulfilling all of the Dietrich College of the Humanities & Social Sciences degree requirements for B.S. candidates, Technical Writing majors must fulfill **16-17 courses** (depending on Track) for a **minimum of 134-146 units** (depending on Track), **which includes** a set of three to four prerequisite courses in calculus, statistics, and computer science. All prerequisites should be completed by end of sophomore year. Prerequisites may double count without limit toward requirements for other majors, minors, and general education curricula.

Mathematics Prerequisite (1 course) 10 units

Complete one of the following:		Units
21-111	Differential Calculus	10
21-112	Integral Calculus	10
21-120	Differential and Integral Calculus	10

21-127	Concepts of Mathematics	12
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Statistics Prerequisite (1 course) 9 units

36-200	Reasoning with Data	9
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Computer Science Prerequisites (1 - 2 courses*) 10-22 units

TC Track:

Students in the Technical Communication (TC) track must complete two required Computer Science courses:

15-110	Principles of Computing	10
15-112	Fundamentals of Programming and Computer Science	12

SMC Track:

Students in the Scientific and Medical Communication (SMC) track complete one required Computer Science course:

15-110	Principles of Computing	10
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15-110 Principles of Computing is designed for students with little or no prior programming experience and is appropriate for students in both the SMC and TC tracks. 15-112 Fundamentals of Programming and Computer Science prepares students in the TC track for all other advanced Computer Science courses.

Beyond these prerequisites, students in both TC and SMC tracks take a common set Core Requirements in writing, communication, professional development, and information design and architecture.

Departmental Core Requirement (1 course) 9 units

Introductory Genre Writing Course

76-212	Introduction to TV Writing	9
76-260	Introduction to Writing Fiction	9
76-261	Intro to Writing Creative Nonfiction	9
76-265	Introduction to Writing Poetry	9
76-269	Introduction to Screenwriting	9

TW Core Requirements (6 courses) 42 units

76-271	Introduction to Professional and Technical Writing	9
76-300	Professional Seminar	3
76-390	Style	9
76-391	Document & Information Design	9
76-487	Information Architecture & Content Strategy	9
76-488	Information Architecture & Content Strategy Lab	3

* prerequisite = 76-271 Introduction to Professional and Technical Writing

**prerequisite = 76-271 Introduction to Professional and Technical Writing + 76-391 Document & Information Design

Theory/Specialization Courses (3 courses) 27 units

To complement the Core Requirements listed above, TW students take a set of three Theory/Specialization courses specific to either the TC or SMC track. In addition, students in the TC track take 3 electives in management, technology, and social issues, and students in the SMC track take a series of three courses in the natural sciences or engineering relevant to their areas of interest.

Complete three courses to deepen your area of specialty and complement your chosen track (TC or SMC) in the major. At least one course must be chosen from the Recommended Courses list for TW majors. The other two courses may be chosen from the Recommended Courses list and/or the Additional Options list. TW students should select courses in consultation with the Department of English academic advisor.

Recommended Courses

Recommended Courses include but are not limited to the following (choose one):

76-375	Emerging Technologies in Writing	9
76-395	Science Writing	9
76-425	Rhetoric, Science, and the Public Sphere	9
76-474	Software Documentation	9
76-476	Rhetoric of Science	9
76-490	Digital Rhetorics	9
76-494	Healthcare Communications	9

Additional Options include but are not limited to the following:

76-318	Communicating in the Global Marketplace	9
76-325	Intertextuality	9
76-366	Grant and Proposal Writing	9
76-372	News Writing	9
76-375	Emerging Technologies in Writing	9
76-389	Rhetorical Grammar	9
76-395	Science Writing	9
76-425	Rhetoric, Science, and the Public Sphere	9
76-474	Software Documentation	9
76-475	Law, Performance, and Identity	9
76-476	Rhetoric of Science	9
76-481	Introduction to Multimedia Design	12
76-490	Digital Rhetorics	9

Electives (3 courses) 27 units minimum

TW majors take three courses outside of English to deepen their area of specialty in their track. Typically, students in the TC track select courses that focus on management, technology, and social issues. Students in the Science and Medical Communication (SMC) track select courses in the natural sciences, engineering, or statistics. Students should work with the Department of English academic advisor and the TW Program Director to select courses that are meaningful for their track.

Electives for the TC Track (choose 3):

Technical Communication Electives

19-211	Ethics and Policy Issues in Computing	9
19-403	Policies of Wireless Systems	12
03-121	Modern Biology	9
36-309	Experimental Design for Behavioral & Social Sciences	9
36-350	Statistical Computing	9
42-202	Physiology	9
51-261	Communication & Digital Design Fundamentals	9
51-262	Communication and Digital Design Fundamentals	9
51-264	Product Design Fundamentals	9
70-311	Organizational Behavior	9
70-332	Business, Society and Ethics	9

70-342	Managing Across Cultures	9
79-212	Jim Crow America	9
79-230	The Arab-Israeli Conflict and Peace Process Through 1948 to Present	9
80-220	Philosophy of Science	9
80-221	Philosophy of Social Science	9
80-234	Philosophy of Race and Gender	9
80-244	Environmental Ethics	9
85-213	Human Information Processing and Artificial Intelligence	9
85-241	Social Psychology	9
85-370	Cognitive Neuropsychology Research Methods	9
88-341	Team Dynamics and Leadership	9
88-366	Behavioral Economics of Poverty and Development	9

Electives for the SMC Track (choose 3):

Students following the SMC Track must take three courses from any of the following subject areas/codes:

- Biology: 03-xxx
- Chemical Engineering: 06-xxx
- Chemistry: 09-xxx
- Civil Engineering: 12-xxx
- Electrical & Computer Engineering: 18-xxx
- Mechanical Engineering: 24-xxx
- Materials Science & Engineering: 27-xxx
- Physics: 33-xxx
- Biomedical Engineering: 42-xxx

Double Counting

Students may double count up to two courses with other programs outside of the Department of English. **NOTE:** courses being used for the **Dietrich General Education** (<http://coursecatalog.web.cmu.edu/schools-colleges/dietrichcollegeofhumanitiesandsocialsciences/general-education/>) requirements do not have a double-counting limit. Also, the *Mathematics* and *Computer Science* prerequisite requirement courses for the Technical Writing major do not have a double-counting limit, nor do the Electives required for each specific track (TC track or SMC track).

Transfer Courses

Students may transfer up to two advisor-approved courses from other non-CMU programs/institutions toward the primary or additional major in Creative Writing or the BHA in Technical Writing, **with the exception of the Introductory Genre Writing Course and Technical Writing Core Requirement Courses**. If the two-course maximum is met, other related transfer courses will be considered for general education requirements and free electives for graduation. Please see the **Dietrich College Advanced Standing and Transfer Credit Policy** (<https://www.cmu.edu/dietrich/advisory-center/scheduling-classes/ap-and-transfer-credit.html>) for more information.

Recommended Curriculum Pathway: B.S. in Technical Writing

This plan is the recommended pathway for completing the B.S. in Technical Writing in four years. While it is not required for students to follow this pathway precisely, it is highly recommended for students to do so, and we recommend students begin the major's courses as early as possible. Students in Dietrich College may declare their primary major as early as February 1. Students who have not declared their major in the Department of English may still take courses with us.

Students may also view the four-year plan (also known as a Pathway) for the B.S. in Technical Writing via the **Stellic Degree Audit Application** (<https://www.cmu.edu/es/stellic/>).

First-Year		Second-Year	
Fall	Spring	Fall	Spring
GEN ED: Foundations: Communication Course	GEN ED: Foundations Data Analysis Course	GEN ED: Foundations Scientific Inquiry Course	GEN ED: Foundations Intercultural & Global Inquiry
GEN ED: Disciplinary Perspectives: Humanities Course	GEN ED: Disciplinary Perspectives: Social Sciences Course	15-112 Fundamentals of Programming and Computer Science (for TC Track students only)	GEN ED: Perspectives on Justice & Injustice
GEN ED: Grand Challenge Seminar Course	15-110 Principles of Computing	TW: Introductory Genre Writing Course	76-390 Style
TW: Mathematics Prerequisite Course	76-271 Introduction to Professional and Technical Writing*	76-300 Professional Seminar	TW: Technical Communication Elective #1 (TC Track students) OR Free Elective (SMC Track students)
Free Elective	Free Elective	Free Elective	Free Elective

Third-Year		
Fall	Spring	Summer
GEN ED: Foundations: Contextual Thinking	Open for course exploration, requirements for other majors/minors, study abroad, etc.	GEN ED: Experiential Learning
GEN ED: Disciplinary Perspectives: The Arts	Open for course exploration, requirements for other majors/minors, study abroad, etc.	
76-391 Document & Information Design*	Open for course exploration, requirements for other majors/minors, study abroad, etc.	
TW: Technical Communication Elective #2 (TC Track students) OR Natural Science & Engineering Elective #1 (SMC Track students)	Open for course exploration, requirements for other majors/minors, study abroad, etc.	
Free Elective	Open for course exploration, requirements for other majors/minors, study abroad, etc.	

Fourth-Year	
Fall	Spring
GEN ED: Disciplinary Perspectives: Additional Course (Business, Design, Engineering)	TW: Theory and Specialization Course #3
TW: Theory and Specialization Course #1 (from Recommended List)	TW: Free Elective (TC Track students) OR Natural Science & Engineering Elective #3 (SMC Track students)
TW: Theory and Specialization Course #2	76-487 Information Architecture & Content Strategy*
TW: Technical Communication Elective #3 (TC Track students) OR Natural Science & Engineering Elective #2 (SMC Track students)	76-488 Information Architecture & Content Strategy Lab*
Free Elective	Free Elective

* These courses must be taken in the sequence indicated. 76-271 is offered all semesters and therefore can be taken fall or spring of sophomore year. 76-271 is a prerequisite for 76-391, and 76-271 + 76-391 are the prerequisites for 76-487 and 76-488. 76-391 is typically only offered in the fall semesters, and 76-487 and 76-488 are typically only offered in spring semesters.