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The history of technical communication instruction at Missouri University of Science and Technology: the evolution of a curriculum

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THE HISTORY OF TECHNICAL COMMUNICATION INSTRUCTION AT MISSOURI UNIVERSITY OF SCIENCE AND TECHNOLOGY: THE EVOLUTION OF A CURRICULUM

by

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ABSTRACT

This thesis provides a written record of the history of technical communication instruction at Missouri University of Science and Technology (Missouri S&T). Beginning with the school's inception in 1871 as the Missouri School of Mines and Metallurgy (MSM) through to the year 2005, I have examined course catalogs and department files and conducted interviews to provide an overview of the evolution of technical communication instruction at this institution. To better understand this evolution, I have also provided a framework for the development of the English department from a single course in 1871 to the current Department of English and Technical Communication.

In addition to recording the history of technical communication instruction at Missouri S&T, I have conducted research on the history of technical communication instruction at colleges and universities similar to Missouri S&T. This research involved reading literature on the history of technical communication instruction at these similar universities. I also read literature on the influences of technical communication instruction in general. This research allowed me to contextualize the evolution of technical communication instruction at Missouri S&T within the appropriate framework of technical communication instruction at similar colleges and universities in the United States and to contribute a case study to the developing research of the history of the teaching of technical communication in the United States.

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I must first and foremost thank the members of my committee for working so patiently and diligently with me throughout my research. Dr. Edward Malone, my advisor, continually expected me to contribute my best to this research and refused to accept anything less. This thesis is a much stronger body of work as a result of his demand for excellence. I am forever indebted to him for his belief in my abilities as both a researcher and writer.

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I was also very fortunate to have Dr. David Wright serve on my committee. He offered words of encouragement and support when I needed them most and I am grateful to have had him serve on my committee.

I must thank Melody Lloyd, assistant archivist at Missouri S&T. She was so patient in lending me course catalogs and allowed archived boxes to sit in her office for months at a time. I certainly could not have completed this work without her help.

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1. INTRODUCTION

1.1. THE CURRICULUM

Ask those in the surrounding communities what is taught at the Missouri University of Science and Technology (Missouri S&T) and you will likely be told time and time again "engineering and science." Certainly, the students, faculty, and staff on campus will tell you the primary goal is to further knowledge in the fields of science and engineering even though, strictly speaking, the university's mission is broader in scope. A look at degree programs that are offered at the University further reveals this primary aim. The school's name was even changed in 2009 from the University of Missouri-Rolla to the Missouri University of Science and Technology to reflect the University's national mission (*University of Missouri-Rolla*, 2006).

Science and engineering degrees, however, are not the only degrees offered at this campus. In addition to the humanities and social science degrees already in place, in 2005, both a Bachelor of Science and a Master of Science in Technical Communication were added to the list of degree programs available to students ("Department Profile," 2008). While these programs are still relatively new, the curriculum of the bachelor's degree assimilated some pre-existing courses and a long tradition of writing instruction at the university. In fact, science and engineering students at the University have been taking writing courses for over 100 years.

1.2. PURPOSE OF THIS RESEARCH

Technical communication instruction is often taught with one of two overriding, distinct purposes: to teach the would-be scientist or engineer how to communicate technical information and to teach the career technical communicator how to

communicate technical information. Not until the 21st century did Missouri S&T officially turn its attention to the preparation of professional technical communicators.

Answering the research questions I pose in this study indicates not only how the technical communication curriculum evolved but also who was influential in that evolution. As a result, this study gives a voice to those unable to speak as well as provides a permanent written record of the history of technical communication instruction on this campus. In my research, I sought to answer two sets of questions. The first set of questions includes the following:

- What is the history of technical communication instruction at Missouri S&T?
- What is the evolution of the curriculum in technical communication?
- Who was influential in the development of technical communication instruction?
- How were technical communication courses influenced by political pressure?
- What was the timeframe for the development of the current technical communication programs?
- What were the major factors of this timeframe?

Researching and understanding the history of technical communication instruction at the University also helps create a clearer picture of academic programs in technical communication. As one scholar invested in the academic history of technical communication wrote, "Understanding the gradual emergence of technical writing in America means understanding the academic environment in which the discipline was first taught – namely, English and/or engineering departments in predominantly technological,

four-year institutions" (Kynell, 2000, p. 7). Thus, I will also try to answer the following question:

- How does the evolution of technical communication instruction at Missouri S&T compare with that at other similar universities?

Most importantly, understanding the development of technical communication instruction at the University can help us gain a more informed and applicable understanding of the evolution of the academic discipline of technical communication as a whole.

1.3. DEFINING *TECHNICAL*

To understand my definition of technical communication, I must first explain my definition of *technical.* Often, when the word *technical* is used, it is used in reference to machines and procedures, for example, computer software and automobile assembly lines. The use of *technical* to describes tools and procedures thus limits the breadth of all that *technical* can encompass (Dobrin, 1983).

In a broader sense, the term *technical* has been used to describe "any materials or human-created processes that help people act or think" (Careers in Technical Communication, 2008). This much larger understanding allows the word to show the "way that people, machines, concepts, and relationships are organized" and "is crucial to the definition" (Dobrin, 1983, p. 243). The focus is not only on the design but also on everything "concerned with creating and implementing" that design (Dobrin, 1983, p. 243). "Technology refers equally to *knowledge*, *actions*, and *tools*: it is (for example) a network of constructed waterways, the knowledge of when and how to irrigate fields, and

the entire set of human actions that comprise this method for farming" (Durack, 1997, p. 258).

I define *technical* in the much broader sense as well. I define *technical* as referring to the relationship among people, procedures, and materials. The interaction that takes place within this relationship is a *technical* interaction. Thus, for the purpose of this study, technical communication is not simply the *technical* information being conveyed nor is it the *technical* nature in which it is conveyed. *Technical* also refers to the creation and methods of creating communication. Thus, *technical* communication is not only a product but also a process.

1.4. DEFINING TECHNICAL COMMUNICATION

For the purpose of this study, I define *technical communication* as the communication of technical information through verbal (whether written or oral) and nonverbal (e.g., visual) means. There are some who distinguish technical writing, editing, publishing, and other related activities from technical communication. I consider these activities to be part of technical communication. I acknowledge that my definition of technical communication is broad.

Working from a broad definition of technical communication, I suggest that the curriculum of technical communication should cover all aspects of communication: physical gestures (hand gestures, facial features, etc.), visuals (charts, graphs, images, etc.), oral discourse and written discourse – all working together to convey technical information. Thus, the curriculum of technical communication can include the study of a research proposal, usability report, online instruction manual, presentation, and websites of a technical, academic, and professional nature.

Even though the term *technical communication* was not widely used in this sense until the 1970s, I am applying this term anachronistically because it was sometimes used in its modern sense in earlier decades and better describes the historical practice than the narrower term *technical writing* (Malone, 2010). All research conducted and analyzed adheres to these definitions.

1.5. HISTORICAL STUDY IN TECHNICAL COMMUNICATION

There have been many studies of prominent figures in technical communication (Brockman, 1983). These studies, while important, fail to focus on the history of technical communication itself, doing little to advance our understanding of the evolution of technical communication (Brockman, 1983). Researchers must be willing to undertake the tedious task of recording technical communication's slow evolution into the academic discipline it is today in order to better understand why technical communication instruction exists as it does. "Histories of technical communication in academic departments and individual industries must be written as a foundation for broader perspectives" (Whitburn, 2009, p. 18).

The historical study of technical communication covers much ground: "all historical *time*; the full variety of *cultures* and *languages* inherent in Western civilization; a broad sample of the diverse *topics* that human beings solving problems in business, science, and technology must address; and the many different *disciplines and approaches* that can and should be used to help us understand the technical, scientific, and business documents we study" (Rivers, 1999, p. 292). My research is strictly focused on the history of technical communication instruction at the University. In addition to forming a timeline of the evolution of technical communication instruction Missouri S&T, I also

contextualize this evolution within the framework of the history of technical communication instruction across the United States.

Much research has already been conducted that focuses "on curricular shifts, emerging disciplinary patterns, and broad movements in this still-evolving discipline" (Kynell & Moran, 1999, p. 1). This research includes studying "individuals, movements, advances, and reprinted articles" (Kynell & Moran, 1999, p. 1). Combining these diverse aspects of research offers a better understanding of the history of technical communication, or, in this specific instance, technical communication instruction. These studies can also offer future researchers hints "at the future of technical communication" (Kynell & Moran, 1999, p. 2).

1.6. THE APPLICATION OF HISTORICAL STUDIES IN TECHNICAL COMMUNICATION

Numerous studies have now been written on the history of technical communication. But what is the value of these studies? Connor (1991) noted that in an academic setting "The history of technical communication can be a 'medium of education,' used to increase understanding and develop judgment," and examining these histories can provide new perspectives on the field (p. 5). Malone (2007) suggested at least four major uses of historical studies: "1) invention (helping on generate ideas), (2) precedent (offering authority for decisions and actions), (3) distance (enabling one to see objectively and clearly), and (4) context (providing a frame of reference for better understanding) " (p. 343).

The primary reason I have chosen to research the history of technical communication instruction at Missouri S&T is to place developments at this University within the context of the evolution of technical communication instruction at comparable

universities across the United States. Placing this research within a contextual framework can offer a "context for understanding practices, concepts, and relationships that would otherwise remain elusive" (Malone, 2007, p. 344).

1.7. DISTINGUISHING AMONG FIELD, PRACTICE AND ACADEMIC DISCIPLINE

As I conducted my research, I found it necessary to distinguish several domains of technical communication:

- The Field of Technical Communication
- The Practice of Technical Communication
- The Academic Discipline of Technical Communication

The *field* of technical communication encompasses all of those engaging in technical communication in both the professional and academic environment. In discussing the *practice* of technical communication, I am referring to the work of full-time technical communicators in industry. Finally, the *academic discipline* of technical communication refers to technical communication instruction within the academic environment, specifically, colleges/universities.

Understanding these distinctions is necessary for understanding the focus of this thesis. My research was aimed at better understanding technical communication instruction within an academic discipline at the University. I do not focus on these other domains of technical communication.

1.8. WITHIN THIS THESIS

Section 2 is a literature review detailing the work I read to gain a better understanding of my topic. I review relevant secondary literature about the history of the

Missouri S&T campus and the history of the academic discipline of technical communication more broadly.

Sections 3, 4, and 5 discuss the history of technical communication instruction at MS&T. This discussion covers not only the curricula but also the faculty and students that are part of this history. I have conducted archival research and used primary sources in addition to interviewing both instructors and students. My request for the Institutional Review Board (IRB) to approve these interviews can be found in **Appendix A**. The proposed consent form can be found in **Appendix B**. The IRB's approval is in **Appendix C**, and my certificate for completing the workshop on human subjects is in **Appendix D**.

Finally, Section 6 is a reflection on the evolution of technical communication instruction that has taken place on this campus. I have also used Section 6 to both answer the initial questions posed in my research and relate the history of technical communication instruction at this University to that of other universities across the country.

1.9. THE UNIVERSITY'S NAME CHANGE

To best understand the history of technical communication instruction at Missouri S&T, one must also understand the history of the school's name.

The school was established as a result of the Morrill Act passed on May 5, 1862 and was formally opened on November 23, 1871 (Roberts, 1946). The School of Mines and Metallurgy (Missouri School of Mines and Metallurgy or MSM as it was commonly known) was a university where students could focus on more technical information, in stark contrast to the liberal arts universities more prevalent at that time (Roberts, 1946).

Over time, many began to believe MSM's name was an inaccurate reflection of the coursework conducted at the University. Some insisted the original name "no longer described the School, since enrollments in mechanical, electrical, civil, and chemical engineering had long surpassed those in mining and metallurgical engineering" (Christensen & Ridley, 1983). In addition, some argued, "the proposed expansion in the sciences, humanities, and social sciences also made the old name too narrow" (Christensen & Ridley, 1983, p. 187).

Dean Marvin Barker, then the top administrator of the campus, and a committee voted on changing the name MSM to University of Missouri at Rolla, conforming with the name chosen for the Kansas City campus which was, and still is, part of the same system (Christensen & Ridley, 1983, p. 187). The new name, University of Missouri at Rolla, became official on July 1, 1964, although it was soon adjusted to University of Missouri-Rolla (Christensen & Ridley, 1983, p. 187).

Forty-two years later, the question was once again raised regarding whether or not the name of the school was an accurate reflection of the University (Careaga, 2006). Reasons for changing the school's name again included the following:

- To distinguish the unique curricula at UMR from the other University of Missouri campuses
- To reflect the university's mission to become "one of the nation's top five technological research universities by 2010"
- To broaden the school's share of the nation's "student pool"
- To "enhance the university's reputation"

(Careaga, 2006)

This discussion led to the name being changed once again. On January 1, 2008, University of Missouri-Rolla became Missouri University of Science and Technology, (Missouri S&T) ("New Name, Same Mission," 2007).

For the purpose of this study, each time I refer to MSM/UMR/MS&T, I will simply refer to the campus as the University, unless ambiguity requires specificity. Doing so will help reduce confusion as well as maintain consistency throughout the thesis.

1.10. CONCLUSION

To better understand and appreciate the field of technical communication today, we must better understand the technical communication of yesterday. History provides not only clues but evidence as to how this field has evolved. History offers an indication of where the field is heading. History provides a foundation on which technical communication can rest as a legitimate, respectable, independent field. Just as the electrical engineer and computer scientist have traced the history of their professions, so too should the technical communicator.

2. LITERATURE REVIEW

2.1. CHOOSING THE LITERATURE

Only a few recorded histories (such as catalogs) exist regarding the evolution of curricula at the University. Though limited, these resources shed some light on technical communication courses and degree requirements over the years at Missouri S&T. Reviewing the literature of previous research offers clues to the evolution of the academic discipline of technical communication in general. These sources provide something of a roadmap regarding how the discipline has evolved nationally. They also enabled me to compare the evolution of the technical communication curriculum at the University to the evolution of similar curricula at universities across the country.

I have chosen to organize my literature review according to two areas of scholarship:

- The History of the University
- History of the Academic Discipline

Books, articles, and other literature in these areas have provided important insight into the history of technical communication instruction at the University.

2.2. HISTORY OF THE UNIVERSITY

No literature written specifically on the history of technical communication instruction at the University exists. There are books, however, detailing the history of the campus as a whole. The first recorded history of the campus was published in 1939. Ladd (1939) chronicled the struggles and fights he endured through his employment as director of the campus. In this position, Ladd (1939) was responsible for the activities

that took place on campus, very similar to the responsibilities of a university president today. Ladd (1930) discussed an English instructor, John Bennett Scott, who taught English at the University from 1898 to 1913 and was the first instructor to teach English courses. Ladd (1939) also discussed a proposal to abolish all English courses from the curricula. I make use of this information in Section 3 when I discuss the resistance many had to the English courses in general, nearly from the inception of the campus.

Phelps County Historical Society (1941) discussed both the necessity of the school's development and need for the school's curricula. The Special Law of 1885, passed by state legislature, is discussed as opening the door for liberal arts curricula to be taught at the University. This Special Law, in essence, allowed English courses to be offered. My further research confirmed no English courses were taught at the University prior to 1885 other than under the preparatory program.

Roberts (1946) also covered the evolution of the University and its science and engineering curricula from 1871 to 1946. He, too, mentioned the passing of "an act" in 1885 that required the school to offer liberal arts courses, opening the door for courses in English in the regular curriculum (p. 37). Roberts (1946) also provided information on those teaching English courses as well as departmental changes involving those English courses. I use this information to a great extent in Chapter 3.

2.3. HISTORY OF THE ACADEMIC DISCIPLINE

This section includes two subcategories: "Historical Writings" and "Writings with a Historical Focus." "Historical Writings" includes literature written from 1895 to 1960. "Writings with a Historical Focus" includes literature written more recently, 1960 to the present, that offers a history of technical communication instruction.

2.3.1. Historical Writings

In the late 1800s, the Society for the Promotion of Engineering Education (SPEE) published common admission requirements for students entering the engineering field (Swain, Baker, & Johnson, 1894). English courses, with corresponding descriptions, were listed as part of the required curricula at universities comparable to MSM, offering a more complete picture of English courses required at that time (Swain, Baker, & Johnson, 1894). This source, thus, influenced my search. As I searched through old university catalogs, I looked for and included courses not simply titled "Technical Writing," "Technical Editing," and such. I also looked further into course descriptions to discern the true nature of the course. Doing otherwise would not have offered an accurate representation of the English courses science and engineering students were taking at that time.

Sypherd (1916) provided a writing resource guide for engineering students, their instructors, and practicing engineers. Included within this resource was a bibliography of textbooks, articles, and other documents available at that time for those looking to improve writing skills and techniques. In his introduction, Sypherd (1916) also highlighted the need for better skilled technical writers and extended the timeline for when technical writing was in demand. I used Sypherd (1916) as a resource to determine what sources were considered at that time to be authorities on technical communication, or, more specifically, technical writing. In addition, Sypherd (1916) indicated that technical communication was being taught in the early 1900s. Because the University opened its doors in 1871, this book suggests some form of technical communication could have been taught at the University nearly from the beginning.

Fountain (1938) surveyed the technical communication curricula of 117 institutions of higher learning (all with a membership in the SPEE), providing "a comprehensive bibliography of materials relevant to writing intended specifically for engineers" (p. 7). Within this compilation, a common thread can be found: fundamental principles being included in the technical communication instruction of the early 1930s "which would probably apply to all technical schools" (Fountain, 1938, p. 5). Because the University was one of the 117 institutions surveyed, this work offered a look at textbooks and teaching methods at the University in the early 1930s. In addition, because Fountain (1938) surveyed universities comparable to the University, I was able to use this work to contextualize my research of technical communication instruction at the University during the late 1930s.

Wellborn (1960) described a survey conducted to better understand the technical writing curriculum of land grant colleges. I have used this study to contextualize technical communication instruction at the University in the late 1950s with comparable universities across the country.

2.3.2. Writings with a Historical Focus

Connors' (1982) groundbreaking article was one of the first studies of the history of the teaching of technical communication in the United States. He discussed the birth of technical communication instruction in American universities, political and social pressures that shaped the curricula, and the catalysts that helped these curricula thrive.

Connors (1982) offered a timeline and context for understanding the evolution of technical communication instruction at UMR. His work describes the struggle of determining the English/technical writing curriculum, clarifying that the struggle to

develop and continue technical communication instruction at the University was similar to the struggles other similar universities were experiencing around the country.

Russell (1991) placed the technical writing instruction at higher education institutions within the context of writing instruction as a whole. He noted that determining appropriate English curriculum was, in general, both highly disputed and misunderstood. For a number of years, instructors tried to apply oral communication to the written word: simply write what you would speak. Technical writing courses often fell under this method of instruction as well. The curricula did not begin to solidify until after World War II when the field of technical communication and, subsequently, the academic discipline of technical communication, erupted. Unfortunately, according to Russell (1991), technical communication instruction, like most other English instruction, fell into the "trap" of simply writing the spoken word for academic and real world situations rather than writing as a form of learning. This book allowed me to understand the larger framework within which these struggles occurred at the University.

Reynolds (1992) offered readers insight into how the discipline of technical communication really began from a demand to help engineers better communicate their technical information. These writing courses, at times, bore no resemblance to the technical communication courses offered today; instead, they focused on the immense task of helping scientists and engineers write better. This article helped me gain an understanding of the foundations of the academic discipline of technical communication so that I might better understand the evolution of the technical communication curriculum at the University – i.e., the necessity, support and resistance to that evolution.

Kynell (2000) not only detailed the history of technical communication instruction in universities across the country but also called for more specific, detailed research to be conducted at those universities. Historically, English departments wanted to teach literature although the engineering faculty believed literature courses were not preparing engineering students for their much–needed literacy. She noted the problems faced by English faculty teaching technical writing to engineering students and how concepts now taught were shaped during the early 20th century.

Kynell (2000) called attention to the fact that few have "analyzed the evolution of technical writing in this country as it grew out of engineering English requirements from roughly the turn of the century to 1950" (p. 1). She argued that, if we are to understand technical writing in America, we must also understand "the academic environment in which the discipline was first taught– namely, English and/or engineering departments in predominantly technological, four-year institutions" (Kynell, 2000, p. 7). My thesis is intended to answer the same need Kynell (2000) addressed in her study, offering an analysis of technical communication curricula at the University.

This thesis seeks to apply knowledge gained from this literature review to researching and understanding the history of technical communication instruction at the University. This University is a campus with a rich, vibrant history of graduating highly educated, successful science and engineering students. Part of that education included technical communication although the curriculum has taken many different forms throughout the campus' history. Understanding and recording this history answers the call by several scholars to lay a better foundation for understanding the field of technical communication.

3. TECHNICAL COMMUNICATION INSTRUCTION, 1871-1950

3.1. INTRODUCTION

The majority of the research conducted for this chapter was done by reviewing course catalogs. These course catalogs, held in Missouri S&T's archives, provide a written record of academic degrees, courses, and instructors. Although the course catalogs from 1871 to 1878 are available only on microfilm, the other catalogs are available in print. By reviewing these catalogs, I was able to create a picture of the English courses offered between 1871 and 1950, as well as the requirements of degree programs.

3.2. EARLY CURRICULAR DEVELOPMENTS AT MSM

An informal invitation for students to attend Missouri School of Mines and Metallurgy (MSM) was extended on September 21, 1871 (Phelps County Historical Society, 1941). "The first formal advertisement for the school was placed in the *Rolla Herald*, as well as in St. Louis and other metropolitan newspapers, on September 21, 1871" (Phelps County Historical Society, 1941, p. 6). MSM first opened its doors for classes on November 6, 1871 (Phelps County Historical Society, 1941).

3.2.1. The School's First Students

The first student body comprised three kinds of students: regular (degree seeking), special (non-degree seeking), and preparatory (pre-degree seeking). At the school's inception, there was a preparatory department in which the majority of students were first enrolled (Roberts, 1946). "Practically all colleges of that day had such departments primarily because of the lack of high school facilities at this early date" (Roberts, 1946, p. 22). Included within the curriculum of this department was an English course: Rhetoric

and Composition (Roberts, 1946). All students applying for admission to the preparatory courses "were required to be at least sixteen years of age, and to stand examination in the ordinary branches of an English education" (Roberts, 1946, p. 23). Once students had completed the preparatory program, they were admitted "to the regular college course without [further] examination" (Roberts, 1946, p. 23). All students applying for direct admission to the regular courses "had to be at least seventeen years of age and to stand an examination in all the subjects of the preparatory year" (Roberts, 1946, p. 23).

3.2.2. The School's First Faculty

The University had three faculty members during its first year: Charles P. Williams, Professor of General and Analytical Chemistry and Metallurgy; Nelson W. Allen, Assistant Professor of Mathematics; and William Cooch, Assistant in Analytical Chemistry and Assaying (Roberts, 1946). During the University's second year, Cooch was "Professor of the English branches" (Roberts, 1946, p. 24).

3.2.3. The School's First Degree Programs

By the 1873-74 academic year, the University added the degrees of Civil Engineer and Bachelor of Philosophy to the already existing degree of Mine Engineer (Roberts, 1946). "The curricula were divided into departments of instruction for the first time in the 1873-74 catalog" (Roberts, 1946, p. 25). Among the nine departments of instruction was the "department of English or preparatory" (Roberts, 1946, p. 25). That same year, Professor R. W. Douthat was listed "as Professor of the English branches and head of the Preparatory Department" (Roberts, 1946, p. 25).

3.2.3.1 The Move to Abolish Liberal Arts Curricula

By 1883, "a difference of opinion had developed in regard to the fields of instruction which should be offered at Missouri School of Mines" (Roberts, 1946, p. 37). Some of the technical faculty believed that the liberal arts courses were taking the technical institution in the wrong direction (Roberts, 1946). At a faculty meeting on April 14, 1883, the Bachelor of Philosophy was removed from the course catalog (Roberts, 1946).

3.2.3.2 The "Special Law of 1885"

In 1885, however, the Missouri state legislature passed an act – known as "The Special Law of 1885" – that required the "Board of Curators to adopt a liberal academic course of study" that would lead to a Master of Arts degree (Roberts, 1946, p. 37). Designed for students who wanted a liberal education, the Master of Arts degree – requiring a three-year course of study known as the Academic Course – "appealed to young men desiring a business career, or to teachers preparing for advancements in their profession" (Roberts, 1946, p. 38). The Academic Course included Grammar and Word Analysis as well as Composition and Rhetoric during the first year and English Literature during the third year (Roberts, 1946). The courses in this degree program were created to "more fully" discharge the obligations of the land grant as well as "promote the liberal and practical education of the industrial classes in the several pursuits and professions of life" (Twenty-Seventh Annual, 1898, p. 8). The courses were offered to answer "the need of general culture as a foundation and accompaniment of specifically technical training and the prevailing absence of facilities for gaining this from the reach of the intended beneficiaries of the institution" (Twenty-Seventh Annual, 1898, p. 7).

This master's degree was later downgraded to a bachelor's degree (Roberts, 1946). Perhaps ironically, no degree was ever awarded under this master's/bachelor's degree program though diplomas of graduation were (Roberts, 1946).

William Holding Echols, who "administered the school's affairs from 1888 to 1891, divided" the curricula into two parts: academic and technical (Roberts, 1946, p. 44). As part of this transformation c. 1890, students could now earn a B.S. in General Science, which included liberal arts courses such as history, French, composition and rhetoric (Roberts, 1946).

3.2.4. Abolishing the Preparatory Program

The preparatory department was abolished in 1892-93, in large part because secondary education in America had improved (Roberts, 1946). In the same academic year, technical degrees were expanded from three-year programs to four-year programs (Roberts, 1946). Perhaps more significant, however, was the development of the English requirements. "This marked the beginning of the freshman English requirement for all curricula" (Roberts, 1946, p. 45). This work "in the humanistic studies came to be considered not as an end in itself, but more as an integrated phase of the regular engineering work" (Roberts, 1946, p. 46).

3.2.5. Defending the English Curricula

The offering of these English courses was still, however, not supported by everyone at the University. Ladd (1939), former director of the school, noted that, at his first meeting with the Board of Curators in Columbia in December 1897, a motion was made to abolish the teaching of both civil engineering and English in the school. Those wanting to abolish this instruction believed the teachings were not representative of the

University's focus at that time. This motion resulted in a battle between Ladd and the curators. Ladd (1939) wrote, "I was told very courteously that if I opposed the wishes of the board, I could not expect to retain my position; but, if I acquiesced in their wishes as developments arose, I could remain Director of the School indefinitely, whether it remained at Rolla or was moved to Columbia where, according to them, it belonged" (p. 40). Ladd (1939) stood his ground, however, insisting these courses were indeed important at a mining school. His reason for keeping the English courses was that "students were entitled to and must have ample training in the use of the English language" (Ladd, 1939, p. 40). The motion to abolish these courses was dropped.

3.2.6. Developing an English Section

Prior to 1897, English was part of the Department of "Modern Languages" (Phelps County Historical Society, 1941, p. 540). During the 1897-98 academic year, under Ladd, English was made a separate department from Modern Languages (Phelps County Historical Society, 1941).

In the last few years of the 19th century, the three-year bachelor's degree program, created in the wake of the Special Law of 1885, was replaced by a four-year program leading to a bachelor's degree in general science (Roberts, 1946). The new degree also included English courses.

3.2.7. The End of the 19th Century

In English courses during the last years of the 19th century, students were "taught to speak and write fluently, correctly, understandingly and in good taste" (Twenty-Seventh Annual, 1898, p. 52). This description illustrates the early understanding of the need for science and engineering students to communicate effectively, both in writing

and speaking. The catalogue does note that, "To a considerable extent success in other branches depends upon proficiency in this subject because all other courses are facilitated by a student's trained power of expression. As the use of good English is an art, skill must be acquired by much intelligent practice" (Twenty-Seventh Annual, 1898, p. 52). The required textbook for this course, English 1 English Grammar and Rhetoric, was "Hill's Revised Rhetoric" (Twenty-Seventh Annual, 1898). This book focused on grammar and rhetoric (Hill, 1892). Roughly the first half of the book is devoted to grammar exercises; the second half of the book teaches rhetoric (Hill, 1892). The focus of "Hill's Revised Rhetoric" was typical of the focus of English courses offered at comparable universities at that time.

3.3. MR. JOHN BENNETT SCOTT

John Bennett Scott initially taught in the Missouri Public School system (Phelps County Historical Society, 1941). In the fall of 1897, Scott was chosen "to succeed Thomas L. Rubey, who had been dismissed with Director Richards" (Phelps County Historical Society, 1941, p. 551). Scott taught English at the university from 1898 to 1913 (Phelps County Historical Society, 1941). He would often appear in the course catalogs as "Instructor of English," "faculty," "secretary," or any combination of titles. Though Scott initially began teaching English without a college degree, he was distinguished in the 1907-1908 catalogue as an "Instructor in English," possessing a B.S. in General Science from the School of Mines, having graduated from MSM in 1907 (Thirty-Seventh Annual, 1908). Scott also served as head of the English department from 1907 to 1912 (Phelps County Historical Society, 1941). Apparently, until 1912, English and Modern Foreign Languages were separate departments with different heads (Roberts,

1946). Ladd (1939), director at the time, was "very fond" of Scott who he noted was "a very religious man and an active member of the Methodist Church. He was not interested in sports or games. He never pitched horse shoes with us during summer vacations, or attended student athletic events" (p. 92). Scott did, however, handle his "work reasonably well," being a "useful faculty" member due to his "practical common sense in dealing with student problems" (Ladd, 1939, p. 13).

3.4. RHETORIC AND LITERATURE COURSES

In universities such as MSM, "although composition was taught, it usually constituted only the first year of the engineering curriculum, whereas literature, in an attempt to bring culture to the discipline, spanned three of the four years an engineer spent in college" (Kynell, 2000, p. 31). Literature courses were offered at MSM as well, again an addition resulting from "The Special Law of 1885." These courses, "American and English Literature," "the former for the Academic students and the latter for the Freshmen" were concerned primarily with the "masterpieces": "Shakespeare, Chaucer, Spencer [sic], Bacon, and Milton" (Twenty-Seventh Annual, 1898, p. 52). Each course was taught by Mr. Scott (Twenty-Seventh Annual, 1898).

3.4.1. "Smith's Literature"

A required textbook for these courses of study was "A Synopsis of English and American Literature" or, more informally, "Smith's Literature" (Twenty-Seventh Annual, 1898). The author, George J. Smith, was, at that time, an English instructor at the Washington, D.C. high school (Smith, 1890). "Smith's Literature" was defined by the author as a condensed version of the "formidable works on science or literature" (Smith, 1890, p. 3). Within the book, readers could find an author's most prominent works as

well as the author's biography and the historical context of the author and work (Smith, 1890). Offering works from Old English through the late 1800s, this book reflected the aim of the literature courses at that time: to study "expression" for "illustrations of the best style enable the pupil to appreciate how thought can be most forcibly and beautifully expressed" (Twenty-Seventh Annual, 1898, p. 52).

3.4.2. Answering Criticisms

The "English Literature" courses evolved slightly in the 1899-1900 academic year to include "two main purposes": "to supplement the work of rhetoric, and to develop a taste for good literature" (Twenty-Eighth Annual, 1899, p 53). The catalog notes that "As in the natural sciences, by the most approved methods we study *things* and not what some one has said about them, so in literature we study the production of authors, instead of occupying our time with biographies, notes and critiques. The aim in the reading of an author will be the study of the thought and the expression in their reciprocal relations" (Twenty-Eighth Annual, 1899, p. 53).

Perhaps this note was an answer to the criticisms those teaching English received at that time from engineers. If so, this response is certainly reflective of the discussions being conducted throughout universities at that time. Although English departments across the United States wanted to teach primarily literature courses, many within the engineering faculty simply did not believe literature courses were preparing students appropriately for their needed literacies (Tebeaux, 2000).

Kynell (2000) notes these debates included such questions as:

- "Was this student to be a person trained solely for professional responsibilities?

- Or was this person to be both a professional and a cultured intellectual as well?" (p. 17)

Across campuses, English was being taught to engineering students not as a part of their engineering training "but as a means to humanize them in the classical, liberal education tradition or to provide them with written communication skills" (Kynell, 2000, p. 18). English was not tied to the curricula and could, and often was, cut if a schedule became too heavy. Kynell (2000) noted, however, that not all engineering educators approved of cutting English courses.

3.4.3. Redefining Rhetoric and English Literature

At MSM, both the rhetoric and English literature courses were redefined in 1901. "Rhetoric" became defined as "a continuation of the subject as taught in the high schools of the state," using "Genung's Practical Rhetoric" (Thirtieth Annual, 1901, p. 61). "English Literature" was taught to embrace "a study of the history and development of English literature with detailed work on the masterpieces of British and American Authors, Lectures, recitations and conferences," using "Lounsberry's History of English" and "booklets of masterpieces" (Thirtieth Annual, 1901, p.61).

These same descriptions were used in the 1902 catalogue (Thirty-First Annual, 1902). The only difference was that the textbook for English 1 Rhetoric changed back to "Hill's Principles of Rhetoric" (Thirty-First Annual, 1902). No textbooks are listed in the catalog for "English Literature" (Thirty-First Annual, 1902). For the 1902-1903 academic year, "Pearson's Principles of Expression" was used for the course on rhetoric (Thirty-Second Annual, 1903).

The description of the rhetoric course was expanded in 1903-1904 to include a greater explanation of expectations for students. "All freshmen in this Institution are required to write throughout the year, short daily, and long fortnightly themes. This work is carefully "criticized by the instructor, corrected by the student and returned to the former as an evidence that the student has profited by the criticisms" (Thirty-Third Annual, 1904, p. 72).

From the school's inception and into the early 1900s, MSM was requiring freshmen and, at times, sophomores, to take rhetoric and composition courses. All other courses offered in English were literature courses. Offering primarily literature courses to engineering students was common of comparable universities across the nation at this time. Kynell (2000) argued that the literature and composition classes students were required to take slowed the growth of technical writing across the nation.

3.5. TRYING TO ESTABLISH A STEADY CURRICULUM

Throughout MSM's history, English courses would be added and dropped as the university worked to determine the most appropriate courses for science and engineering students. For example, for the 1903-1904 academic year, only English 1 Rhetoric was required during a student's freshman year (Thirty-Third Annual, 1904). General Science, however, required English 1 in the student's sophomore year as well (Thirty-Fourth Annual, 1905). A course simply entitled "Themes" was added to students' laboratory work for the 1904-1905 academic year, required during both a student's freshman and sophomore year by all degree programs (Thirty-Fourth Annual, 1905). The catalog description of the sophomore "Themes" course indicated the type of assignments given in both the freshman and sophomore "Themes" courses: "Two themes of not less than eight

hundred words each are required each term. These themes are criticized and corrected in the same manner as indicated for the Freshman themes. Sophomores, two times a term throughout the year" (Thirty-Fourth Annual, 1905, p. 69).

Changes were made in the English requirements of several degrees for the 1905-1906 academic year. Neither "English" nor "Themes" courses were required beyond the freshman year for students seeking a degree in Mining Engineering (Thirty-Fifth Annual, 1906). This was not true, however, for the Metallurgy and Chemistry degree. This degree added "English" to the sophomore semester in addition to the already existent "Themes" (Thirty-Fifth Annual, 1906). Civil Engineering added "English Literature" to the sophomore year (in addition to the already existent "Themes") (Thirty-Fifth Annual, 1906). These two courses continued to be required for several years before "Themes" was eventually dropped from the catalog entirely.

3.6. REDEFINING THE ENGLISH COURSES

The English courses in general would be redefined in the 1908-1909 course catalogue. The introduction to the section devoted to English courses stated:

> Efficiency in oral and in written expression on the part of the engineer is no longer considered among teachers in technical schools a matter of secondary importance. Efficiency in English, like that in any purely technical subject, can be acquired only by a systematic study of the principles underlying the subject, followed by long apprenticeship of practice under judicious criticism (Thirty-Eighth Annual, 1909, p. 89).

This introduction seemed to be indicating a shift within the English department from the widely accepted practice of humanizing engineering students to educating these same students to communicate more effectively. Greater emphasis was being placed on the communicative aspect of the English courses than in the past. The nature of the courses themselves, however, had changed very little. English faculty were still utilizing rhetoric, composition, and literature courses to educate engineering students to become better communicators.

The titles of English courses became more clearly defined in the 1911 course catalogue to reflect the character of the courses. The expanded course offerings were as follows:

- English 1a Expository Literature and Mechanics of Literature
- English 1b Descriptive and Narrative Literature and Mechanics of Writing
- English 3a Scientific and Expository Literature
- English 3b Argumentative Literature
- English 5a Exposition in Theory and Practice
- English 5b Argumentation, Description, and Narration in Theory and Practice

(Fortieth Annual, 1911)

English 1b, English 3b, and English 5b were all continuation courses of each corresponding course. No longer were courses defined under generic titles of rhetoric, composition, and so on. Students, faculty, and administrators alike could now determine very quickly from a course title the character and nature of each course being offered.

3.7. THE FIRST FEMALE GRADUATE: A TECHNICAL WRITER

"Mrs. Eva Hirdler Greene (nee Eva Endurance Hirdler) who earned the degree of Bachelor of General Science (with major in mine engineering) in 1911," had the unique distinction at that time "of being the one and only 'girl graduate' of the School of Mines" (Phelps County Historical Society, 1941, p. 44) Upon graduation, Greene entered "the field of active mining practice" spending "a number of years as Chief Clerk and Technical Editor for the Missouri Bureau of Geology and Mines. While working at the Bureau, she edited a number of reports, including Volumes 10, 11, 12, and 13, 2nd Series, and Biennial Reports of the Survey. She also wrote numerous press bulletins on the mineral resources of Missouri" (Phelps County Historical Society, 1941, p. 44).

Mrs. Greene's work was not limited, however, to technical writing and editing. She also worked "in the field of petroleum geology, making the study of sub-surface geology the basis for her own business as an independent oil producer" (Phelps County Historical Society, 1941, p. 45). Greene "had a greatly varied and prominent career in connection with associations of university women, geological, astronomical, and Audibon [sic] societies, churches, relief organizations, and so on" (Phelps County Historical Society, 1941, p. 45).

Unfortunately for Mrs. Greene, working in the field of technical communication was something of a ghetto for women scientists and engineers, especially in the late 1800s and first half of the 20th century (Rossiter, 1982). Rossiter (1982) noted that many women of the late 1800s were assumed to be earning degrees as "a rigorous and satisfying intellectual experience to ... essentially 'aimless lives'" (Rossiter, 1982, p. 52). In fact, so few women scientists existed in the United States at this time that sexual

stereotyping in these fields was still in its infancy (Rossiter, 1982). Those women scientists who did earn degrees often became wives and mothers and did not work outside the home (Rossiter, 1982). Greene's attendance at and graduation from the University was unusual for women at that time. With the exception of women's colleges (which were small in number) women were rare in a class of graduating science and engineering students. In addition, her work as a technical writer and editor may indicate the low status of such work in industry at that time.

3.8. THE FIRST TECHNICAL WRITING COURSE

Apparently, in 1912, English and Modern Foreign Languages merged (Roberts, 1946). Joseph Wayne Barley held the title of Assistant Professor of English and Modern Languages and served as head of the merged department (Phelps County Historical Society, 1941). Barley would make significant contributions to the University's curricula.

3.8.1. English 3 Technical Writing

The first technical writing course, English 3 Technical Writing, appeared in the course catalog published in 1913. This course was required during the student's sophomore year for all degrees at that time: Mine Engineering, Metallurgy, Civil Engineering, and General Science (Forty-Second Annual, 1913). Professor Barley was listed as the instructor for the course, which was designed to address "the problems of engineering writing and the mechanical details of technical writing" (Forty-Second Annual, 1913, p. 60). By the next year, English 3 was replaced by English 403 Engineering Writing, which was described as "an advanced course in oral and written technical reports, and in the details and problems of engineering writing" (School of

Mines, 1914, p. 63). Offered as an elective, the redefined course was still taught by Barley (School of Mines, 1914). Students were required to have senior status in order to enroll (School of Mines, 1914).

This course certainly took a direction different from English courses taught at MSM in the past. "Engineering Writing" was not concerned with offering students a more intellectual, literary education. Instead, this technical writing course was focused on the writing that science and engineering students could expect to do upon entering industry.

3.8.2. Including Technical Communication Instruction

Certainly the arguments were being made at that time around the country for offering science and engineering students an education that included technical communication skills. Sypherd's (1916) book reflected his experiences teaching engineering students as well as working with others who taught engineering students. Because his book listed books and articles published prior to January 1916, one understands very quickly that technical writing courses were being offered at other schools somewhat earlier than they were at MSM (Sypherd, 1916).

In the late 1800s, the Society for the Promotion of Engineering Education (SPEE) conducted a survey of 77 colleges and universities across engineering curricula to better understand the requirements for admission into the engineering courses (Swain, Baker, & Johnson, 1894). Their findings suggest a strong focus on grammar, composition, and rhetoric.

Kynell (2000) noted that, "by the end of the 19th century, [...] technical writing as we know it today simply did not exist in American engineering programs, but *aspects* of

technical writing did exist within composition classes" (p. 22). Kynell's (2000) finding certainly correlates with courses offered at MSM during the late 1800s and early 1900s. Although technical writing instruction was not explicitly offered, aspects of that instruction did seem to have existed, particularly in English 3a Scientific and Expository Literature.

The creation of MSM's first course in technical writing coincided with Professor Barley's arrival at the school. He had arrived in 1912, and English 3 a Scientific and Expository Literature was changed to English 3a Technical Writing by 1913.

3.9. ENGLISH 403 ENGINEERING ENGLISH

English 403 Engineering English first appeared in the 1920-1921 course catalog (School of Mines, 1921). Offered only to students with senior status, Engineering English taught students how to compose oral and written technical reports (School of Mines, 1921). The course, taught by Professor Barley, was taken during a student's first term for two hours per week (School of Mines, 1921). It was a required course for Civil Engineering students and an elective for students in Mine Engineering, Metallurgy, Mechanical Engineering, Electrical Engineering, and Chemical Engineering (School of Mines, 1921).

By the 1927-1928 academic year, the course had become open to students with junior status (School of Mines, 1928). The next year, however, requirements were returned to senior level status (School of Mines, 1929).

3.10. THE FIRST FEMALE ENGLISH FACULTY MEMBER

The department welcomed its first female faculty member in 1928: Nadine Matlock Sease (Phelps County Historical Society, 1941). Matlock was the first female

Assistant in English and was only the fifth woman "to hold a position of faculty of the School of Mines" (Phelps County Historical Society, 1941, p. 916). Only one year later, Sease would advance to Instructor in English, a position she would hold for nine years: 1932-1941 (Phelps County Historical Society, 1941).

3.11. EVOLVING ENGLISH 403

Several changes took place in 1930. The Petroleum Curriculum (a focus of Mine Engineering) added Engineering English to the schedule of required courses (*Official Publication*, 1931). In addition, before taking the course, students were required not only to hold senior status but also to have completed their sophomore English requirement, a reflection of the knowledge and experience students needed in order to succeed in the class (*Official Publication*, 1931). During this academic year, both Professor Barley and a Mr. Cagg were listed as instructors of the course (*Official Publication*, 1931).

3.12. DIVIDING THE DEPARTMENTS

That same year, 1930, the Department of English and Modern Foreign Languages was divided into two distinct departments (Roberts, 1946). Modern Foreign Languages was headed by Professor O. A. Henning (Roberts, 1946). Professor Barley continued to head the English department as demand for Engineering English continued to grow (Roberts, 1946).

3.13. EARNING AN ENGLISH MAJOR

By fall of 1930, the English department was authorized to offer students the opportunity to earn a major in English, a primarily literature degree (Phelps County Historical Society, 1941). This opened the door for both larger enrollments and increased funding for the English department.

3.14. ENGLISH 403 LOSES SUPPORT

By the 1932-33 academic year, Professor Barley was the only instructor listed for Engineering English although the list of degrees requiring this course had expanded to include the following:

- Mining Engineering
- Mining Geology (Mine Engineering Curriculum)
- Petroleum Engineering (Mine Engineering Curriculum)
- Civil Engineering
- Ceramic Engineering

(*Official Publication*, 1933)

The growing support for Engineering English was short-lived. By the 1935-36 academic year, Ceramic Engineering had dropped Engineering English as a required course (*Official Publication*, 1936). Mining Engineering dropped the course the next year (*Official Publication*, 1937). Mining Geology dropped the course for the 1939-40 year (*Official Publication*, 1940). By the 1942-43 academic year, even Civil Engineering had dropped Engineering English as a required course (*Official Publication*, 1943).

By 1943, Engineering English was dropped from the course catalog altogether. The course was replaced with English 180 Report Writing (*Official Publication*, 1944). The course description remained the same. Many other aspects of the course, however, had changed. Professor Barley was no longer the instructor. He was replaced by a Mr. Brown (*Official Publication*, 1944). In addition, the course was no longer listed as required but, rather, as an elective (*Official Publication*, 1944). Finally, though students

were required to have taken two years of college English before enrolling in ENGL 180, they were no longer required to hold senior status (*Official Publication*, 1944).

3.15. FOUNTAIN'S THESIS

Fountain (1938) conducted a study of technical writing courses at 117 engineering schools throughout the United States. MSM was one of the schools he examined. Fountain (1938) classified each school into one of five categories: (1) schools having no type of segregation, (2) schools that had "separate departments, separate courses, separate credits, and separate instructors for engineering students," (3) schools that had separate classes for engineering students although those courses carried the same course content and credit as it did for other students, (4) schools "having segregation by not requiring any English," and (5) schools that had "segregation by requiring only specialized English" (p. 43). MSM was categorized as having no type of segregation. Fountain (1938) identified MSM and other schools of mines as such because "the curricula are so nearly uniformly technical that there is no purpose to be served by segregation" (p. 44).

3.15.1. Required Number of Hours

Fountain (1938) found that, on average, engineering students at the schools in his study were required to take 13.48 hours of English. These hours were broken down as such:

- Elementary composition. 7.4
- Literature 2.75
- Technical writing 1.4
- Public speaking..... 1.2
- Advanced composition 0.59

- Business English 0.11
- Journalism..... 0.03

(Fountain, 1938)

Students at MSM at this time were required to take a total of six hours in writing: English 400 Rhetoric and Composition and English 401 Rhetoric and Composition, a continuation of English 400 (*Official Publication*, 1937). Students were also required to take six hours of English literature (*Official Publication*, 1937). Of course, at this time, several curricula were still requiring three hours of English 403 Engineering English (*Official Publication*, 1937)..

Fountain (1938) discovered that, at MSM, "in an effort to improve instruction in technical writing courses some teachers try to adapt the work to the individual students who take the course, changing the content and matter from term to term as occasion arises" (p. 109).

3.15.2. Required Textbooks

Fountain (1938) made a catalogue of the textbooks that were being used at the different schools. The only course offered at MSM at that time which fell within the scope of Fountain's (1938) study was English 403 Engineering English. Fountain (1938) recorded that Park's *English Applied in Technical Writing* was being used at Cincinnati, MSM, New Mexico State, and Texas Tech (p. 101). At both MSM and New Mexico State, Park's textbook was being "supplemented by other materials" (Fountain, 1938, p. 101). Park's book was also used at some time by Akron, Lehigh, North Dakota, Arkansas, Case, Hawaii, Oklahoma, Oregon State, Colorado, and Maine (Fountain, 1938).

Harbarger's *English for Engineers,* the primary text at Alabama, Nebraska, and Ohio State, and a required reference at Lehigh and Michigan, had been used at some earlier date at Georgia Tech, Louisville, Colorado State, Iowa, Tufts, University of Washington, Kansas State, Montana State, North Carolina State, North Dakota, and MSM (Fountain, 1938, pp. 100-101). Richardson, Becklund, Guthrie, & Haga's *Practical Forms in Exposition* had been the principal textbook at Alabama Polytechnic, Colorado State, South Dakota State, Texas A. & M., and Virginia Polytechnic (Fountain, 1938, p. 101). This text had also, at one time, been used at both MSM and, possibly, Minnesota (Fountain, 1938).

3.16. ARMY SPECIALIZED TRAINING ENGLISH

That same year, AST 111 Army Specialized Training English was offered and was intended to help students improve "the art of communication" (*Official Publication*, 1944, p. 155). Students began the course with a "rapid review of grammar and punctuation" although the chief focus of the course was on analyzing "prose selections from American history and literature and of the student's expository themes" (*Official Publication*, 1944, p. 155). Instruction was aimed at "(1) aesthetic and scientific or technical description, with emphasis upon technical description as applied to civilian or military engineering reports; (2) instruction in military correspondence and communication; (3) continued instruction in prose analysis and in writing longer, formal expositions based upon immediate reading or experience of the student" (*Official Publication*, 1944, p. 155).

The Army Specialized Training English course was offered only one year and dropped in 1944. The English 180 Report Writing course was completely restructured as

English 180 Technical Exposition in the same year. Unlike Report Writing, Technical Exposition centered not on the "oral and written technical reports" (*Official Publication*, 1944, p. 155). Instead, it focused on "the technical paper, the report, and business letter writing," laying the groundwork for the technical communication courses that would follow (*Official Publication*, 1945, p. 153). The course was offered to students as an elective although two years of college English were the prerequisite (*Official Publication*, 1945). Both Mr. Cagg and a Mr. Guest taught the course (*Official Publication*, 1945). This course was dropped, however, in the 1947-48 academic year.

3.17. CREATING THE DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES

In the summer of 1946, "the departments of Economics, English, and Foreign Languages were combined to form the Department of Humanities and Social Sciences" ("Department of Humanities," 1950, p.8). This was agreed upon by the Board of Curators; Frederick Middlebush, the president of the University of Missouri-Columbia; and Dean Curtis Laws Wilson, the top administrator at MSM, to bring together "the day-to-day contacts of instructors in the different fields, the joint staff meetings, and the conscious adoption of goals to be achieved" ("Department of Humanities," 1950, p.8). Those creating the department hoped for " a more completely coordinated program of instruction in non-engineering courses" ("Department of Humanities," 1950, p. 8). The purposes of this new department were determined by the suggestions of the American Society for Engineering Education and included:

- Helping to train better engineers
- Train better citizens for life in democracy
- Train individuals for a more complete enjoyment of life

("Department of Humanities," 1950, p. 8)

By meeting these goals, the department hoped engineering students would be better able to express themselves in both writing and speaking ("Department of Humanities," 1950). The "business correspondence and reports" the engineer wrote in industry were "voluminous"; therefore, the new department of Humanities and Social Sciences hoped to train students in "public speaking and in writing standard English" ("Department of Humanities," 1950, p. 8).

At this time, all students were required to "take a course in business correspondence and technical writing" during the second semester of the freshman year ("Department of Humanities," 1950, p. 8). English 180 Report Writing last appeared in the 1946-1947 course catalog. English 51 Engineering Report Writing replaced English 180 as the only technical communication course offered in the 1947-1948 course catalog. English 51 was offered to give students the communication skills that the department believed would make them better engineers ("Department of Humanities," 1950, p.8).

In addition to these courses, students were encouraged to enroll in courses that would "increase the student's capacity for enjoying life" ("Department of Humanities," 1950, p.8). The faculty in English offered courses in American, English, and World Literature ("Department of Humanities," 1950). Students were encouraged to take these courses because the English faculty in the Department of Humanities and Social Sciences believed "the typical engineering student has developed a dislike for good literature somewhere in his grade and high school career" ("Department of Humanities," 1950, p.8). Emphasis was placed on these courses to encourage students to "carry with him in

his professional life a desire for reading the works of the best authors, past and present" ("Department of Humanities," 1950, p.8).

The English faculty's focus on literature courses would be challenged in less than twenty years, however, by faculty who recognized that technical communication was also vital for offering science and engineering students the strongest education possible.

4. TECHNICAL COMMUNICATION INSTRUCTION, 1950-2000

4.1. INTRODUCTION

Technical communication experienced an evolution during the 1950s and 60s. Connors (1982) stated that the 1950s was the decade in which scholars "saw technical writing 'grow up,' assuming the essential form we know it in today" (p. 342). Major transformations in both the field and academic discipline of technical communication took place during and immediately after World War II. A great shortage of engineers who were capable writers and were willing to do the work drove companies and government agencies to hire technologically savvy English and journalism majors to fill in these gaps.

4.2. A CALL FOR TECHNICAL COMMUNICATORS

Rossi & Schleich (1958) bemoaned this shortage, warning it would become more acute "unless a successful education program can be devised for developing new technical writers" (p. 5). Hickok (1955) suggested that only those trained in journalism and the sciences were adequately prepared to be technical writers. The revolution in electronics in the post-World War II years fueled the growth of the new profession. Technical writing in those years included "reports, manuals, instruction materials, sales and promotional literature, advertisements, office memoranda, articles for scientific journals and business papers, as well as motion picture, radio, and television scripts" (Dibelka, 1958, p. 5).

Those already working in industry began to realize how important technical communication skills were. Before World War II, engineers had done most of their own writing. After the war, however, technical communication became a specialization

within engineering. "Colleges gave more serious consideration to turning out trained technical writers" (Connors, 1982, p. 342). In the years following World War II, the Missouri School of Mines (MSM) did not turn its attention to educating career technical writers and editors; it continued to be preoccupied with the task of preparing engineers for the workplace.

4.3. TECHNICAL WRITING INSTRUCTION AT LAND GRANT COLLEGES IN THE 1950S

In order to better understand the technical writing curricula of land grant colleges, such as MSM, Wellborn (1960) conducted a study to:

- Determine the status of the technical writing curriculum
- Identify textbooks used
- Analyze the subject matter taught
- Gather personal evaluations of courses taught

Questionnaires were mailed to both engineering and agricultural ("Aggie") universities across the country with 90% of the 56 schools responding (Wellborn, 1960). The findings were as follows:

REQUIREMENTS FOR TECHNICAL WRITING

	No requirement but elective offered	Required of all students	Required by some departments	Total making some requirement
Aggie	53.8%	28.2%	18 %	46.2%
Engineer	36.1%	52.8%	11.1%	63.9%

ENGLISH REQUIREMENTS FOR AGGIES AND ENGINEERS

	Freshman English only	One course above Fresh. English	Two courses above Fresh.	Variable-dependent upon proficiency tests
Aggie	41.2%	17.9%	30.7%	10.2%
Engineer	31.7%	21.9%	21.9%	24.5%

Figure 4.1: Technical Writing Program Survey Results (Wellborn, 1960, p. 26)

Nearly 52.8% of the engineering universities in the survey required *all* students to take some form of technical writing course(s); another 11.1% required some students to take technical writing; the remaining 36.1% had no requirements, only electives, in for technical writing (Wellborn, 1960).

4.4. CREATING AN ENGLISH DEPARTMENT

When MSM opened in the fall of 1871, English was not initially a separate, independent English department. Instead, the development of an English department took place over a nearly 100-year time span (See **Figure 2**). All English courses offered were initially preparatory courses and, as such, were housed under the preparatory program (Phelps County Historical Society, 1941). In 1888 when the preparatory courses were included in the Academic Department, so too was English (Phelps County Historical Society, 1941). The courses fell under a new heading when, in 1893, English courses were part of the Modern Languages Department (Phelps County Historical Society, 1941). Not until 1897 was English separated into an independent English department (Phelps County Historical Society, 1941).

The separation would not last long, however. In 1912, English and modern languages were merged into an English and Modern Languages Department (Phelps County Historical Society, 1941). In 1946, both English and modern languages were included in a newly formed Department of Humanities and Social Studies (Roberts, 1946).

When the Department of Humanities and Social Studies (HSS) was created in 1946, sections within this department were created as well. By 1964, HSS included the sections of:

- English
- Modern Foreign Languages
- Social Studies
- Religion

(*University of Missouri*, 1964).

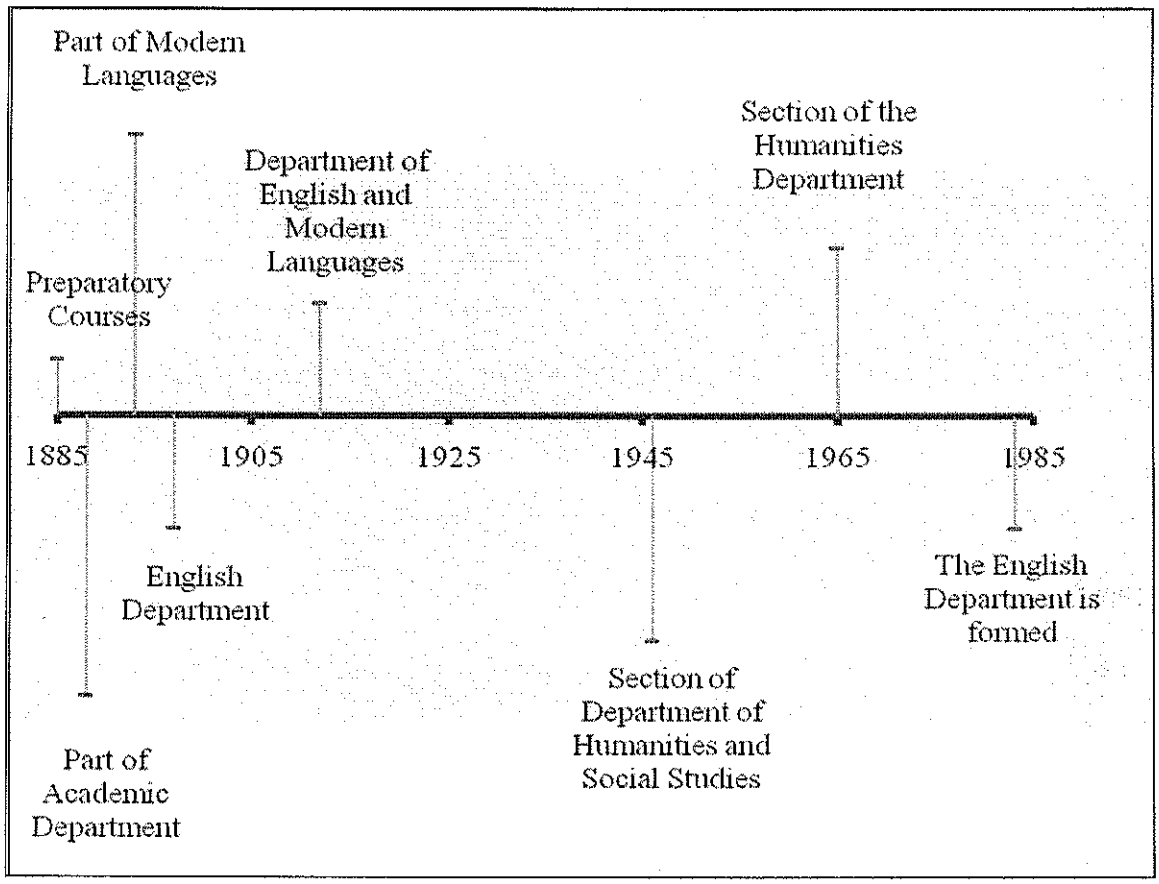


Figure 4.2: History of the English Department

In 1965, the Department of Humanities and Social Studies became redefined as simply the Humanities Department. By 1975, sections in the Humanities department included:

- English
- Foreign Languages

- Music
- Philosophy

(*The University of Missouri*, 1972)

During this time, although a chair was responsible for the Humanities Department, a section head was often responsible for his/her section. When the Department of Humanities and Social Sciences split into two departments and English became a separate, independent department in 1983, sections left under the original Humanities department were now included in the Department of Applied Arts and Cultural Studies and section heads were moved accordingly (Christensen & Ridley, 1983).

4.5. TECHNICAL WRITING COURSES: 1947-1973

MSM seems to have been one of the universities that required all students to take technical writing. As early as 1950, all MSM students were required to "take a course in business correspondence and technical writing" during the second semester of the freshman year ("Department of Humanities," 1950, p.8). English 51 Engineering Report Writing first appeared in the university catalogue for the 1947-1948 academic year, replacing English 180 Technical Exposition. To enroll in English 51, students were only required to be at least second semester sophomores (*Official Publication*, 1953).

4.5.1. English 51 Engineering Report Writing

From 1947 to 1966, including the period covered by Wellborn's survey, the technical communication course offered at MSM/UMR remained unchanged. English 51 Engineering Report Writing was offered to students with at least sophomore standing (*The University of Missouri*, 1966). Prerequisites for this course included both English 1 and English 2 (*The University of Missouri*, 1966). The English 51 course was the only

technical communication course offered during this time period. Though the course was listed as a requirement, students could choose from a list of English courses to fulfill the requirement; engineering programs apparently deemed English 51 to be interchangeable with any one of several literature courses (*The University of Missouri*, 1966).

On July 1, 1964, the administration at Missouri School of Mines and Metallurgy changed the name of the school to the University of Missouri-Rolla (Christensen & Ridley, 1983, p. 187). This name change, from MSM to UMR, took the emphasis of the university away from science and technology – an emphasis that would be restored in 2008 when UMR became Missouri S&T ("New Name, Same Mission," 2007).

4.5.2. English 61 Technical Writing

By fall 1966, English 61 Technical Writing replaced English 51 Engineering Report Writing. English 61was intended to educate students on "the theory and practice of writing technical papers, reports, and correspondence" (*The University of Missouri*, 1966, p. 259). The course was "limited to engineering and science students," emphasizing the department's intention of educating these specific students to become more effective technical writers (*The University of Missouri*, 1966, p. 201). Prerequisites included English 1 Rhetoric and Composition as well as second–semester sophomore status (*The University of Missouri*, 1966).

4.5.3. English 65 Advanced Technical Report Writing

English 65 Advanced Technical Report Writing took this education further when it first appeared in the 1966-1967 course catalog. English 65 was to offer students "instruction on an advanced level in the techniques of oral and written technical reports, in professional research procedures, and in the presentation of researched data" (*The University of Missouri*, 1966, p. 260).

4.5.4. Technical Communication Courses Removed

Both English 61 and English 65 appeared in the course catalogs from 1966 to 1970. From fall 1970 to spring 1973, however, no technical writing courses were listed in the course catalogs as being offered. Professor Doty remembered this was a result of the campus trying to trim the number of courses required of engineering students. The University did not want students to carry a heavier workload on this campus than they might carry on comparative campuses (Gene Doty, personal communication, 11 February 2011).

4.6. ENGLISH 160 TECHNICAL WRITING

One technical writing course was returned to the course catalog in 1973 (*The University of Missouri-Rolla*, 1973-74). This course, English 160 Technical Writing, was defined as "the theory and practice of writing technical papers, reports, and correspondence (*The University of Missouri*, 1972, p. 100). To enroll in the course, students were required to have taken English 1 and hold junior standing.

4.6.1. Support from Engineering Faculty

Professor Doty recalled that technical writing instruction was returned to the course catalog at the request of the engineering departments; those departments wanted the technical writing courses to be offered to their students (Gene Doty, personal communication, 11 February 2011). Connors (1982) noted that changes like this were indeed often "the result of pressure from the engineering faculty and the continuing complaint of industry that new graduates still could not write well" (p. 342). Engineering faculty at UMR saw value in the education engineering students received from a technical communication course, and English faculty were reluctant to ignore pressure to

return a technical writing course to the course catalog. The new challenges to result from offering a technical communication course again would come from determining both course content and course instructors.

4.6.2. The Curriculum

Professor Gene Doty remembered that, when ENGL 160 was added to the course catalog, technical communication instruction had been completely restructured. Changes included:

- Emphasis on professional writing
- Emphasis on reader response
- Types of assignments
- Focus on Theory

(Gene Doty, personal communication, 11 February 2011)

Rather than describing mechanisms, processes, and definitions, students were writing proposals, progress reports, recommendation reports, and giving presentations. Students were encouraged to write with a consideration for reader response, employing the theories of technical communication at that time (Gene Doty, personal communication, 11 February 2011). Prior to 1970, the University had been working to educate science and engineering students to become better communicators. When no technical writing courses were offered from 1970 to 1973, students were not offered formal technical communication instruction. The creation of English 160 in 1973 helped the English department return to the task of educating engineering and science students to become better communicators.

4.6.3. Prerequisites

To address a request for advice concerning enrolling freshmen into English 160, Dr. Marilyn Pogue (1976-77) sent a memo to the chair, Dr. Nicholas Knight, urging him

not to allow freshmen into the course, whose prerequisite was junior or higher standing. Pogue (1976-77) noted that English 160 was "subsequent to English 1. Furthermore, students who quiz out of English 1 should have a semester or two of college before taking English 60 and perhaps even before taking 160."

4.7. HIRING TECHNICAL COMMUNICATION FACULTY

Suggestions were then made for increasing the number of English 160 sections offered each semester. An annual report written by Dr. Knight (1976) noted that "The writing program (at UMR) clearly needed a technical writer" to teach this ever–expanding course. The English faculty were soon "authorized to advertise for and interview one full-time addition" to the staff (Wade, 1975-76). The new faculty member sought would "be a technical writer" who would, hopefully, "have some professional visibility" (Wade, 1975-76). In addition to teaching technical writing courses, this new faculty member would also be expected to teach composition and writing courses (Wade, 1975-76).

4.7.1. Dr. Douglas Charles Wixson

Douglas Charles Wixson's degrees are in two separate fields, engineering and English. In 1955, he received a Bachelor of Science in Mechanical Engineering from MIT and in 1960, a master's degree in Mechanical/Aerospace Engineering from Stanford. Before serving in the Air Force, Dr. Wixson worked briefly as an engineer for Shell Oil Company. After Stanford he joined the SST research team at Boeing Company. For several years he took advanced course in mathematics in Germany and taught math and science subsequently at the Institute Montana in Switzerland. Returning to the States, he

accepted a position teaching applied mathematics at the University of Colorado-Denver (Douglas Wixson, personal communication, 18 July 2011).

Having devoted his studies to engineering and mathematics, Dr. Wixson (personal communication, 18 July 2011) felt a need to broaden his education to include the humanities, motivated in part by his experiences in Europe and a desire to pursue "human uses of human beings" (as Norbert Wiener said). He took a broad selection of courses in the classics, philosophy, history, and English at the University of Colorado-Boulder, transferring to the University of North Carolina, Chapel Hill, where in 1971, he received a PhD in British Renaissance literature, writing his dissertation on Shakespeare's *King John* ("Dr. Douglas Wixson," 1992-1993). Engineering and literary studies appeared to join for him when he accepted a position at the University of Missouri-Rolla (Douglas Wixson personal communication, 7 February 2011). A 1976 report obtained from the university archives titled "Report From the Committee on Hiring" noted that "all committee members were agreed that Wixson's qualifications" were "far ahead of those of other applicants for technical writing" (*English Section*, 1976, p. 1).

4.7.2. Dr. Sam Charles Geonetta

Dr. Sam Charles Geonetta was hired into the Humanities Department as an assistant professor in 1977 (Geonetta, 1978). Geonetta had earned both an M.A. and PhD from Indiana University and brought to the Humanities Department a great deal of knowledge and experience regarding technical communication instruction (Geonetta, 1978). In addition, he had presented at the Speech Communication Association in Ohio, Illinois, and California (Geonetta, 1978). Geonetta had been hired to teach speech and

communication courses though the courses he taught would initially fall under the heading of English (Knight, 1978).

4.8. A DIVIDED FACULTY

Dr. Wixson (personal communication, 18 July 2011) recalled that he quickly found himself at odds with the tenured English faculty who, "lacking sufficient science or engineering training, showed no willingness to adapt their teaching to the needs of the engineering and science students who represented the majority of the student body." Constituting themselves as the "regulars," they effectively controlled the English curriculum, assigning technical writing to the "non-regulars," the untenured and part-time faculty (Douglas Wixson, personal communication, 18 July 2011). The regulars constructed their courses along traditional lines for the English majors, "ignoring the needs of engineering and science students to be exposed to humanities perspectives and methods" (Douglas Wixson, personal communication, 18 July 2011). Wixson (personal communication, 7 February 2011) recalled that he was hired to renew the technical writing curriculum as well as introduce courses in the English section that would attract engineering and science students, adding liberal arts breadth to their technical education.

The "regulars" seemed content with this but maintained a tight grip on their own courses in the English curriculum (Douglas Wixson, personal communication, 18 July 2011). This "balkanization," Dr. Wixson (personal communication, 18 July 2011) believed, "was detrimental to the best use of department faculty, regular and non-regular, and to the educational mission of the University." Wixson (personal communication, 18 July 2011) reported a great deal of "rancor and bitterness" between the "regulars" teaching the literature courses and the "non-regulars" charged with teaching technical

writing, creating in effect a hierarchical structure not commensurate with qualification or ability. This division was "not a happy arrangement," causing the English section to be viewed as the "problem child of the Humanities" (Douglas Wixson, personal communication, 7 February 2011).

4.9. SCHEDULE DISPUTES

Dr. Linda Hughes was originally hired at the University part-time and taught only two sections in the fall of 1976. Beginning with spring 1977, she was then placed on a full-time, four – course load. In 1978, she began teaching technical writing in addition to the freshman composition courses. Though she was trained as a specialist in 19th Century British Literature, "it was principally the people at the lower ranks who were doing a majority of the writing courses." Being one at the "lower ranks," Hughes found herself teaching both composition and technical writing (Linda Hughes, personal communication, 5 July 2011).

With a PhD in English Renaissance literature and a strong background in 20th century American literature, Dr. Wixson (personal communication, 18 July 2011) was dismayed to find that he, along with the non-regulars, had joined a two-tiered section controlled by "elitist regulars."

Though Cummins had been hired before Dr. Wixson, in 1967, as an adjunct, with an M.A. in English from the University of South Dakota and five years of teaching experience at University of Missouri-Columbia (UMC), she, too, found her course schedule limited. Though she had begun teaching both writing and literature surveys at UMR, she found that, as time went on, she taught more and more writing with less and less literature. She recalled continually requesting changes to her teaching schedule,

adding courses more aligned with "literature," only to be denied (Elizabeth Cummins, personal communication, 15 March 2011).

Cummins (personal communication, 15 march 2011) recalled that those who had tenure had "been there, done that" with regards to teaching composition and writing. Teaching composition and technical writing was for the non-tenure, "non-regulars." In addition, there was a sense that people trained in literature were not qualified to teach technical writing (Elizabeth Cummins, personal communication, 15 March 2011). Ironically, almost all of those who had taught and were currently teaching the technical communication courses at the University held backgrounds in literature: Professor Barley from the early 1920s to the late 1940s, Professor Doty and Professor Cummins in the 1960s, and Drs. Hughes, and Wixson in the 1970s. This attitude of using non-regulars with a background in literature to teach the technical communication courses quickly led to the ghettoization of technical communication instruction at UMR.

4.10. BUILDING A HIERARCHY

Professor John Morgan recalled that, though he did remember "a little tension," he did not believe those teaching technical writing were looked down on. He also felt that most people simply did not want to teach the technical writing courses; teaching these courses was "vaguely regarded as a headache - comparable to English 1 Freshman Composition" (John Morgan, personal communication, 23 February 2011).

4.10.1. Regulars

Memos obtained from the university archives indicate that the chair at that time did, in fact, initially reject all requests for non-tenure track instructors to teach the literature courses; those courses were reserved for tenure-track professors. Not only did

he reject all requests for non-tenure track instructors to teach the literature courses, but he also rejected requests from the non-regulars for tenure-track and tenured faculty to teach composition and technical writing courses. In a 1975 memo addressed to "the members of the English section," the chair wrote: "A majority of the regular, tenured faculty in English has suggested to me over the past two days [...] re: present and future developments in English [...] that only 'senior faculty' should attend meetings" (Wise, 1975). These meetings involving only tenured faculty would involve discussions regarding the proposed "need" to use tenured faculty to teach the composition courses (Wise, 1975). The letter concluded with an apology "to everyone – particularly the non-regular staff – for postponing the already – [sic]called meeting," though he did "feel that the arguments for calling the tenured faculty together first are persuasive" (Wise, 1975). Non-regulars and thus technical writing faculty were, essentially, being shut out from faculty meetings, discussions, and voting.

4.10.2. Non-Regulars

Dr. Larry Vonalt, a Visiting Assistant Professor from 1975 to 1978 and a "non-regular," who taught both composition and literature, responded not long after with a memo to "The Non-Regulars, Irregulars, Seconds" (1975). In this short memo, Vonalt (1975) wrote, "Can we get together to discuss (1) what, if anything, we want to do about the Regular - Non-Regular business and (2) what, if anything, we want to do about our working conditions, namely salary?" Vonalt (1975) hoped to address the growing division between "regulars" and "non-regulars" and discuss with "non-regulars, irregulars, seconds" what could be done to reduce this division.

4.10.3. Bringing in the Dean

Originally assigned to teaching technical writing exclusively, a position he shared with Cummins, Dr. Wixson began to develop English courses within the Humanities department that would interest engineering and science students. Aiding in this effort were Dean Adrian Daane, following him, Dean Marvin Barker, and Chancellor Joseph Marchello (Douglas Wixson, personal communication, 7 February 2011). Cummins (personal communication, 15 March 2011) recalled Dean Marvin Barker of the College of Arts and Sciences met with the regulars and "dropped a bombshell: either integrate the teaching or composition will become its own department." Because the English section could not survive without the composition courses, the courses with the highest enrollments, the regular, tenure-track professors had no choice but to begin addressing the concerns and requests of the non-tenure-track faculty. Wixson had received support to end the hierarchy and the "buddy system" of assigning courses within the English faculty. As a result, Dean Barker's support gave those teaching technical communication instruction a slightly more elevated status among the English faculty. The dean's support opened up opportunities for more new courses in technical communication instruction to be created. Faculty teaching technical communication courses were now supported by the dean to have a voice among all English faculty (Elizabeth Cummins, personal communication, 15 March 2011).

4.11. EXPANDING THE CURRICULA

The English section introduced a minor in communication s in fall 1976 (Knight, 1976). A student had to select 12 hours from English 70 Creative Writing, English 85 Speech, English 160 Technical Writing, English 302 Advanced Composition, English

305 History and Structure of the English Language, and English 306 Introductory Linguistics (*UMR Bulletin*, 1977). "When student demand is sufficient, the student may also take business and industry-oriented seminars in English in such subjects as editing, techniques of research, and advanced writing for science and engineering students" (*UMR Bulletin*, 1977, p. 92). The purpose of the minor was to educate both English majors and engineering students to write and speak well (Knight, 1977). The minor was "designed to answer a special need that students be better prepared to articulate their ideas and opinions in their jobs and as citizens" (Knight, 1977, p. 20). This minor was offered in addition to the traditional minor in English being offered (*Undergraduate Bulletin*, 1979).

4.11.1. English 165 Engineer as Writer

Dr. Wixson offered interdisciplinary humanities courses such as the "literature and folklore of technology" that opened students to a wealth of reading material generally excluded from the English section's traditional curriculum. These included classic texts by Twain, Anzia Yezierska, Philip Bonosky, Jack Conroy, and Thomas Bell (Douglas Wixson, personal communication, 7 February 2011). An additional course, entitled "The Engineer as Writer," recovered texts from ancient history, by engineers/architects such as Vitruvius, Frontinus, from the Middle Ages and Renaissance, including the Abbot Suger and da Vinci, and through recent history with Eads, Roebling and Maillart (Douglas Wixson, personal communication, 18 July 2011).

This course was developed "in part upon the assumption that engineering students need to know how engineers in the past have communicated through the written word their ideas and schemes" (Knight, 1976). Engineer as Writer was made part of the

technical communication minor with one semester of literature listed as a prerequisite (Knight, 1976). In a memo to the "English Section," Dr. Wixson (1976-77) requested approval for Engineer as Writer, "with the number 165 and a prerequisite of English." Engineer as Writer was a course that included both literature and technical communication content. English 165 allowed Wixson to continue teaching technical communication while beginning to infuse literature as well (Douglas Wixson, personal communication, 18 July 2011).

In 1983, Dr. Wixson (personal communication, 18 July 2011) received the University of Missouri's system-wide Thomas Jefferson Award, in part, for his success in developing this course. A complete syllabus for this course with instructions for the final exam can be found in **Appendix E**.

4.11.2. Training the Technical Instructor

In August 1977, Dr. Hughes attended a Michigan conference taught by Drs. John Mathes and Dwight Stevenson: "Technical Writing for Engineers, Scientists, and Technical Writers" (Knight, 1978). As the conference was intended for business and engineering professionals and quite expensive, Mathes and Stevenson kindly allowed Hughes to do a day and a half personal consultation with them gratis. They went over the key assumptions of their textbook, *Designing Technical Reports*, and their premises as well as the assignments they used in their own teaching (Linda Hughes, personal communication, 5 July 2011). She recalled the experience was an intensive consultation that she felt was imperative to have before teaching her first technical writing course, English 160. Hughes believed technical writing focused on "how to communicate pragmatically and effectively; technical communication in a clear, readable way; for me

it was principally about writing" (Linda Hughes, personal communication, 7 February 2011).

When Dr. Hughes began teaching technical writing the next semester, she applied what she had learned during the consultation. Her classes focused on effective communication, primarily the audience and purpose of the communication (Linda Hughes, personal communication, 7 February 2011). To offer student's real world data and experience, she had students write a letter of application for a job. For many, the application was for a summer position or internship. (Linda Hughes, personal communication, 5 July 2011). From there, students were moved into the stages of a longer engineering project, ending with both an oral and written report. Throughout the semester, Hughes utilized peer reviews on every single assignment, recalling "the secret" to teaching technical writing is the peer review. When asked how students responded to the courses, Hughes recalled, "I can literally remember a student telling me I got this job because of what I learned in this course" (Linda Hughes, personal communication, 7 February 2011).

4.12. GEONETTA'S ORAL/VISUAL TECHNICAL COMMUNICATION

The technical communication curriculum at this time reflected a broad definition of *technical communication* to include verbal (whether written or oral) and nonverbal (e.g., visual) communication. Though many tend to equate technical communication with technical writing, many industries evolved without using writing, but rather communicated technical information through physical and oral means (Johnson, 2006).

4.12.1. Becoming Section Head

Dr. Geonetta had originally been hired into the English section although he quickly found himself working across both the English and Speech and Media Studies (SMS) section. Geonetta became section head of SMS in 1980 ("Annual Report," 1979-80). When the English department was created, Geonetta continued with SMS and became part of the Applied Arts and Culture Studies department. While this was received well at the "administrative level," English did not want the "Speech and Media" curriculum removed from English (Sam Geonetta, personal communication, 25 January 2011). The administration, however, wanted to see a development in "applied communication," thinking this would be done best within SMS (Sam Geonetta, personal communication, 25 January 2011).

4.12.2. Building a Communication Program

By the 1978-1979 academic year, Dr. Geonetta had made great advances in building up the communications program. Geonetta was working toward offering engineering students more rounded technical communication instruction. He had "to an astonishing success built" the communication program to nearly 50 minors (Knight, 1978). He had a room designated as a Communications Laboratory equipped to tape presentations as well as prepare and present overheads (Sam Geonetta, personal communication, 25 January 2011). In a 1978-1979 "Annual Report of the Department of Humanities," Geonetta was also noted as on the verge of bringing a new degree program into the department (Knight, 1978, p. 24).

In addition to these roles and responsibilities, Dr. Geonetta joined the Council of Programs in Technical and Scientific Communication (CPTSC) in 1980. He recalled he

found "kindred spirits," many others struggling to find a place for technical communication, in his very first meeting with the program. His roles would evolve from member at large to treasurer, editor of the proceedings (1986), vice-president, and, eventually, president in 1991 (Sam Geonetta, personal communication, 25 January 2011).

4.12.3. Proposing a Degree in Technical and Scientific Communication

In 1979, Dr. Geonetta (personal communication, 25 January 2011) chaired a committee to develop a recommendation for a Bachelor of Science in Technical and Scientific Communication, to be housed in the Humanities Department. The degree would be a cooperative degree between English and Speech ("Annual Report," 1979-80).

4.12.3.1 A Self-Study

In December 1980, Dr. Geonetta submitted a self-study that included a rationale for a scientific and technical communication degree to be housed in SMS (**See Appendix F**). This self-study included goals of the degree, necessary resources, course descriptions with numbers, and needed facilities (Geonetta, 1980). Geonetta (personal communication, 25 January, 2011) recalled that the degree needed a "fresh start" from the communications minor.

4.12.3.2 The Demand For Effective Communicators

Geonetta (1980) believed that communication would soon become "central to meeting changes in the way society" would function as well as in engineering and science education (p. 1). Communication would become central because information would become "the principle 'product' of the next decade in America" (Geonetta, 1980, p. 1). This information would create a demand for individuals in communication who could "best communicate information in their fields to the new generations coming through the

educational system and to those in the field" (Geonetta, 1980, p. 2). In addition, scientists and technologists would be called upon "to explain their ideas to decisionmakers with whom and for whom they work and have to articulate their ideas to the public who pays for and uses technology" (Geonetta, 1980, p. 2). All of this combined for a great demand to educate not only science and engineering students to communicate effectively but educate professional technical communicators as well.

4.12.3.3 Degree Goals

Geonetta (1980) believed that the goal of a degree in scientific and technical communication was to train "entry-level professionals to apply modern techniques of communication to the dissemination of technical/scientific knowledge in industry, business, education, and government" (p. 4). Geonetta (1980) noted thatUMR was an ideal place for such education. The degree would educate "professional communicators who can handle the growing body of technical and scientific information that" would be produced as a result of ever-changing technologies (Geonetta, 1980, p. 9). Again, Geonetta wanted to see the University continue educating not only science and engineering students as effective communicators but also begin educating professional technical communicators.

4.12.3.4 Contextualizing the Degree

Though a degree in scientific and technical communication was still relatively new at this time, several comparable universities were already offering what Geonetta was proposing. The list of these universities included:

- University of Minnesota
- Carnegie-Mellon University
- Colorado State University

- California state University-Fullterton
- Rensselaer Polytechnic Institute
- Oklahoma State University
- University of Washington
- Miami University (Ohio)

(Geonetta, 1980)

The demand for effective technical communicators, however, surpassed those being educated at the time (Geonetta, 1980). Geonetta (1980) noted that UMR could benefit from this demand "because of the lack of such programs in the region, because of the growing demands for technical communicators, and because of the advantages to students from contact with the best in technical and scientific education" (p. 11). A degree in scientific and technical communication would be "central to the development of a strong program in Speech and Media Studies" (Geonetta, 1980, p. 15).

4.12.3.5 Proposed Curricula

A B.S. in Scientific and Technical Communication would be comprised of the following curricula:

- 33 hours in Math, Physical, Biological, and Computer Sciences
- 21 hours in Basic Skills and Humanities
- 15 hours in Social Sciences
- 33 hours within the major
    - 4 hours in Speech
    - 6 hours in Oral Communication
    - 6 hours in Written Communication
    - 6 hours in Media
    - 6 hours in Theory and Research in Communication

- 5 hours of Practica, Internship, and Research

- 10 hours in courses outside the major

(Geonetta, 1980)

All new courses created as a result of the degree would be housed in Speech and Media Studies.

4.12.3.6 The Proposal Comes to a Halt

Dr. Geonetta (personal communication, 25 January, 2011) worked on a proposal for a B.S. in Scientific and Technical Communication from 1979 to 1984. He believed UMR was an ideal university for such a degree and wanted to see Speech and Media Studies educating both engineers who could communicate effectively as well as professional technical communicators. Unfortunately, budget issues and academic politics as well as his developing and directing the Assessment of Classroom Communication Abilities of International GTAs brought Geonetta's (personal communication, 25 January, 2011) proposal to a halt.

4.13. SUPPORTING TECHNICAL COMMUNICATION INSTRUCTORS

In January 1980, Dr. Wixson sent a memo to the English section urging the department to fund two people to attend the "Teaching Technical and Professional Communication" conference at the University of Michigan. Wixson (1980) noted that the department needed people with both an interest in and training for teaching technical writing. Based on Dr. Hughes's experience in Michigan, Cummins sought funding to attend the full week conference in 1980. Cummins submitted her registration form in February (Cogell, 1980b). By April, she had been accepted to attend the summer conference (Cogell, 1980a). Hughes and Cummins attended and later shared what they

had learned with other faculty interested in teaching technical writing, so that, for a time, there was considerable uniformity among the sections of English 160, including the use of Mathes and Stevenson's textbook *Designing Technical Report* (Elizabeth Cummins, personal communication, 15 March 2011).

4.13.1. Working Again to Ease the Tension

Unfortunately, in his annual report, Dr. Michael Patrick (1980) indicated that the tension within the department had declined little, writing of "a deep division in English between those who teach primarily composition and those who teach primarily literature. Naturally, the division between a composition faculty and a literature faculty and the heavy composition burden has caused great morale problems" (p. 4). Because those who taught composition were often the same faculty used to teach technical communication, improvements to status appear to have been slow at best.

In his annual report, Dr. Patrick (1980) seemed to indicate that Dean Barker's intervention had not been incorporated as well as some had hoped. "In 1966, every English faculty had the opportunity to teach at least one literature course a year" (Patrick, 1980, p. 4). By 1980, however, many had "not taught a literature course for three or more semesters" (Patrick, p. 4). In addition, senior faculty were still resistant to teaching composition courses (Patrick, 1980). Patrick (1980) seemed to indicate in his goals that, by bringing the technical communication courses to a higher status, perhaps morale could be improved.

He seemed hopeful, also, that, by hiring two new faculty members to teach technical writing courses, a number of course offerings beyond English 160 could be developed (Patrick, 1980, p. 11). Dr. Patrick (1980) believed that technical editing and

technical graphics would "be of considerable value to the UMR campus" as would courses in science writing (p. 11). But no courses in either technical editing or technical graphics were created at this time.

4.13.2. Creating Uniformity

Dr. Wixson hoped to bring more uniformity to the underlying principles of teaching technical writing. In a memo addressed to "Technical Writing People," Wixson (1982) wrote that a "syllabus for tech. writing should include at least one engineering report; and that that report ought to be of sufficient length and scope to permit the student to practice his/her skills at undertaking library research, organizing a long report (e.g., feasibility study, write an abstract and summary and so forth" (p. 1). Wixson (1982) believed these types of reports were "a major component of a technical writing course for junior-senior level students" (p. 1).

4.14. REEXAMINING THE ENGLISH DEPARTMENT'S GOALS

In January 1985, a technical writing committee was working to develop a professional writing minor (Pogue, 1985). By 1986, another committee had formed to propose a Master of Arts in English – a cooperative degree with the University of Missouri-Columbia (UMC) campus (Wise, 1986a). This cooperative degree with UMC was a degree in English education, a degree preparing students to teach in secondary education (Elizabeth Cummins, personal communication, 14 July 2011). By 1986, the department was again examining both the needs and goals of the English department. Among these goals, Wise (1986b) submitted for a vote: "The immediate goal of English is to teach those students to think critically about a body of knowledge (literature) and to

write intelligently with ease, correctness, and reasoned judgment." The English faculty approved all goals by a vote of 12 to zero (Wise, 1986c, p. 2).

4.15. CREATING A NEW COMMUNICATION LABORATORY

Between 1985 and 1987, Dr. Geonetta set up the "Visual Communication Laboratory" in the basement of the library. As part of the project, Geonetta (personal communication, 25 January 2011) had wiring for microphones installed, remote control slide projectors, video equipment, and video playback. He made the room available to the English 160 technical writing teachers who wished to tape their students' oral presentations (Elizabeth Cummins, personal communication, 15 March 2011). Geonetta (personal communication, 25 January, 2011) also oversaw the installation of one of the campus's first computer labs, furnished with computers, color monitors, and laser printers, on the first floor of HSS.

4.16. REVISITING A B.S. IN SCIENTIFIC AND TECHNICAL COMMUNICATION

Cummins wanted to expand the English department goals significantly, as described in a memo to Dr. J. Pogue in 1987. To match the newly formed cooperative M.S. in English, Cummins (1987) hoped to begin developing a cooperative degree in scientific and technical communication. Cummins (1987) hoped that the new degree would "meet the needs of" the students as well as "use the expertise of all English faculty equally".

Shortly after Cummins' memo, discussions for the proposed degree became more focused. The feasibility, nature, and ramifications of creating a cooperative degree with SMS were discussed as well as the methods of determining the curriculum and

administration of the degree (Minutes, 1987a). A committee was formed to draft a proposal. This committee included:

- Larry Vonalt
- Elizabeth Cummins
- Jim Pogue
- Douglas Wixson
- Jim Wise

("Committee on Scientific," 1987)

Discussions regarding the degree continued as the committee worked to determine "requirements in a general framework rather than presenting a list of particular courses" to reflect "UM-Rolla's technical and liberal arts environment" as well as provide "an education strong in scientific and technological background and in the practice and theory of communication" (Committee, 1987b, p. 1). Finally, the committee hoped implementing a strong B.S. degree would lead to "a very good opportunity to develop a Master of Science Degree in Scientific and Technical Communication" (Committee, 1987b, p. 1). Although the discussion regarding the degrees continued for some time, the proposal, at present, remained unwritten.

By September 1988, Dr. Geonetta believed that he had taken his work on the campus as far as he could. The available resources simply were not at the level necessary to evolve his work in the SMS section further. Although he had good initial support, continuing support was difficult. He found himself constantly competing with and losing to the engineering faculty for much needed upgrades to the computer lab. Support for technical communication resources, and the SMS section in general, would only go so far. He left for a better job at the University of Cincinnati in August 1988 (Sam Geonetta, personal communication, 25 January 2011).

4.17. DEFINING THE GOALS OF TECHNICAL COMMUNICATION

The English department began offering students the opportunity to earn a minor in Technical Writing in 1991 (*University of Missouri*, 1992). To complete this minor, students were required to take the following technical writing courses:

- English 65 The Technical Writer in Business and Industry
- English 160 Technical Writing
- English 260 Practicum in Technical Writing

(*University of Missouri*, 1992)

English 65 Advanced Report Writing had last appeared in the 1969-1970 course catalog. English 65 The Technical Writer in Business and Industry was first introduced into the course catalog for the 1992-93 academic year (*University of Missouri*, 1992). The course was designed to introduce students "to the role of professional writer in business and industry and practice in methods of developing technical materials such as operation and maintenance manuals, field bulletins, grant proposals, inserts, or other technical publications" (*University of Missouri*, 1992, p. 121). The course was recommended for those other than engineering majors with a prerequisite of English 20 Exposition and Argumentation (*University of Missouri*, 1992).

By Spring 1996, technical writing courses were beginning to more closely mirror the courses offered today when Dr. Edward A. Malone, a non-tenure-track lecturer, broke with the convention of using the second edition of Mathes and Stevenson's *Designing Technical Reports* in English 160 and used the third edition of Burnett's *Technical Communication.* Malone had students design a collaborative Web report and a Web

resume – a move into multimedia. This was done in 1996 – before the World Wide Web was being widely used in classes at the University. In August 1996, Malone left the University for a tenure-track position at Missouri Western State College, where he taught English and technical communication courses (Ed Malone, personal communication, 15 March 2011).

Little had changed in English 160 by the 1997 Fall semester. Some instructors were still using Mathes and Stevenson's text, almost twenty years after Dr. Hughes had returned from the Michigan conference. The UMR English department did not yet have a major in technical communication and thus was not trying to prepare career technical writers. English 160 remained firmly a service course for non-majors. Dr. Dennis Perry's (1997) English 160 syllabus included the following statements: "This is technical writing for professionals (not professional technical writers) and will provide practice in several forms of technical reports."

With this one statement, Dr. Perry was stating explicitly the purpose of the 160 communication course: to prepare engineering and science students to communicate technical information successfully.

As the end of the 20th century approached, English 160 still emphasized audience analysis, purpose of the communication, and "conventions" (genres), but also covered how to "design and use tables, graphs, and technical illustrations" – a recognition of the importance of visual communication (Perry, 1997). Dr. Perry's deadlines for assignments reflected a desire to create a "real-world" scenario. All projects were to "be completed and turned in by 4 p.m. on the day they are due in order to count as having been

submitted on time" (Perry, 1997). This deadline corresponded to the end of a work day rather than the end of a class period. This approach, in a fictional sense, took students out of the classroom and into a workplace environment.

Throughout the 20th century, technical communication instruction at MSM/UMR remained focused on engineering students. The technical communication courses were, by and large, service courses. In the 1980s and 1990s, attempts were made to create degree programs for career technical communicators, but they were not successful. Not until the next century would the department and campus succeed in creating degree programs in technical communication.

5. FORMING BS AND MS PROGRAMS IN TECHNICAL COMMUNICATION

5.1. INTRODUCTION

By fall 2000, technical communication courses at UMR were being offered regularly and consistently. The variety of technical communication courses had grown. No longer were students limited to a course on technical writing. Five different courses in technical communication, ranging from basic to specialized and theory to practice, were being offered:

- English 65 The Technical Writer in Business and Industry
- English 160 Technical Writing
- English 165 Engineer as Writer
- English 260 Practicum in Technical Writing
- English 281 Theory of Written Communication

(*University of Missouri*, 2000-2001)

English 260 and English 281 had each first appeared in the 1992-1993 course catalog (*University of Missouri*, 1992). English 240 Layout and Design was added to the list of required courses two years later in the 2003-2004 University course catalog (*University of Missouri*, 2003-2004).

Another department's newly created degree program, a Bachelor of Science in Information Science and Technology, was requiring technical communication courses, including: a choice between English 60 Writing and Research, English 65 The Technical

Writer in Business and Industry, and English 260 Practicum in Technical Writing ("Information Science and Technology," 2001).

The climate within the English faculty had changed dramatically to become much more favorable toward technical communication instruction. Correspondence and annual reports regarding department tensions and faculty divisions had become fewer. The technical communication faculty's focus of the 1990s was on technical communication instruction while the English faculty's focus was on research and publication of literary topics as well as literature instruction. Perhaps the technical communication faculty's focus on instruction was reflective of those teaching the courses at that time. The technical communication faculty may have been focusing on teaching because most were non-regulars. Research is part of a tenure-line professor's job; it is not typically part of a non-tenure-track instructor's job.

Those teaching technical communication courses had found their voice among the English faculty. Those voices would soon bring changes to both technical communication instruction and the English department.

5.2. TECHNICAL COMMUNICATION DEGREE PROGRAMS ACROSS THE COUNTRY: 1950S TO 2003

Technical writing saw tremendous growth during the 1950s (Connors, 1982). Though universities across the country offered individual courses in technical writing, "before 1953, no degree programs existed" (Whitburn, 2009). The proposed degree at Rensselaer Polytechnic Institute (RPI) was an "experimental operation" that proposed to superimpose "a graduate major in technical writing and editing on an undergraduate education in science or engineering" (Olmsted, 1955, p. 557). Jay Reid Gould helped to

found this "first Masters [sic] in Technical Communication in the country at RPI in 1953 and helped set up the first Ph.D. program in rhetoric and communication in the country at RPI in the late 1960's" ("Jay Reid Gould," 1999). Requirements into the program initially included a bachelors' degree in either science or engineering (Olmsted, 1955).

5.2.1. The 1960s

Technical writing courses struggled to define themselves in the late 1960s, and as the number of undergraduate engineering students fell from 239,000 in 1968 to fewer than 187,000, by 1970, enrollments in technical writing courses fell accordingly (Connors, 1982).

5.2.2. The 1970s and 1980s

By 1974, enrollments in these service courses were again beginning to rise (Connors, 1982). More importantly, though, the departments offering such courses began to develop degree programs to train career technical communicators: "University of Minnesota, St. Paul, University of Washington, New Mexico State University, Miami University of Ohio, Michigan Tech University, Bowling Green State University, Oklahoma State University, Drexel University – to name a few" (Souther, 1989, p. 11).

In 1974, for example, the University of Washington offered students technical writing courses that could be used to complete one of two degrees ("Department History," 2010). Students could use these courses to earn either a minor in technical writing or as the focus of an interdisciplinary bachelor's degree in either engineering or in the general studies program within the college of arts and sciences ("Department History," 2010). The latter was in effect a major in technical communication

("Department History," 2010). When the College of Engineering at the University of Washington eliminated the Humanities and Social Sciences Department in 1983, the seven members of the technical communication faculty became the center of an Interdisciplinary Program in Scientific and Technical Communication ("Department History," 2010). This program became a full-fledged department, the Department of Technical Communication, in 1989, offering both a Bachelor and Master of Science degree in technical communication as well as services courses for engineering students ("Department History," 2010).

In 1976, only 19 academic programs in technical communication were listed by the Society for Technical Communication (Souther, 1989). By 1985, that number had grown to 58 (Souther, 1989, p. 2). It was in the mid-1980s that Dr. Geonetta had been trying to create a similar degree program at UMR.

5.2.3. The 1990s and 2000s

Universities continued to add technical communication programs (majors, minors, certificates, etc.) in the 1990s and 2000s. For example, two universities in Missouri also had degree programs in technical communication by the mid-1990s: Missouri Western State University ("About MSWU/STC") and Missouri State University ("Society for Technical," 2011). From 2001 to 2003, a Professional Writing undergraduate program was developed at Michigan State University, with the program being launched in 2003 (DeVoss & Julier, 2009).

Though the University's instruction in technical communication for non-majors (e.g., engineering majors) may have been comparable to similar instruction at other

universities, by the 1980s, the University in Rolla was behind other comparable universities in technical communication instruction with regards to offering a bachelor's degree to prepare professional technical communicators. Though discussions had taken place, by 1999 no formal proposal had been submitted to the campus curriculum committee for creating either a bachelor's or master's degree in technical communication.

5.3. DISCUSSING A COOPERATIVE DEGREE

In 2000, Dr. Paula Lutz, Dean of the College of Arts and Sciences, appointed an ad hoc group to investigate the possibility of a cooperative technical communication degree between English and Speech/Media Studies (Elizabeth Cummins, personal communication, 15 March 2011). This Communication Task Force was formed to discuss issues, aspects, difficulties, and feasibility of a cooperative degree. This committee was composed of faculty from across campus, including both English and Speech/Media Studies (SMS). After several meetings, Dr. Cummins (personal communication, 28 June 2011), volunteered to draft a proposal that would reflect the results of the discussions and outline the details of a technical communication degree cooperative between the English department and SMS faculty. Cummins (personal communication, 15 March 2011) recalled that writing several drafts according to suggestions from the Communication Task Force. Cummins (personal communication, 14 July 2011) saw that the Task Force was not moving toward an agreement.

5.4. VONALT'S INFORMAL PROPOSAL TO DEAN LUTZ

Dr. Cummins recalled that each draft of the proposal seemed to have been met with great scrutiny, opposition and, in the end, rejection of a cooperative degree (Elizabeth Cummins, personal communication, 17 February, 2011).

Dr. Cummins (personal communication, 17 February, 2011) decided to meet with the chair of the English department, Dr. Vonalt, to discuss the impasse. Vonalt contacted Dean Lutz to discuss what should be done. In his letter (**See Appendix G**) Vonalt (2002) stated that, "having talked with both Lance Haynes (Professor in SMS) and David Williams (Assistant Professor in SMS) about the communication degree, I have concluded that the communication degree English easily could house is the one in which Lance and David have little interest" (p. 3). Vonalt (2002) suggested that the University would "be a logical site for such a degree, given the English department's experience with the technical writing minor" (p. 3). Vonalt (2002) hoped to begin development for approval according to CBHE guidelines upon approval by both Dean Lutz and Provost Y.T. Shah. Should the degree be implemented by the Fall semester 2003, Vonalt (2002) hoped to hire a "technical writing specialist" as soon as possible, no later than Fall 2005.

Within one week, Dean Lutz emailed a response. Lutz had announced "with members of the communication task force committee that the only 'communication' degree that would proceed" would be housed in the English department (Zepernick, 2002). As a result, "the faculty in speech and media would NOT be merged with English" (Zepernick, 2002). This disbanded the Communication Task Force and, with

the support of Provost Y.T. Shah, the English department moved forward to prepare a proposal for a B.S. in technical communication.

5.5. PROPOSING A B.S. AND M.S. IN TECHNICAL COMMUNICATION

During this period in time, the Coordinating Board of Education (CBHE) was very reluctant to approve new degrees. In addition, CBHE systematically sent new degree proposals to the other college and university campuses in Missouri. Any proposal submitted would need to be thoroughly researched, clarifying how the degree program would differ from both Missouri State and Missouri Western. (Elizabeth Cummins, personal communication, 28 June 2011).

5.5.1. Levels/Stages of Approval

In order for the degree to be adopted, a final draft of the proposal needed to be approved at five levels/stages:

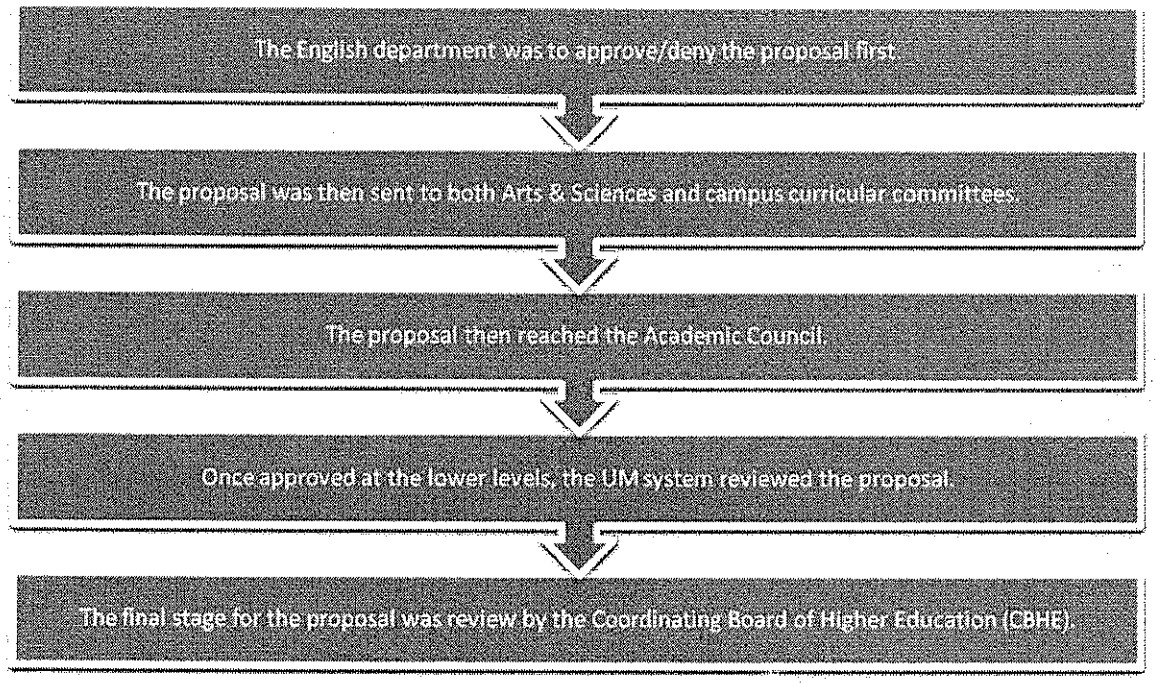


Figure 5.1: Levels/Stages for Approving the Proposal

5.5.2. Writing the Proposal

Dr. Steve Graham, Associate Vice-President for Academic Affairs of the University of Missouri System, suggested that Dr. Vonalt apply for the B.S. and M.S. at the same time. Vonalt agreed and asked Cummins to help draft a new proposal. This new proposal would be written according to CBHE forms and guidelines and would include both a B.S. and M.S. in technical communication housed only in the English department (Elizabeth Cummins, personal communication, 28 June 2011).

As department chair, Dr. Vonalt assumed the role of writer-in-charge. As a retired faculty member, teaching part-time, Dr. Cummins essentially operated as his research assistant, although she did write the business plan for the document. Both had taught English 160 for several years, and Vonalt taught the first sections of English 65. However, their research careers had been in literature; neither had done research in technical communication. Cummins did a great deal of research on the history of technical communication and on degree programs at other schools. Although Rensselaer had been proposed as a possible model for what the department should become, this was ultimately rejected. Although Rensselaer did have a highly respected Department of Communication and Rhetoric, it did not have an English department. Remodeling UMR's English department after Rensselaer's would have meant the end of teaching literature courses (Elizabeth Cummins, personal communication, 30 June 2011).

Dr. Vonalt and Dr. Cummins continued to work closely with Dr. Graham, who offered suggestions regarding meeting formatting requirements of the CBHE. Graham also emphasized the importance of demonstrating how the proposed programs would

both differ from other programs offered in Missouri as well as attract enough students to pay for the faculty (Elizabeth Cummins, personal communication, 15 March 2011). The proposal was submitted (**See Appendices H and I**) and the department waited for a response.

5.6. THE FIRST–TENURE TRACK APPOINTMENT

In Spring 2003, Dr. Vonalt sent an email to Dr. Malone at Missouri Western, inviting him to apply for a technical communication position at the University (Ed Malone, personal communication, 15 March 2011). Malone's experience within Missouri Western's technical communication program as well as his previous employment at UMR from 1996 to 1997 (see Chapter 4) made him a potentially valuable resource for the University's new program. Malone accepted Vonalt's invitation and applied for the position. He went through the interview process and was eventually hired. He returned to the University in August 2003 as the university's first tenure-track appointment in technical communication (Ed Malone, personal communication, 15 March 2011).

5.7. THE DEGREE IS APPROVED

The Missouri Coordinating Board of Higher Education approved both the B.S. and M.S. degrees in technical communication at their meeting in December 2004 ("New Technical Communication," 2005).

5.8. TOTAL DEGREE PROGRAMS BY 2005

When trying to determine the curriculum of a standard technical communication program, Harner and Rich (2005) found 133 bachelor degree programs listed on the Society for Technical Communication (STC) Academic programs database. Further

research indicated that the accuracy of STC's information was directly proportionate to the accuracy of the information found on the websites for each program listed as offering either a BA or BS degree (Harner & Rich, 2005). After confirming accurate and inaccurate data within individual schools' websites, they were able to identify 46 BA programs and 34 BS programs, with five schools studied offering both BA and BS degrees (Harner & Rich, 2005). Thus, by 2005, 80 bachelor's degree programs in technical communication were being offered at 75 institutions (Harner & Rich, 2005). By proposing both a B.S. and M.S. in technical communication simultaneously, Missouri S&T had joined comparable universities in offering degree programs to train professional technical communicators.

5.9. THE PROGRAM'S FIRST DIRECTOR

In August 2007, Dr. Malone was appointed as the University's first Director of the Technical Communication Programs (Ed Malone, personal communication, 15 March 2011). At that time, the graduate teaching assistants (GTA) were using different textbooks in their English 160 classrooms. Within a few semesters, all GTAs were using the same textbook: the latest edition of Burnett's textbook. He had used an earlier edition of this text in English 160 in the mid-1990s. This change not only brought about stronger cohesion and cooperation among sections of the English 160 courses, but it also facilitated the task of supervising and mentoring the GTAs (Ed Malone, personal communication, 15 March 2011). Malone was a link between the technical writing curriculum of the 1990s and the technical communication programs in the 2000s.

5.10. THE PROGRAM'S FIRST GRADUATE

The first graduate of the master's program in technical communication was Rebecca Moneymaker. Moneymaker had been taking the technical communication courses as ENGL 301 Special Topics and ENGL 300 Special Problems (an independent study course) in anticipation of the master's degree being approved. She graduated from the program in December 2005. By fall 2005, the technical communication programs had no undergraduate majors but four graduate students (Enrollment Reports, 2005).

5.11. ENROLLMENTS

By fall 2006, the programs had added five undergraduate students and two more graduate students (Enrollment Reports, 2006). Undergraduate enrollments continued to increase so that, within five years, the program had a total of eighteen students enrolled as majoring in technical communication (**See Figure 5.2**) (Enrollment Reports, 2010).

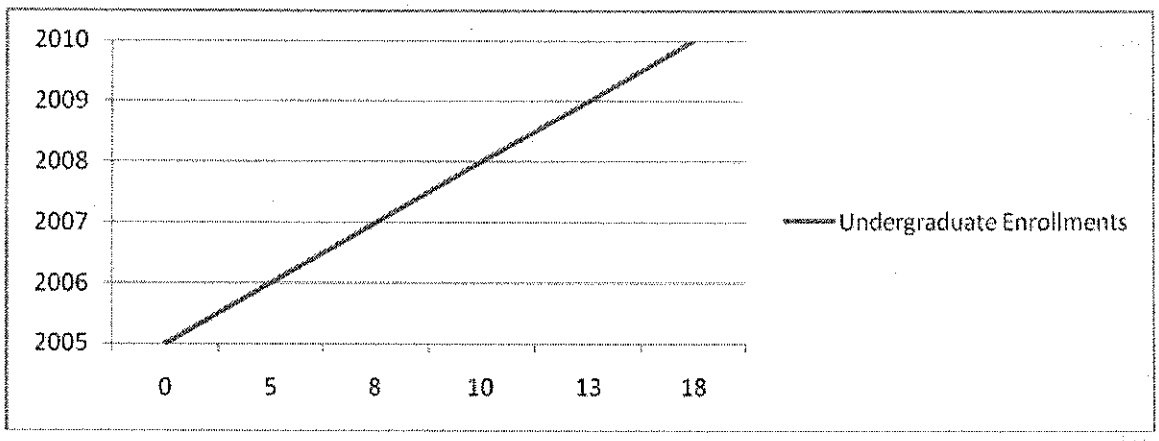


Figure 5.2: Undergraduate Majors

Just as undergraduate enrollments were growing, so too were graduate enrollments. Although the program began in 2005 with only four graduate students (**See Figure 5.3**), within five years that number had risen to ten (Enrollment Reports, 2010).

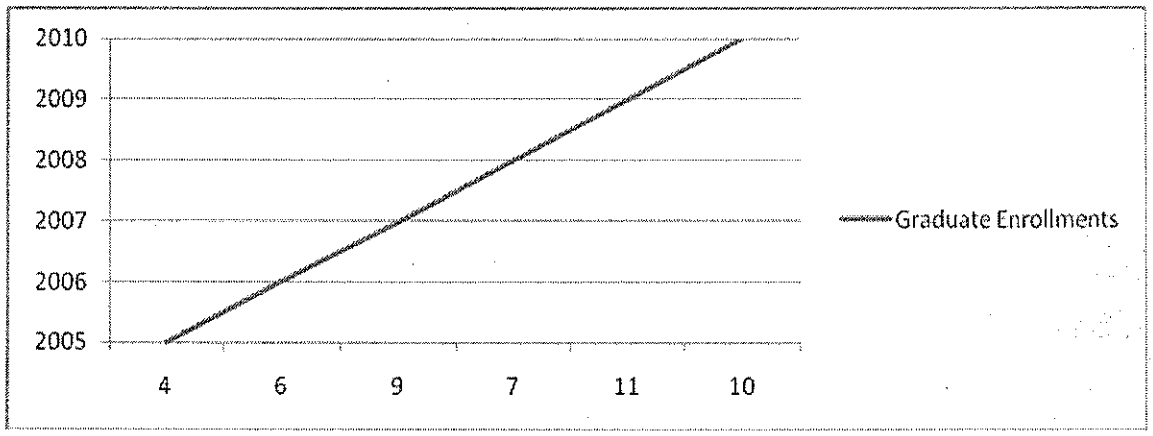


Figure 5.3: Graduate Majors

By fall 2010, the program had a combined enrollment (both undergraduate and graduate majors) of 28 students (**See Figure 5.4**) (Enrollment Reports, 2010).

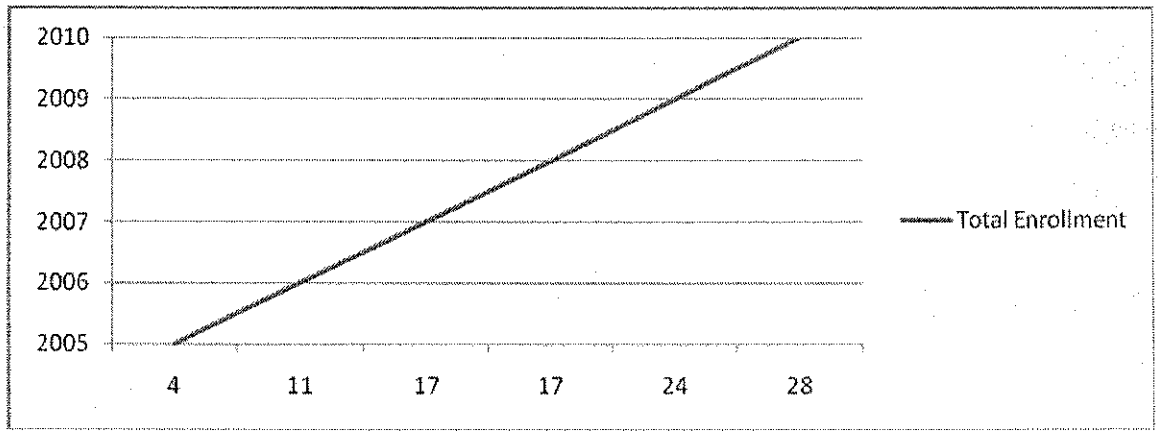


Figure 5.4: Total Majors

5.12. MOST RECENT ADDITIONS

A graduate of Texas Tech University's Ph.D. program in technical communication and rhetoric, Dr. Kathryn Northcut was the department's second tenure-line hire in technical communication, joining the faculty in August 2004 ("A New Member", 2005). In January 2010, she succeeded Dr. Malone as Director of Technical Communication Programs.

Dr. David Wright, the department's third tenure-line hire in technical communication, joining the faculty in August 2007, graduated from Oklahoma State University in 2007 with a Ph.D. in Technical Communication ("Program News," 2007).

5.13. CONCLUSION

The bachelor's and master's degree programs in technical communication at the University were created at a time when many similar programs across the country had been offered for a number of years, in some instances, for over fifty years. The creation of the B.S. and M.S. programs had been a consummation of a long struggle to create a degree program in technical communication. The department went on to create a graduate minor in technical communication and an undergraduate certificate in technical writing. It is in the process of creating a graduate certificate in technical communication. The department has received a $58,000 grant to create online versions of it master's degree program, graduate minor program, and graduate certificate program (Ed Malone, personal communication, 11 July 2011). If the technical communication programs at similar universities are indications of this program's future, the technical communication program at the University will continue to grow.

6. CONCLUSION

6.1. INTRODUCTION

This thesis is the first written attempt to document the history of technical communication instruction at the Missouri University of Science and Technology. I believe this thesis is an important document as it offers a permanent record of the events that have taken place, primarily regarding technical communication instruction, at the University from its beginning 1871 to roughly 2005. Providing a chronological discussion and analysis of these events enabled me to better answer the questions posted at the beginning of this thesis. Those questions are:

- What is the history of technical communication instruction at Missouri S&T?
- What is the evolution of the curriculum in technical communication?
- Who was influential in the development of technical communication instruction?
- How were technical communication courses influenced by political pressure?
- What was the timeframe for the development of the current technical communication programs?
- What were the major factors of this timeframe?
- How does the evolution of technical communication instruction at Missouri S&T compare with that at other similar universities?

6.2. THE HISTORY OF TECHNICAL COMMUNICATION INSTRUCTION AT MISSOURI S&T

During the first thirty years of the school's history, faculty and administration alike struggled to find a place for English courses in the engineering student's degree requirements. From the 1870s to the 1890s, a small fraction of faculty and administration did not see a need for English courses at all, believing engineering students needed to focus on technical courses. These men constituted a minority and were overruled by more forward-thinking minds, such as Ladd and those within his administration who supported him.

6.2.1. Determining the English Curricula

By the early 1900s, for the majority of the faculty and administration, the debate did not center around the necessity of maintaining an English department but, rather, the nature of the English courses that would be offered and required. Some believed students would be best prepared for industry if they were offered literature courses. These literature courses helped familiarize them with western, British, and American culture. In addition, English faculty hoped these courses gave engineering students a well-rounded education, combining the technical information of their engineering studies with the culture of the English courses. Others, however, believed that at least some of the engineering student's time should be spent learning the basics: rhetoric and composition, preparing to write the reports, manuals, and correspondence of their industries. Course catalogs would present this back-and-forth discussion as literature, rhetoric, and composition courses were added, removed, and then added again.

6.2.2. Determining the Technical Communication Instruction

Technical communication courses began slowly at the University, beginning in 1913 with the first technical writing course. Technical communication courses were added and dropped repeatedly throughout the school's history. Great emphasis was placed on the literature courses being offered. Technical communication instruction was seen, by many, as a necessary evil and the faculty and courses were treated as such. Technical communication instruction at the University struggled to find a firm foothold within the students' degree programs. These courses were even completely removed from the course catalogs for a time in the early 1970s. When the courses were returned in the 1970s, they were offered to answer demand: the engineering departments wanted their students to become better communicators. Perhaps the greatest struggle faculty teaching these courses experienced was the lack of support from the English literature faculty.

Technical communication instruction at Missouri S&T began as a means of preparing engineering students for communicating within their industries. Research suggests that were times during the first half of the 20th century when faculty and administrators realized the value of educating engineering students in effective communication. There were also times, however, when technical communication instruction waned on campus.

In the late 1970s, the engineering departments were largely responsible for keeping technical communication instruction within their curricula. When technical writing was removed from the course catalog in the early 1970s, engineering faculty pressed the English faculty to return it to the catalog.

6.2.3. Educating Engineers and Technical Communicators

By the late 1980s, proposals for a scientific and technical communication program had been both discussed and written. Several on the English faculty worked through the 1990s to keep technical communication courses in the forefront even when they were not consciously trying to create new programs. Their efforts were finally rewarded when, in 2004, the English department received approval to offer both a B.S. and M.S. in technical communication. These two degrees seemed to both validate the work of the technical communication faculty as well as elevate their status among English faculty. The English and technical communication faculty can now work not only to educate engineering students to become more effective communicators but also educate professional technical communicators.

6.3. THE EVOLUTION OF THE CURRICULUM IN TECHNICAL COMMUNICATION

Students enrolled within an engineering program will often, upon graduation, find themselves working in very diverse fields with varied responsibilities. This fact was not lost on faculty teaching technical communication. Those teaching technical communication struggled to define a course (or courses) that would satisfy the needs of a very diverse student base in terms of the types of engineering degrees they were pursuing. From the early 1900s to 1920, the technical communication instruction was frequently changed as faculty struggled to determine the best curricula. Although the course numbers, titles, and assignments were always changing, however, all of these courses were regularly and consistently defined as preparing students in written and verbal communication.

From 1920 to the mid-1940s was a fairly stable period for technical communication instruction at the University. Barley seemed to have created a successful, consistently offered technical writing course, English 403 Engineering English. This course, however, would eventually lose the engineering faculty's support as the course was dropped from students' degree programs.. In the 1950s, English 51 Engineering Report Writing seemed, for a time, to offer a steady curriculum as well only to lose support in the late 1960s.

By the early 1970s, faculty seemed once again to have found direction for the technical communication curriculum. First taught in the mid-1970s, English 160 Technical Writing would be offered consistently for over 36 years. This and similar courses were taught by the non-regulars, leading to the ghettoization of technical communication instruction at the University. Many English faculty teaching technical writing at that time had "2nd class status" within their respective departments (Tebeaux, 2000, p. xvii). These faculty members often worked in the hopes of being promoted to the teaching of more literature courses. Many of the non-regulars at the University held backgrounds in literature. Not until the dean stepped in at Dr. Wixson's request did the situation for these non-regulars change, not only expanding the courses they were allowed to teach but also improving their status within the department.

When English 65 The Technical Writer in Business and Industry was first introduced in the early 1990s, it too was offered consistently with the support of both English and engineering faculty alike.

These courses, however, were all emphasizing educating the science and engineering student to become effective communicators. Not until the late 1990s was a

steady, consistent focus given to educating the professional technical communicator. This focus may have been a conscious/subconscious attempt to improve the discipline's status on campus. In addition, technical communication faculty may have been trying to establish technical communication courses that could be offered under a technical communication degree program. Indeed, a number of courses created during the 1990s were later included in the B.S. degree that was eventually approved and implemented.

Attitudes toward the technical communication courses and faculty seemed to change slowly, however, as evidenced by the rejection of both Geonetta's proposal for a B.S. in scientific and technical communication as well as English faculty's unwillingness to expand the teaching schedules of non-regulars. Certainly these obstacles prevented a healthy discussion on the creation of a technical communication degree program, thus slowing the evolution of this curricula at Missouri S&T substantially.

6.4. THOSE INFLUENTIAL IN DEVELOPING TECHNICAL COMMUNICATION INSTRUCTION

The following are those who were historically significant in developing technical communication instruction at Missouri S&T.

6.4.1. Professor Joseph Barley

Professor Joseph Barley was the first professor at the University to offer direction for teaching engineering students to become more effective communicators. Barley taught the first technical writing course offered at the University: English 3, Technical Writing. He gave a purpose to the course that few could argue was not of a technical communication nature: addressing "the problems of engineering writing and the mechanical details of technical writing" (Forty-Second Annual, 1913, p. 60). Barley's course, English 403 Engineering English, first offered in the fall of 1920, narrowed the

focus of technical communication courses to oral and written reports. Barley's courses were the first courses at the University aimed at teaching engineering students to become more effective communicators. Barley seemed to be doing in the 1920s what Geonetta would try to do over 60 years later: fuse the engineering student's technical information with effective communication.

6.4.2. Dr. Sam Geonetta

As an officer in the Council for Programs in Technical and Scientific Communication, Dr. Geonetta was keenly aware of the importance of effective technical communication instruction within the engineering student's curricula. Like Barley, Geonetta tried to bring content from the students' other courses into his courses to demonstrate how one was essential to the other. He brought in technology that allowed students, in a sense, to step from academia into industry. With this technology, students could actively apply classroom concepts (e.g., written, visual, and oral communication) while Geonetta was on hand to offer guidance when necessary. Students could put together print media and practice presentations, using the knowledge and information they gathered from Geonetta's class as well as their engineering classes. This technology allowed students, again, to fuse technical information with technical communication.

In addition, Dr. Geonetta was the first to introduce the possibility of offering a technical communication degree at the University in 1980. Geonetta was a pioneer in this respect, realizing not only the value but also the necessity of offering such a degree. Offering a degree in scientific and technical communication would have allowed faculty the opportunity to offer a wider range of technical communication courses. In addition, offering it would have allowed students at the University to major in technical

communication and become career technical communicators. Students interested in communication as well as science and technology would have been able to pursue this interest as students were doing at other universities. Unfortunately, the degree would not be implemented for another 34 years, allowing these other universities to surpass, for a time, technical communication instruction at UMR.

6.4.3. Dr. Douglas Wixson

Dr. Douglas Wixson certainly played a prominent role in the evolution of technical communication curricula at the University. With a background in both literature and engineering, Wixson brought another unique perspective to the English department. Wixson had experienced firsthand the fusion of technical information and communication and, in many ways, helped to further the work that Geonetta had begun in the 1970s. Like Geonetta, Wixson had a vision for what the technical communication instruction at the University could become. Wixson argued for better trained technical communication faculty and more diversity in the technical communication course offerings, supported the creation of a major in technical communication, and insisted that technical communication and literature were both of value to successfully educating science and engineering students. With time and the elimination of the regular/non-regular division, both technical writing courses and literature courses were shared by all faculty members with proper qualifications, at least up to 1992 when Professor Wixson retired from UMR to continue research at the Harry Ransom Humanities Center at the University of Texas-Austin.

6.4.4. Dr. Elizabeth Cummins

Dr. Elizabeth Cummins played a significant role in the evolution of technical communication instruction at the University. Not only did she teach a significant number of technical communication courses, but she also fought to change attitudes toward the technical communication courses. She insisted that those courses receive the same level of attention that the literature courses were receiving, and, in later years, she was a driving force for bringing the BS and MS in technical communication to fruition.

6.4.5. Dr. Larry Vonalt

Finally, Dr. Larry Vonalt played a significant role in the evolution of technical communication instruction at the University. As a non-regular himself for a time, Vonalt worked to help other non-regulars (and thus, composition and technical communication instructors) find a voice among the English faculty. When Vonalt accepted a tenure-track position, his relationships with non-regulars remained unchanged. He worked to bring technical communication instruction and faculty in-line with literature courses and literature faculty with regards to attitudes toward and prominence of the technical communication courses and faculty.

Dr. Vonalt was a prime mover in the creation of a B.S. and M.S. in technical communication at the University. Although his background was in literature, Vonalt willingly and enthusiastically taught technical communication courses for years. Perhaps ironically, with this background in literature, Vonalt wrote the greater part of the proposal that would eventually lead to the creation of a BS and MS in technical communication.

6.5. POLITICAL PRESSURE INFLUENCING THE TECHNICAL COMMUNICATION INSTRUCTION

Because the school was created as a technical school offering engineering degrees, many faculty and staff simply did not see the value in offering any courses in English. As the English section developed, English faculty focused primarily on literature courses. Because those hired into the English department had training and interests in literature, they resisted the technical communication courses. By the late 1970s, as demand for the technical communication courses was growing and enrollments were rising from semester to semester, resistance turned into resentment. Many faculty in the English department did not want to be aligned with courses that they deemed secondary at best to the literature courses. These courses were viewed as a headache and any attempt to increase their value was blocked at all opportunity by some of the literature faculty.

Many in the English department also feared the technical communication courses. Literature courses can only be offered when enrollments indicate demand. Those regulars teaching literature feared losing their literature courses to technical communication courses. This was certainly a possibility when, in the late 1970s, Dean Barker stepped in with support for those teaching technical communication, the non-regulars. Barker threatened to remove composition from the English curricula and into its own department if non-regulars were not integrated properly into the faculty. Without these service courses, the literature courses could, quite possibly, have disappeared. In addition, the English department could have been eliminated completely because the administration might have had difficulty justifying the expense at the University of an English department offering only literature courses.

Regulars teaching the literature courses wanted the service courses to be housed in English. Service courses in both composition and technical communication, helped support and justify the English section of the Humanities department. Many regulars simply did not want to teach the service courses if they could avoid them. The literature faculty had worked hard to create an English major within the department and later (1983) a separate English department at the University. During the 1980s and 1990s, their focus was, quite naturally, on developing and protecting the literature courses and the integrity of the department as they saw it. Not until the majority of these faculty had left the University by the 1990s were technical communication courses able to assume a prominent place in the English department.

In the 2000s, "Technical Communication" would be added to the department's name, and technical communication courses would be offered under their own designation, not "ENGL," but "TCH COM."

6.6. CONTEXTUALIZING THE EVOLUTION OF TECHNICAL COMMUNICATION INSTRUCTION AT MISSOURI S&T

Technical communication instruction at colleges and universities similar to Missouri S&T began as a means of educating engineering students to better communicate their technical knowledge and information. The passage of the Morrill Act in 1862 that led to the foundation of land grant colleges such as the University, combined with both the new technology of the Civil War and the Industrial Revolution, replaced the traditional education of liberal arts studies with that of "technical and applied specialties - chief among them engineering" (Connors, 1982, p. 330). "The growing need for

engineers to plan and build roads, canals, and railroads" also created a need to communicate this information effectively (Reynolds, 1992, p. 462).

6.6.1. Major Factors

Colleges created after the Civil War seemed to follow one of two patterns (Reynolds, 1992). (1) Because no precedent existed regarding the direction of land grant colleges, many "tended to follow their own inclinations tempered by local circumstances" (Reynolds, 1992, p. 462). Certainly, MSM was created as a means to address the great mining opportunities throughout Missouri (Phelps County Historical Society, 1941). (2) In addition to a lack of precedent, "no public consensus existed about how engineering training should be conducted, and no public agencies or institutions had the power to promote or enforce uniformity" (Reynolds, 1992, p. 462). Essentially, each school was at its own discretion to determine the school's curricula.

The MSM faculty struggled for decades to determine the best curricula for engineering students. Certainly, the English faculty struggled to determine the best courses to offer these specialized students.

6.6.1.1 Educating Engineers to Communicate Effectively

Technical writing "emerged as a result of the engineer's increasing responsibility to communicate technological changes to a large and diverse audience – not just other engineers, but academics, lawyers, and the public" (Kynell, 2000, p. 10). Not until 1907, however, did "the rhetorical elements of engineering writing" really "begin to surface" (Tebeaux, 2000, xvii). This was certainly true at MSM. Technical communication instruction did not begin to appear until English 3a Scientific and Expository Literature was offered in the fall of 1911. The first official technical communication course appeared two years later in 1913: English 3 Technical Writing. Courses such as these

offered at MSM between the early 1900s and the 1950s focused, as such courses at many comparable universities did, on educating engineering students to communicate more effectively.

Just as the Civil War brought technology to the forefront in the 1860s, so too did World War II nearly 100 years later. Technical writers had been "in great demand during the war" with technical writing becoming "a genuine profession as wartime technologies were translated into peacetime uses" (Connors, 1982, pp. 340-341). As a result, technical communication instruction went through a great transformation from the 1950s to the 1990s. The transformation was in educating *both* the would-be scientists and engineers as well as career technical communicators.

6.6.1.2 Educating Career Technical Communicators

RPI offered the first master's degree in technical communication in 1953 ("Jay Reid Gould," 1999). The Association of Technical Writers and Editors and the Society of Technical Writers were created in that same year, later merging to become the Society of Technical Writers and Editors in 1957, then merging with the Technical Publishing Society to become the Society of Technical Writers and Publishers in 1960, and finally changing its collective name to the Society for Technical Communication in 1971 ("A Rich History"). The University of Michigan, Massachusetts Institute of Technology, Colorado State University, and the University of Washington followed after RPI, each creating their own degree programs in technical communication in the 1960s (Souther, 1989, p. 9).

There were approximately 20 technical communication degree programs in the country when the Council for Programs in Technical and Scientific Communication (CPTSC) was formed in 1974 (Pearsall & Warren, 1996). By 1981, there were 28 degree

programs in technical communication, and there were 58 by 1985 (Souther, 1989). In Missouri, two technical communication degree programs were well established by the 1990s: Missouri Western State University and Missouri State University. Missouri S&T did not receive approval to offer both a B.S. and M.S. in technical communication until 2004 ("New Technical Communication," 2005).

6.6.2. Summary

Missouri S&T began educating engineering students to become effective communicators quite early in the school's history, the early 1900s, certainly within the same timeframe of other similar colleges and universities. The University fell behind, however, in educating and preparing professional technical communicators. Technical communication programs, organizations, and societies designed to prepare and support professional technical communicators proliferated from the 1970s to the 1990s as the University struggled to develop and maintain a steady technical communication curriculum for engineering students.

While other institutions developed technical communication instruction for career technical communicators simultaneously with technical communication instruction for science and engineering students, Missouri S&T did not. A few faculty at the University had certainly tried to create a technical communication degree program within the same timeframe as other universities were doing (the 1980s and 1990s). These faculty seemed to understand that the environment at Missouri S&T was ideal for a technical communication program. Those efforts were simply unsuccessful until 2004.

6.7. CONCLUSION

For decades, technical communication instruction has struggled to find a prominent place in universities across the country. The history of technical communication instruction at the University is no exception. A number of men and women at this university worked for decades to educate and prepare engineering students for workplace writing. In addition, many of these pioneers helped todevelop a technical communication program that today offers students of all backgrounds the opportunity to become effective and successful technical communicators. These men and women deserve a prominent place in the history of technical communication instruction not only at the Missouri University of Science and Technology but in the United States.

APPENDIX A.

IRB APPLICATION

APPLICATION TO THE UNIVERSITY OF MISSOURI-ROLLA
CAMPUS INSTITUTIONAL REVIEW BOARD
c) ***FOR THE PROTECTION OF HUMAN SUBJECTS IN RESEARCH (UMRIRB-1)***

Review Requested: [X] **Exemption** [ ] **Expedited** [ ] **Full Board**

1a. Primary Investigator: Elizabeth Roberson

Daytime Phone Number: 573.308.7679

Mailing Address: 22024 Maries Road 444

City/State/Zip: Vichy, MO 65580

E-Mail Address: emrt24@mail.mst.edu

Department: **English & Technical Communication**

1b.Additional Applicant(s):

1c.Advisor: Dr. Ed Malone

Daytime Phone Number: 573.341.4681

Advisor's E-Mail Address: malonee@mst.edu

Department: English & Technical

Campus Mailing Address: 236 Humanities & Social Sciences Rolla, MO 65409

2. Project Period: From September 18, 2010 **to** May 30, 2011

3. Funding Source(s): N/A

4. Site of Work: Primarily on campus at MS&T; Some interviews to be conducted off campus

5a. Title of Project:

A Research Proposal Concerning the History of Technical Communication at Missouri University of Science & Technology

5b. Brief description of its general purpose:

This proposal suggests researching the history of technical communication at Missouri S&T. The research proposed will seek to answer a number of questions on several different levels. These levels include the academics at Missouri S&T, the academics of technical communication across the United States, and the evolution of technical communication as a discipline/field.

6. **Give details of the procedures that relate to the subjects' participation, including at a minimum the following information (append additional page(s) if necessary):**

   a) **How will the subjects be selected and recruited? (Append copy of letter, ad, or transcript of verbal announcement.)**

Subjects will be chosen according to their relationship with and education at MS&T. A letter will be sent requesting information and permission to conduct interviews.

   b) **What inducement is offered?**

N/A

   d) **Number and salient characteristics of subject, i.e., age range, sex, institutional affiliation, other pertinent characterizations.**

I intend to contact as many as 40 people for the purpose of this research. Interviews would be conducted among both men and women. Some interviews conducted will be with former alumni. Others will be conducted with former instructors/professors. Ages could range from the early thirties to the late nineties.

   d) **If a cooperating institution (school, hospital, prison, etc.) is involved, has written permission been obtained? (Append letters).**

N/A

   e) **Number of times observations will be made?**

Interviews may be conducted once or several times.

   f) **What do the subjects do, or what is done to them, in the study? (Append copy of questionnaires or test instruments, description of procedure to be conducted on the subject.**

Subjects will simply be asked questions relating to their relationship and experiences with MS&T in regards to English and technical communication.

   g) **Is it clear to the subject that their participation is voluntary, that they may withdraw at any time, and that that they may refuse to answer any specific question that may be asked them?**

yes

   h) **Number of subjects to be used in the project:** 40

   i) **Please indicate below if any of your proposed subjects might fit into the following categories:**

Minors?	**Yes**		**No**	X	**Age**		**Incompetent Persons?**	**Yes**		**No**	X
Pregnant Women?	**Yes**	X	**No**				**Students?**	**Yes**	X		
Women of Child-Bearing Age?	**Yes**	X	**No**				**Low-Income Persons?**	**Yes**	X	**No**	
Institutionalized Persons?	**Yes**		**No**	X			**Minorities?**	**Yes**	X		

j) Cite your experience with this type of research.

N/A

7. **How do you intend to obtain the subjects' informed consent? If in writing, attach a copy of the consent form. If not in writing, include a written summary of what is to be said to the subject(s), and justify the reason that oral, rather than written, consent is being used. Also, explain how you will ascertain that the subjects understand what they are agreeing to.**

8. **In your view, what benefits may result from the study that would justify asking the subjects to participate?**

I believe this research is essential if we are to gain a better understanding of the technical communication curriculum at Missouri S&T. Answering these research questions can tell us not only how it evolved but also who was influential in that evolution. Those who helped keep this curriculum alive can receive the credit they deserve. Researching the history of technical communication at Missouri S&T can help create a clearer picture of the history of technical communication academically. Most importantly, understanding the development of technical communication at Missouri S&T can help us gain a more informed and applicable understanding on the evolution of technical communication as a whole.

9a. **Do you see any chance that subjects might be harmed in any way? Do you deceive them in any way? Are there any physical risks? Psychological? (Might a subject feel demeaned or embarrassed or worried or upset? Social? (Possible loss of status, privacy, reputation?)**

I cannot foresee any risk involved with this research.

9b. **How do you ensure confidentiality of information collected? (Consider 9a and 9b from the point of view of the subject.)**

Participants will be notified ahead of time their information could become public knowledge. If participants wish to be included in the research anonymously, no identifying attributes will be given for the participants.

Elizabeth Roberson	Ed Malone	

e) **Applicant's Name (Please Print)** **Faculty Advisor's Name (Please Print)** **Date**

Applicant's Signature **Faculty Advisor's Signature** **Date**

INSTRUCTIONS FOR COMPLETION OF THE "APPLICATION TO THE UMR CAMPUS IRB" (UMRIRB-1)

The form "Application to the University of Missouri – Rolla Campus Institutional Review Board for the Protection of Human Subjects in Research" (UMRIRB-1) was designed to be self-explanatory. Occasionally there are questions; therefore, the following is offered as a guide to assist you in completing the application thoroughly.

Some institutions use a color-coded series of application forms, i.e., yellow for survey research, red for biomedical, green for educational, etc. Each form asks questions specific to a given type of research. The UMR Campus IRB application was designed as "one form fits all", with the applicant answering all pertinent questions, appending attachments as appropriate. If any question does not apply to your research project, mark it N/A (not applicable). The application was designed to serve as a checklist for the researcher, ensuring the research plan includes all necessary elements.

You should answer all questions thoroughly. If you do not answer questions that are pertinent to your proposed research, or if you do not attach a copy of the research instrumentation, procedures, etc., your application will be returned to you or held for receipt of all necessary documentation. If you have any questions about what should be included in your application packet, please contact the UMR Campus IRB at (573) 341-4305.

1a. ***Principal Investigator's Name, Daytime Phone Number, etc.:*** **This person, if there is more than one applicant, is the individual who is to serve as the lead contact for all correspondence and requests from our office regarding the application. Please ensure that all contact information listed is only that of the Principal Investigator.**

1b. ***Additional Applicants*: Please list all names of additional applicants, other than the Primary Investigator. PLEASE BE SURE THAT EVERYONE LISTED IN THIS SECTION SIGNS THE ORIGINAL APPLICATION FORM!**

1c. ***Advisor:*** **Please list the full name and contact information of your advisor, if you are a student. Also remember to have him/her SIGN YOUR ORIGINAL APPLICATION PRIOR TO FORWARDING TO OUR OFFICE.**

2. ***Project period:*** **Give approximate time period of subject involvement. This is important if your project is a long-term one; the Campus IRB must review ongoing projects every eleven months. Our interest here is in the period of subject participation and data analysis.**

3. *Funding source(s)*: If your project is supported, totally or partially, by external funding, the Campus IRB wants to know. (We keep track of sponsored human subject research.) If you are self-funded, enter "N/A." If the proposal has not been funded, but has been submitted, enter the proposed funding source.

4. *Site of work:* Where are you going to involve the subjects? On campus? At a local high school? All over the state? (Interested in subjects' location, not in the place of the data analysis.)

5a. *Title of project:* List title of project.

5b. *Brief description of its general purpose:* List brief synopsis of your project.

6a. *How were subjects selected and recruited?:* Where did you get your subject population? Passers-by-at-large? Random selection from the telephone book? The Psychology pool? Inmates in a prison? Residents of a nursing home? How did you select population? Was it through an advertisement in the paper, letter, announcement, etc.?

6b. *What inducement is offered?:* If subjects are to receive a stipend, grade points, or any other reward for participating, what is it? If there is no inducement, enter "N/A".

6c. *Number and salient characteristics of subjects:* How many subjects do you plan to involve? Do you plan on distributing 50 or 1,000 survey forms? What is the number of subjects you intend to involve? Also, characterize them -- females, ages 8 to 80, or males, 18 to 22, or what? Are your subjects all eighth grade students, or members of a specific church, or holders of a MO hunting or fishing license? Give any specifics that categorize your subject population.

6d. *If a cooperating institution is involved, has written permission been obtained?: APPEND LETTER(S).* Researchers must have written permission from the head of an organization or member of the administration with sufficient rank to grant such permission. For example, a teacher friend may not give you permission to enter his/her eighth grade classroom in the Rolla Public School System to conduct research; this permission must be obtained from the Superintendent of Schools of that district, or the principal of the specific school, at a minimum. If there is no cooperating institution, enter "N/A".

6e. *Number of times observations will be made?:* Are you asking the subjects to complete one instrument once? Are you asking them to report their diet three times a week for six weeks, and take blood samples once a week for the six weeks? How much of the subjects' time will you take up -- half an hour? Six hours?

6f. *What do the subjects do, or what is done to them, in the study?: APPEND COPY OF QUESTIONNAIRE(S), TEST INSTRUMENT(S), OR DESCRIPTION OF PROCEDURES TO BE CONDUCTED ON THE SUBJECTS.* If you are involved in thesis, dissertation, or sponsored research, attach a copy of your research procedure. If not, give a clear, concise description of what you intend to do to or with the subjects. The Campus IRB is not interested in what type of analysis you intend to carry out on the data. We are interested in what you are going to measure and how.

6g. *Is it clear to subjects that their participation is completely voluntary, that they may withdraw at any time, and that they may refuse to answer any specific question that may be asked them ?:* Does your informed consent form or statement make this clear to the subjects? Is it written in language they can understand?

6h. Indicate the approximate number of subjects who will participate.

6i. Indicate if any of your subjects fit into the categories listed in 6(i).

6j. ***Cite your experience with this type of research:*** **The Campus IRB's interest here is mainly in projects where there is an element of risk for the subjects -- physical, emotional, through potential breach of confidentiality, etc. In such cases when the researcher does not have adequate experience, the Campus IRB will work to ensure the subjects' safety by having someone with adequate experience monitor the project.**

7. ***How do you intend to obtain the subjects' informed consent? If in writing, attach a copy of the consent form. If not in writing, include a written summary of what is to be said to the subjects, and justify the reason that oral rather than written consent is being used. Also, explain how you will ascertain that the subjects understand what they are agreeing to*** [1]**. The Campus IRB may allow consent to be obtained other than through the full consent form, provided: (1) there is no risk, or risk to the subject is minimal, (2) the written consent procedure would not be normally used outside the research context, and (3) the consent document would be the only link between the subject and the research data.**

The decision as to whether an informed consent document is required is reserved to the Campus IRB. However, the Campus IRB does specifically require that potential subjects be informed that:

(1) participation in the research project is voluntary
(2) the title of the project is stated;
(3) state who is conducting the research and under whose auspices;
(4) explain what they are being asked to do or what will be done to them;
(5) tell them how much of their time will be involved in the study;
(6) explain that participation is fully voluntary, the subject may quit at any time, and the subject may refuse to answer a question(s);
(7) define the method of ensuring subjects' confidentiality;
(8) provide the name of the person who would furnish subjects with additional information about the research project; and
(9) offer to answer any questions the subjects might have about the study.[2]

8. ***In your view, what benefits may result from the study that would justify asking the subjects to participate?:*** **What expected value is there to the study that gives the researcher the right to ask the subjects to participate?**

9a. ***Do you see any chance that subjects might be harmed in any way? Do you deceive them in any way?***[3] ***Are there any physical risks? Psychological? (Might a subject feel demeaned or embarrassed or worried or upset? (Possible loss of status, privacy, reputation?)*** **This is the part of**

---

1 The Campus IRB will determine if oral consent is appropriate.

2 A Checklist entitled, "Informed Consent Checklist:, is available on request from the Campus IRB Office or our website.

3 The UMR Campus IRB does not approve of deceit in research. It will review and may approve applications that involve limited deception, with the proviso that subjects receive a comprehensive debriefing within a reasonable time frame.

the application that is concerned with the cost/benefit ratio of the proposed research, and calls for an honest evaluation by the researcher of these considerations from the point of view of the subject.

9b. ***How do you ensure confidentiality of the information collected?*** **See 9a.**

Be sure that the applicant(s) signs the application in the lower left corner. If the applicant is a student, the faculty advisor must also sign in the indicated place. This faculty advisor signature indicates that the advisor has reviewed the proposed research and approves of it as being methodologically and ethically sound, taking full responsibility for the conduct of the research, if approved.

If you have any questions, please contact:
Campus IRB
108 Campus Support Facility
Rolla, MO 65409
(573) 341-4305

APPENDIX B.

CONSENT FORM

Consent Form

I am currently conducting research to record the history of technical communication instruction at the Missouri University of Science & Technology (MS&T). The research I propose will seek to answer a number of questions on several different levels. These levels include the academics at MS&T, the academics of technical communication across the United States, and the evolution of technical communication as a discipline/field. I intend to publish this research in the form of a thesis through the Scholars' Mine (http://scholarsmine.mst.edu/) on the Missouri S&T campus. As such, this information will become available to anyone who may be interested in reading it.

Part of this research includes conducting interviews. These interviews consist of asking a series of questions regarding individual experiences, knowledge, and opinions of technical communication at Missouri S&T. All interviews will be recorded in audio format unless participants request no audio. These interviews involve no risk whatsoever. Should you feel uncomfortable with the interview, you are free to discontinue the interview at any time.

In addition, I prefer to give credit to those contributing to this research. This credit includes both a cited reference within the document. All references will be done in a professional manner without any risk of embarrassment/legal issues for you. Should you be uncomfortable with a citation, I will at any time record data obtained as "confidential".

By signing this form, you agree to be interviewed as part of a research project to record the history of technical communication instruction at Missouri University of Science & Technology.

Signature Date

By signing on the line below, you agree to have your interview recorded in audio format only.

Signature Date

APPENDIX C.

IRB APPROVAL

Campus Institutional Review Board Approval Form
Missouri University of Science and Technology

This is to certify that the research proposal entitled:

Title

Submitted by: **Elizabeth Roberson**
Department: **English and Technical Communication**

has been reviewed by the Campus IRB and approved with respect to the study of human subjects as appropriately protecting the rights and welfare of the individuals involved.

Type of Approval: X Exempt ____ Expedited ____ Full

Approval Date: 1/15/11 Expiration Date: 1/14/12

Note that approval of this research is contingent upon the following agreement by the researcher(s):

1) To report potentially serious events to the Campus IRB by the most expeditious means within five days of occurrence. The IRB may require an additional written report.

2) To submit a **Change in IRB Approval Form (Missouri S&T IRB-2)** if the project changes in any way that affects human subjects.

3) To maintain copies of all pertinent information, including copies of informed consent agreements, for a period of three years from the date of completion of the research.

4) To adhere to all S&T Policies and Procedures relating to human subjects, as written in accordance with 45 Code of Federal Regulations 46.

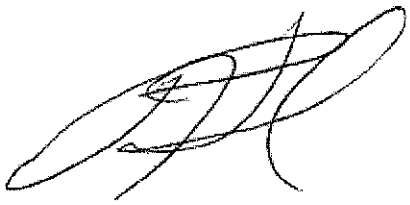
5) To be aware that Federal and University Regulations require continuing review of research projects involving human subjects. Therefore, **this approval will expire one year from date of approval.** To meet this requirement, **Continuing Review Report (Missouri S&T IRB-4)* should be filed within one year of the original approval date.** However, projects receiving Exempt Approval and lasting less than one year do not need to provide this report. The campus IRB reserves the right, at any point, to inspect project records to ensure compliance with federal regulations.

*See http://irb.mst.edu for the necessary forms.

Approved By: Richard H. Hall Title: Professor, Information Science and Technology

Chair, Institutional Review Board

Date: January, 15, 2011



APPENDIX D.

CERTIFICATE OF COMPLETION FOR THE WORKSHOP ON HUMAN SUBJECTS

CITI Collaborative Institutional Training Initiative (CITI)

Social and Behavioral Responsible Conduct of Research Curriculum

Completion Report

Printed on 6/20/2011

Learner: Elizabeth Roberson (username: emrt24)

Institution: Missouri University of Science and Technology

Contact Information

236 HSS
5000 W. 14th Street
Rolla, MO 65409 USA
Department: English & Technical Communication
Phone: 573.341.4681
Email: emrt24@mail.mst.edu

Social and Behavioral Responsible Conduct of Research: This course is for investigators, staff and students with an interest or focus in **Social and Behavioral** research. This course contains text, embedded case studies AND quizzes.

Stage 1. Basic Course Passed on 01/17/11 (Ref # 5454824)

Elective Modules	Date Completed	Score
Introduction to the Responsible Conduct of Research	01/14/11	no quiz
Research Misconduct 2-1495	01/17/11	4/5 (80%)
Data Acquisition, Management, Sharing and Ownership 2-1523	01/17/11	5/5 (100%)
Publication Practices and Responsible Authorship 2-1518	01/17/11	4/5 (80%)
Peer Review 2-1521	01/17/11	4/5 (80%)
Mentor and Trainee Responsibilities 01234 1250	01/17/11	6/6 (100%)
Using Animal Subjects in Research 13301	01/17/11	5/8 (63%)
Conflicts of Interest and Commitment 2-1462	01/17/11	5/6 (83%)

Collaborative Research 2-1484	01/17/11	6/6 (100%)
Human Subjects 13566	01/17/11	9/11 (82%)
The CITI RCR Course Completion Page.	01/17/11	no quiz

For this Completion Report to be valid, the learner listed above must be affiliated with a CITI participating institution. Falsified information and unauthorized use of the CITI course site is unethical, and may be considered scientific misconduct by your institution.

Paul Braunschweiger Ph.D.
Professor, University of Miami
Director Office of Research Education
CITI Course Coordinator

APPENDIX E.

SYLLABUS FOR ENGINEERS AS WRITERS

UNIVERSITY OF MISSOURI-ROLLA

Department of Humanities

English 165: The Engineer as Writer

D. Wixson
Hum. & SS 224

Course Syllabus

The course is divided into four sections corresponding to the texts selected for study.

I. THE ROMAN ENGINEER AS WRITER
text: Vitruvius, The Ten Books on Architecture
Frontinus, The Aqueducts of Rome

1. course requirements, rules, texts, assignments, methodology, term project

2. general introduction to the Roman city and civilization; texts as vehicles of communication

3. Vitruvius: plan for a city

4. Vitruvius: materials for a city

5. Vitruvius: buildings & machines

6. Vitruvius & the Colosseum: technical, aesthetic, and symbolic evaluation (text & project)

7. Frontinus, city water commissioner

8. water & Roman life: Frontinus

9. Frontinus: distribution, construction, operation

10. Frontinus: measuring, hydraulics, water rights

11. Frontinus applied to the Pont-du-Gard: an evaluation (text & project)

12. quiz; essay I assigned

II. THE GOTHIC BUILDER AS WRITER
text: Abbot Suger of St. Denis, On His Administration
Theophilus, On the Divers Arts
The Sketchbook of Villard de Honnecourt

13. Abbot Suger at St. Denis--background

14. Suger's description of his construction of a Gothic cathedral: vaults, arches, buttresses, etc.

(Syllabus: English 165, p. 2)

15. Suger applied to Chartres (text & project): threefold evaluation

16. Theophilus' description of Gothic building crafts (technical exposition)

17. The Sketchbook of Villard de Honnecourt : graphics as a part of the inventive process

18. summary; essay II assigned

III. TWO ITALIAN ENGINEERS AS WRITERS
texts: Biringuccio, Pirotechnia
Leonardo da Vinci, Note-books

19. Biringuccio: an argument for mining; introduction and background

20. Pyrotechnia compared to On Divers Arts

21. Biringuccio and the tradition of alchemical literature

22. Leonardo: engineer/artist as writer

23. The form and technique of the Note-books

24. The flying machine: text & project, an evaluation; summary; essay III assigned; student reports begin

25. quiz; student oral reports: the student/engineer as writer

IV. EADS AS WRITER
text: James B. Eads and the Great St. Louis Bridge
James B. Eads, "Arch and Truss Bridges"

26. James B. Eads, "The St. Louis Bridge Project"; student oral reports

27. Eads's description of the arch construction; student reports

28. The effect of Eads's report & its significance for its age and today; student reports

29. Eads's report, Eiffel's report, and da Vinci's letter; student reports

30. The Eads Bridge: an evaluation in terms of Eads's report according to the threefold criteria; student reports

31. The craft of engineering writing & the art of seeing; summary of the course; written reports due; final examination; critique of course

English 165 FINAL EXAMINATION May 1978

Do your own work. You are free to use your notes and texts.

First think and organize your ideas; then begin to write.

Due on Tuesday before 5 PM. Bring to me in Room 224 Hum. & SS Bldg., or give to secretary to put in box marked "English 165."

Two essays, each ca. 500 words in length

Essay I

A noted da Vinci scholar writes that the main quality of da Vinci's Notebooks is "the feeling they give of unimpeded, untroubled, unaltered transfer of the object in his vision to the paper...."

Write a careful essay in which you describe how da Vinci saw the world and how expressed his vision in his Notebooks. Do you agree/disagree with the citation given above?

In the course of your essay, respond to questions numbers 2,8,18, 19,20,21,34,35,36,39,40,41,42,43, in your da Vinci study handout. In other words, use your responses to these questions as the basis of your essay. Assemble your ideas into a coherent, well-ordered, and unified essay. (Several of the questions are related, and can be grouped together in the same paragraph with the same topic sentence.)

Essay II

Bridges have often been subjects of poetry, songs, and painting (e.g., Vincent van Gogh, Hart Crane, S.endhal, "Le pont d'Avignon," etc.). Indeed, engineering structures can be works of art in their own right, competing with the creations of artists. Marcel Duchamp, a pre-World War I artist ("Dada"), wrote about an exhibition of airplanes he visited:"Painting has come to an end. Who can do anything better than this propeller? Can you?"

The Eads Bridge has been celebrated by engineers and poets, perhaps because it represents our own age's concept of function, namely utility. It embodies utility in a noble way, we might argue. The form (appearance, design) matches the function (a bridge to carry people and goods across a wide river) perfectly. And the arches of the bridge seem to symbolize something too. In your essay, use the methods you have learned in this course to comment on the Eads Bridge according to the threefold scheme, technical, aesthetic, and symbolic. Write a coherent and graceful essay with a central thesis and an organization which is based upon the threefold scheme mentioned above.

Give examples. Be sure your conclusion supports your thesis-statement and illustrations (unity).

In writing your essay questions observe the following:

--think over the questions carefully; read them several times.

--decide upon some central focusing main thesis of your essay.

--your main thesis should treat the topic I have given you, not some other topic.

--organize and group the questions according to the order of your thought; integrate your response to them into the logic of your essay.

--you can of course add other responses and ideas to your essay; but be sure to answer the questions given above.

--you will be graded on how you organize and write your essay, in addition to the quality of the content.

Special Notice:

See the May 1978 issue of Scientific American for an article on the Roman aqueduct system and Frontinus. You will find this article interesting after having taken my course.

APPENDIX F.

GEONETTA SELF-STUDY

Proposed Requirements

for a Bachelor of Science

Scientific and Technical Communication Degree

A minimum of 130 credit hours required.

I. Sciences

33 hrs. minimum required and must include the following:

Math/Stat 8: Calculus with Analytic Geometry I (5)
Math/Stat 21: Calculus with Analytic Geometry II (5)
Math/Stat 22: Calculus with Analytic Geometry III (4)
Computer Science 73: Intro to Programming (2)
Computer Science 77: Computer Programming Lab (1)
Physics 21, 22: General Physics lecture and lab (5)
Physics 25, 26: General Physics lecture and lab (5)

II. Basic Skills

17 hrs. minimum required and must include the following:

English 1: Composition (3)
English 60: Intermediate Composition (3)
Sp/Media 85: Principles of Speech (3)
Introductory Foreign Language (8)

III. Humanities

12 hrs. minimum required

Elected from each of the areas of Literature, Philosophy, and Fine Arts (Art and Music). No performance or studio courses in Music or Art count toward fulfilling these requirements.

IV. Social Sciences

12 hrs. minimum required and must include the following:

Williams' law History or Political Science (3)
9 hrs. elected from two additional areas of the social sciences

V. Major Requirements

33 hrs. minimum required

A. Oral Communication (6)

Courses in the writing and presentation of speeches on technical subjects; in small group communication, including interviewing; in leadership in conference organization; and in group dynamics.

B. Written Communication (9)

Courses in technical and science writing; in the study and practice of textual editing; and in writing styles appropriate to particular audiences.

C. Visual Communication (6)

Courses in the integration of graphics and/or sound into oral and written communication; including use of equipment; computer graphics; photography; videotaping techniques; production design and layout.

D. Theory of Communication (9)

Courses in semiotics; discourse theory and critical strategies; argumentation; information theory; non-verbal communication. Some of these courses may be interdisciplinary.

E. Introduction to Scientific and Technical Communication (3 sophomore year)

Required of all majors. The course examines the verbal and visual matrix of the scientific and technical environment, including international communication, the relationship between language and culture, and the relationship between the visual and the verbal.

VI. Minor

12 or more hrs. as required

Students minor in a scientific or technological field, except in rare instances approved by the advisory committee.

VII. Electives

The remaining 11 hrs. needed to fulfill the required 130 hrs. for the B.S. degree will be elected in consultation with the advisor.

Note:

Majors in the Scientific and Technical Communications degree are recommended to consider taking courses as electives that will enhance their program. Examples of such courses are as follows:

History 270: History of Technology to 1900
History 274: Recent American Art and Technology
History 275 and 276: History of Science I and II
History 374: Twentieth Century Technology and Society
Philosophy 50: Ethical Theory
Philosophy 220: Minds and Machines
English 133: The Literature and Folklore of Technology
English 165: Engineer as Writer
Psychology 311: Human Factors

SELF STUDY:

SPEECH AND MEDIA STUDIES

Presented to

Dean Marvin Barker

College of Arts and Sciences

by

Dr. Sam C. Geonetta, Section Head

December, 1980

PREFACE

This study focuses on the educational functions of Speech and Media Studies in meeting the needs of society and technology and science education in the 1980s. The presumption for proceeding in this manner is that research and service grow out of and complement the educational activities of a section.

This study articulates the assumptions upon which the goals for Speech and Media Studies rest, including considerable growth in information as a "product", growth in technology and science, and growth in adult education. The goals for Speech and Media Studies, which emphasize the development of a B.S. degree in Technical and Scientific Communication and the development of a comprehensive program of service and continuing education courses, are presented and resources for implementing action to achieve the goals are discussed.

CONTENTS

SELF-STUDY: SPEECH AND MEDIA STUDIES

Sam C. Geonetta

Because communication will be central to meeting changes in the way society functions and in engineering and science education, the 1980s will present many challenges for Speech and Media Studies at the University of Missouri-Rolla. This study explores the major assumptions that provide the basis for the role of Speech and Media Studies in the 1980s, provides the rationale for a B.S. degree in Technical and Scientific Communication in Speech and Media Studies, and projects necessary resources for the implementation of activities in Speech and Media Studies.

Assumptions

The Growth in Information. The principle "product" of the next decade in America will be information. According to Jon Stewart of The Saturday Review, nearly 54% of the population currently engages in work related to the production and dissemination of information. In a RAND Corporation study "The Information Machines", Ben Bagdikian argues persuasively that the percentage of individuals in this area will continue to grow until information and information processing is America's primary commodity. Much of this information will be in technology and the sciences as more individuals work in these areas and as society continues to turn to these areas to solve its

problems.

To meet the demand for information and the problems of disseminating the available pool of information the use of communication technology, such as computer networks and cable television systems, will spread. How effectively and efficiently information spreads and is utilized and how communication technology effects this information and its use will be one of the primary concerns of experts in human communication represented by those in Speech and Media Studies at the University of Missouri-Rolla.

The Growth in Technology and Science. The growth in technology and science will continue through the Eighties. This will be a challenge to the University of Missouri-Rolla because of the growing need for new technologists and scientists and because of the need to re-educate those technologists and scientists in the field who will need the most current information to function effectively.

Individuals in communication will provide the expertise for educators of scientists and technologists to best communicate information in their fields to the new generations coming through the educational system and to those in the field. In addition, scientists and technologists will be called upon by their colleagues and the public for information. They will have to be able to explain their ideas to decisionmakers with whom and for whom they work and they will have to articulate their

ideas to the public who pays for and uses technology. Both writing and speaking will be fundamental communication skills, but the most effective communicators will be familiar with the tools and skills of the "new literacy": the electronic media.

The Growth in Adult Education. Practicing technologists and scientists, as well as other adults in many professional groups will need and want more education in the 1980s. In The Future of Adult Education Fred Harrington observes that the more well-educated the population is, the more education they want; with educated individuals making up a larger proportion of the population each year there will be a greater demand for more education. Furthermore, since more people will be engaged in dealing with information as the primary product of American expertise, they will need both communication skills and a critical and analytical understanding of information and information processing in order to best function and understand their work.

Summary. The growth in information, technology and science, and adult education in the 1980s will require effective communication skills so individuals can cope with their environment better. As effective communicators individuals will have the tools to be understood as best they possibly can; as consumers of communication they will have the abilities to analyze and evaluate the communications of others.

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Goals

To meet the apparent needs of society and technology and science education at the University of Missouri-Rolla, Speech and Media Studies will have to develop a variety of programs. Because Speech and Media Studies is a new area of emphasis at the University of Missouri-Rolla these programs can be developed to more readily meet projected needs than if it was a program tied to established traditions.

Degree Development. Speech and Media Studies must develop a degree in Technical and Scientific Communication which trains entry-level professionals to apply modern techniques of communication to the dissemination of technical/scientific knowledge in industry, business, education, and government. Such professionals would be prime candidates for helping to resolve many of the needs discussed above. Such a program would be ideally placed at the University of Missouri-Rolla to take advantage of the tehnological and scientific educational opportunities of the campus, as well as to take advantage of the strong ties to organizations and businesses that the University has in providing opportunities for cooperative education, internships, and placement.

Specific requirements for such a degree emerge when one considers the functions of the technical and scientific communicator and when one examines recent surveys of students, practioners, and employers of technical and scientific communicators.

Essentially, the demands of the professional situation in which the technical and scientific communicator finds himself require that he be well-rounded in a variety of communication areas. Two recent major surveys of practicing technical communicators, employers of technical communicators, and recent graduates of technical communication programs demonstrate the current thinking about what should be required of a student taking a degree in this area.

Dr. Earl McDowell, of the University of Minnesota, in a 1979 survey asked 87 members of the Society of Technical Communicators to rate courses in technical and scientific communication. On a scale of 1 to 5 they were to indicate 1) very unimportant, 2) unimportant, 3) uncertain, 4) important, and 5) very important the courses they were rating; they were also to list the competency areas they considered most important and to list eight courses (24 semester hours; 32 quarter hours) all technical communication majors should take. Tables 1 and 2 summarize the results.

Dr. John Brockman, of Clarkson College, reported a 1977 nationwide survey of technical communicators by Richard Wiegand. 850 individuals responded to the survey, with nearly 600 of them answering the question "Which of the following more specific communication course areas do you believe a degree in technical communications should include?" as reported in Table 3.

Table 1

Summary Results from McDowell Survey:
Ranking of Competency Areas

GROUP	RANK	AREA
STC*	1	Writing/editing
Potential employers	1	Writing/editing
Graduates	1	Writing/editing
STC	2	Graphic communication
Potential employers	2	Graphic communication
Graduates	2	Oral communication
STC	3	Oral communication
Potential employers	3	Organizational, management, and training communication
Graduates	3	Organizational, management, and training communication
STC	4	Organizational, management, and training communication
Potential employers	4	Oral communication
Graduates	4	Graphic communication
STC	5	Communication theory/research
Potential employers	5	Communication theory/research
Graduates	5	AV and media communication
STC	6	AV and media communication
Potential employers	6	AV and media communication
Graduates	6	Communication theory/research

*Society for Technical Communication members; the largest professional group in technical and scientific communication.

Table 2

Summary Results from McDowell Survey:
Top 8 Courses Based on Average Ratings

GROUP	RANK	REQUIRED COURSES
STC*	1	Scientific/technical writing
Potential employers	1	Scientific/technical writing
Graduates	1	Scientific/technical writing
STC	2	Interviewing
Potential employers	2	Transfer of technology
Graduates	2	Technical presentations
STC	3	Technical presentations
Potential employers	3	Technical presentations
Graduates	3	Advanced public speaking
STC	4	Writing for publications
Potential employers	4	Writing for publications
Graduates	4	Technical graphics
STC	5	Technical graphics
Potential employers	5	Effective listening
Graduates	5	Writing for publications
STC	6	Transfer of technology
Potential employers	6	Technical graphics
Graduates	6	Professional writing
STC	7	Professional writing
Potential employers	7	Professional writing
Graduates	7	Interviewing
STC	8	Directed training in business
Potential employers	8	Interviewing
Graduates	8	Studies in organizational communication

*Society for Technical Communication members; the largest professional group in technical and scientific communication.

Table 3

Summary Results from Wiegand Survey:
Required Communication Course Areas in Technical Communication

AREA	NUMBER RESPONDING	PERCENT OF TOTAL
Editing	183	21.1
Communication research methods	94	10.9
Technical drawing	92	10.6
Business communication	74	8.5
Printing, bindery, plate-making, distribution	70	8.1
Technical writing	65	7.5

Appendix I presents an outline of a proposed course of study for a B.S. in Technical and Scientific Communication at the University of Missouri-Rolla based on the findings of the McDowell and Wiegand surveys. Appendix II presents a list of course descriptions.

As proposed this degree will help meet the needs of the Eighties by providing professional communicators who can handle the growing body of technical and scientific information that will be produced. These professionals will be able to collect, analyze, and present information and ideas for many groups, including educators, consumers, and businessmen. In short, individuals who graduate from this program will have both the skills and the analytical abilities to communicate symbolically using a variety of media in a society based on information and technology.

The potential of a degree in technical and scientific communication becomes clearer when one examines the state of education in this area. As a field of study it is relatively new to higher education, with only a handful of active undergraduate programs. Of these, well-established programs exist at the University of Minnesota, Colorado State University, Carnegie-Mellon University, and California State University-Fullerton, while newer programs are being implemented at Rensselear Polytechnic Institute, Oklahoma State University, the University of Washington, and Miami University (Ohio).

The well-established programs are graduating an average of ten students each year. This does not meet the demand: Dr. John Muller, of the Wright Patterson Air Force Base Technical Communication Program, notes that surveys he has conducted of positions in this area in the four state region of Iowa, Wisconsin, Michigan, and Minnesota over the past four years have shown an average of 350 openings; the demand is such that at least one company offers a $500 bonus to employees recruiting an employable technical communicator. According to Dr. Thomas Pearsall, chairman of Technical Communication at the University of Minnesota, a maximum of fifteen active technical communication programs nationwide graduate 150 individuals a year to fill the 350 openings in the four states surveyed by Dr. Muller. If one takes into account the other areas of the country where further demand exists, including the heavily industrialized Northeast, the technology-intensive areas in the West and Northwest, and the growing numbers of high technology businesses and industries in the Sunbelt, as well as the projected growth in information dealing with technology and science, then one realizes that the positions reported in Dr. Muller's four state area just scratch the surface of the potential current market for graduates. The current programs are simply not meeting the current demand; more technical communicators are needed now, more will be needed to meet the needs of the Eighties.

What is the potential for such a program at the University of Missouri-Rolla? When Dr. Pearsall began the program at Minnesota in 1971 there were two majors, with projections for forty majors by 1979-'80: the technical communication program at Minnesota currently has seventy-five majors--150% of 1971's projections. Pearsall expects continued growth. In assessing the potential of such a program at the University of Missouri-Rolla, he noted that it could enjoy similar or better growth because of the lack of such programs in the region, because of the growing demands for technical communicators, and because of the advantages to students from contact with the best in technical and scientific education. Further advantages accrue from the University's healthy contacts with business and industry and its proximity to the major technological industries of St. Louis and Kansas City.

According to the National Center for Educational Statistics, there will be a growth in bachelor's degrees in communication studies from 2.5% of all degrees in 1977 to 3.1% in 1985 (this does not include degrees in areas like English and Journalism). If only one-half of the entering freshmen at the University elected the technical and scientific communication major who elected the program at the national level's percentages (that is, about 1.6% by 1985), then about twenty students a year would enter the program. This projection does not include new students attracted to the University because of the new program, students

in other programs who would change their major, transfer students from more traditional programs at other schools, and students who would enroll in the program through Fort Leonard Wood. In addition, St. Louis Community College has recently started a two year program in technical communication that could be the source of a pool of students much like the pre-engineering students at the College.

As Carter Daniel, head of the MBA Writing Program at Rutgers University, said in the Chronicle of Higher Education: "universities have far too long been the most myopic marketers of all". The B.S. in technical and scientific communication is not only timely, but well-founded. It is a degree in an area for which trained professionals are currently needed and for which there will be a continuing demand. The requirements for the degree are formulated on the most recent research on what such a program should entail, rather than on tradition. It is not formulated simply as vocational training, but as a program that equips individuals with the tools to collect, analyze, and present information in a process of continuous learning.

Program Development: Service Courses and Continuing Education. To meet the communication needs of the large group of students not enrolled in the B.S. and the adults in the region served by the University of Missouri-Rolla Speech and Media Studies must have a vigorous program of service courses and continuing

education offerings. A review of the various professional publications for engineers and scientists shows a widespread concern for improving communication abilities of technological students. William R. Kimel and Melford E. Monsees, in Engineering Education, forcefully conclude from a recent survey of recent technological graduates that "the most significant finding of the survey is that respondents overwhelmingly stressed the ability to communicate as most important, yet recent graduates--who will eventually take over as the leaders of our profession--are very deficient in this attribute." A major reason for the concern with communication competency is that individuals who are to be effective managers of technology must be effective communicators. Another major reason for the concern with communication competency is that technologists must communicate more with the public who uses and judges technology. As Hershner Cross, of General Electric Company, said in Vital Speeches, "technology itself has become a part of the personal experience of every consumer, bringing the role of the engineer into universal sharper focus and making the profession of engineering more visible. . . ."

But students in the liberal arts must also be served. The fundamental characteristic of the liberal arts student should be that he effectively use oral and written language in a variety of situations from interpersonal to mass communication. Furthermore, the liberal arts student will be called upon more frequently

to articulate the values that are fundamental to man's humanness as the world becomes increasingly complex because of greater amounts of information and technology that he has to cope with. A flexible schedule of course offerings that provides students in both the technological and liberal arts programs with opportunities to meet their communication needs should be implemented in Speech and Media Studies. Of special regard in achieving this will be a series of flexible minor programs. For example, a student should be able to elect a minor in Speech and Media Studies which helps him achieve communication competency while suiting his interests and needs. Sample curricula in broadcasting, journalism, interpersonal communication, and public communication are provided in Appendix III. If a student elects not to pursue a minor, he should have a selection of courses from which to choose to achieve communication competency in a course of study that meets his needs and interests. For example, a student who needs work in oral communication would not have to choose from public speaking or manuscript speaking, but could choose a course in group communication or interpersonal communication to help him become more articulate orally. Flexibility would be the key to service courses to help various groups of students. Because of the growth of information and information processing through a variety of media in their environment students should also be able to undertake studies in the analysis of communication and communication processes. These courses would

be structured to help individuals become more fully oriented to a major activity in their environment as critical consumers of communication directed to them. To understand communication processes and effects would help them cope more successfully.

Adult learners should be served with continuing education courses in Speech and Media Studies. According to Owen Fox, Area Continuing Education Specialist, in a survey of counties in the region served by the University of Missouri-Rolla, activities in communication have a top priority among requests for programs. Requests for a range of courses from public speaking to parliamentary procedure to communication in the family consistently were often made by adults. Expansion of such activities by Speech and Media Studies could satisfy these requests and build a strong network of off-campus education in South Central Missouri.

Summary. Central to the development of a strong program in Speech and Media Studies is the implementation of a sound degree in technical and scientific communication. Such a program would meet the needs of the Eighties in an increasingly technological society and in technology and science education by producing professional communicators with the ability to collect, analyze, and present complex information and ideas and with the ability to assist others in communicating information and ideas. But Speech and Media Studies should also meet the

needs of non-majors and adult learners through a strong series of service and continuing education courses and programs.

Resources

Faculty. There is currently one and one-half FTE faculty in Speech and Media Studies. To implement the goals articulated above more strong faculty will have to be recruited. They should have an ability to teach creatively and a commitment to pursue intellectual inquiry into processes and techniques of technical and scientific communication. Furthermore, they should be active in providing expertise for their technical and scientific colleagues in the field of communication techniques.

Faculty that should be added to start the program would include two assistant professors to teach basic and intermediate speech courses, one assistant professor to teach basic media courses, and one associate professor to teach advanced media courses.

Support Personnel. One senior secretary and one clerk-typist should be provided for the best use of faculty time. A current problem is that faculty must do much of their own typing and clerical work; this wastes their valuable time that could be best used in less petty and more productive activity. In addition, two technicians should be hired to maintain and set up audiovisual equipment in use by both faculty and students. These technicians would assure optimum utilization of equipment

and provide technical expertise in setting up equipment for use by faculty and students.

Facilities. Office space and appropriate furniture should be provided to faculty and staff. For best interaction the space should be in a single location with access to classrooms and studio space.

An audio-visual center with videotaping, graphics, and radio facilities should be provided. This center should provide instructional and support opportunities for faculty and students. The center should be in proximity to offices and classroom space. Adequate storage and maintenance space, as well as a satisfactory inventory of parts and equipment for maintenance should be provided to assure a smooth-running, efficient operation.

Finally, an inventory of communication equipment should be at the disposal of faculty and students for instructional classes and laboratories. A videotaping studio, a radio studio, and a graphics laboratory should be equipped to fully satisfy the educational needs of an entry-level professional in technical and scientific communication. These facilities could also be utilized to support campus educational activities outside of the direct instruction of technical communication students. Ideally, the interplay of communication instruction and support activities would help enhance both technological and scientific education and the educational experiences of technical communi-

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cation students.

APPENDIX I:

Proposed Curriculum
for a
B.S. in Technical and Scientific Communication

B.S. In Technical and Scientific Communication

I. Math, Physical, Biological and Computer Sciences (33 hrs)
   A. Math 115: Statistics (3 hrs)
   B. Computer Science 23: Basic Scientific Programming (2 hrs)
   C. At least one course in biological and one course in physical sciences (one must be a laboratory class
   D. Electives to reach a total of 33 hrs for this group (excluding courses designed for students pursuing B.A. degree)

II. Basic Skills and Humanities (21 hrs)
   A. English 1: Rhetoric and Composition (3 hrs)
   B. English 60: Exposition (3 hrs)
   C. Speech 85: Principles of Speech (3 hrs)
   D. Humanities selected from two different disciplines (12 hrs)

III. Social Sciences (15 hrs)
   A. Williams' law history/political science requirement (3 hrs)
   B. Economics 110: Principles of Economics (3 hrs)
   C. Psychology 50: Introductory Psychology (3 hrs)
   D. Electives to reach a total of 15 hrs for this group (6 hrs)

IV. Major (33 hrs)
   A. Basic courses required of all students
      1. Speech 50: Communication as a Field of Study (1 hr)
      2. Speech 181: Communication Theory (3 hrs)
   B. Oral communication skills: elect two courses (6 hrs)
      1. Speech 86: Interpersonal Communication
      2. Speech 87: Discussion Methods
      3. Speech 97: Audiovisual Presentations for Science and Industry
      4. Speech 283: Speech Writing
   C. Written communication skills: elect two courses (6 hrs)
      1. English 70: Creative Writing
      2. Speech 91: Scientific Journalism I
      3. Speech 92: Scientific Journalism II
      4. English 160: Technical Writing
      5. Speech 282: Writing for Scientific Publication
      6. English 302: Advanced Composition
   D. Media: elect two courses (6 hrs)
      1. Speech 93: Copyediting
      2. Speech 94: Basic Media Graphics
      3. Speech 95: Introduction to Electronic Media
      4. Speech 284: Fundamental Scientific and Technical Photography
      5. Speech 285: Fundamental Scientific and Technical Videotape Techniques

IV. Major (continued)

E. Theory and research in communication: elect two courses (6 hrs)
1. Speech 90: Mass Media
2. Speech 182: Propaganda, Persuasion, and Public Policy
3. Speech 183: Communication in the Organization
4. Speech 286: Communication Law

F. Practica, Internship, Research: five hours toward the major requirements (5 hrs)

V. Courses Required Outside the Major (10 hrs)
A. Engineering Management 211: Industrial Organization Development
B. Engineering Technology 10: Engineering Drawing
C. Engineering Technology 11: General Engineering Drawing
D. Psychology 311: Human Factors Engineering

VI. Minor Electives (Up to 18 hrs)
A. To be selected in consultation with advisor

APPENDIX II:

Proposed Course Descriptions for Speech and Media Studies

PROPOSED COURSES IN

TECHNICAL AND SCIENTIFIC COMMUNICATION

50 (1 hour; lecture) Communication as a Field of Study. Presentations and discussions of the various areas of concern to the field of communication, including different career options. Open to all students; required of majors.

85 (3 hours; lecture) Principles of Speech. A study of the arts of expression, oral communication, and listening (theory and practice); effective interaction of speech, speaker, listener, and occasion. (Entrance requirements).

86 (3 hours; lecture) Interpersonal Communication. The study of communication in face-to-face situations as they occur day-to-day. Examines the factors that shape personal, social, and work relationships.

87 (3 hours; lecture) Discussion Methods. Development of communication skills for small group decision-making. Application of these skills to different types of problems.

88 (1 hour; lecture) Parliamentary Procedure. How to conduct and participate in formal meetings. Review of parliamentary law and its application in a variety of situations.

90 (3 hours; lecture) Mass Media. Surveys types of mass media. Investigates systems. processes, and effects of radio, television, newspapers, magazines, film, books, and recordings. Appraisal of the performance and future of the media.

91 (3 hours; lecture/lab) Scientific Journalism. The process and practice of reporting and writing about science and technology for the news media. Explores basic journalistic style and different types of news reports.

92 (3 hours; lecture/lab) Scientific Journalism II. The continuation of Scientific Journalism. Focuses on special types of news reports, features, and depth reports.

93 (3 hours; lecture/lab) Copyediting. Editing news copy and pictures, writing headlines, handling wire copy, designing pages for print media. Understanding legal and ethical issues in editing is also considered.

94 (3 hours; lecture/lab) Basic Media Graphics. Focuses on the tools and techniques available to the communicator in designing graphics for different media.

95 (3 hours; lecture) Introduction to Broadcasting. A basic discussion of broadcasting, including its history, government regulations, station operation, and program development.

96 (3 hours; lecture/lab) Audiovisual Presentations for Science and Industry. Focuses on the materials and techniques for audiovisual presentations. Special concern with the presentation of the scientific and technical materials to different audiences.

100 (Variable credit) Special Problems. Problems or readings on specific subjects or projects in the department.

101 (Variable credit) Special Topics This course is designed to give the department an opportunity to test a new course.

150 (1 hour; lab) Practicum in Communication. Work on applied projects in the field, with conferences adjusted to the needs of the student. Repeatable to a maximum of four hours credit.

181 (3 hours; lecture) Communication Theory. Deals with the concerns addressed by communication theory: language, cybernetics, visual arts, general semantics, information and electronic communications. The University's fairly extensive media and communications resources are made use of, both for their content and for a study of the impact of their forms upon the transfer of information.

182 (3 hours; lecture) Propaganda, Persuasion, and Public Opinion. Study of the role of the audience in the communication process, as well as the theory and application of concepts related to changing attitudes, beliefs, and social behavior through human communication.

183 (3 hours; lecture) Communication in the Organization. The effect of communication variables on the structure and function of organizations.

199 (Variable credit) Cooperative Training. This course will provide continuous registration for cooperative work periods.

200 (Variable credit) Special Problems. Problems or readings on specific subject or projects in the department.

201 (Variable credit) Special Topics. This course is designed to give the department an opportunity to test a new course.

202 (Variable credit) Cooperative Training. On-the-job experience gained through cooperative education with industry, with credit arranged through departmental cooperative advisor. Grade received depends on quality of reports submitted and work supervisots' evaluations.

210 (Variable credit) Seminar. Discussion of current topics.

250 (1 hour; lab) Advanced Practicum in Communication. Work on applied projects in the field, with conferences adjusted to the needs of the student. Repeatable to a maximum of four hours credit.

282 (3 hours; lecture/lab) Writing for Scientific Publication. This course focuses on the requirements of professional publication, including style, graphics, and outlets for material.

283 (3 hours: lecture) Speech Writing. This course focuses on the professional oral communication such as the technical speech, business-type briefing, or informative report. The student learns about language in oral communication and manuscript preparation, preparation of effective audio-visual devices, microphone speaking, and similar topics.

284 (3 hours; lecture/lab) Fundamental Scientific and Industrial Photography. Study of basic photography techniques in field situations with special emphasis on the scientific/technical and industrial setting.

285 (3 hours; lecture/lab) Fundamental Scientific and Industrial Videotape Techniques. Exploration and application of video technology in scientific/technical and industrial settings.

286 (3 hours; lecture) Communication Law. Considers the legal questions and practices the professional communicator encounters in the practice of writing, editing, and broadcasting.

287 (3 hours; lecture) The Flow of Scientific and Technical Communication. Examines scientist-to-scientist and scientist-to-public flow of communication.

288 (3 hours; lecture/lab) Industrial Advertising. Role of industrial advertising in the media with a special emphasis on industrial, technical, and scientific publications. Basic display layout, writing copy, design, structuring campaigns, and selling advertising are discussed.

300 (Variable credit) Special Problems. Problems or readings on specific subjects or projects in the department.

301 (Variable credit) Special Topics. This course is designed to give the department an opportunity to test a new course.

310 (Variable credit) Seminar. Discussion of current topics. Prerequisite: Senior Standing.

350 (3-12 hours; lab) Internship in Communications. On-the-job specialized training in professional communication situations to complement the student's academic training. Apply for participation one semester before enrollment.

390 (Variable credit) Undergraduate Research. Designed for the undergraduate student who wishes to engage in research. Does not lead to the preparation of a thesis. Not more than six (6) credit hours allowed for graduation credit. Subject and credit to be arranged with the faculty supervisor. Prerequisite: senior standing.

APPENDIX III:

Sample Minor Curricula in Speech and Media Studies

WORKING DOCUMENT(10/8/'80)
MINOR SEQUENCES IN SPEECH AND MEDIA STUDIES
Sam C. Geonetta
HSS 234, 4697

All students required to take SMS 181: The Process of Communication (3 hours)

Students are required to elect nine (9) hours in one of the following sequences:

I. Broadcasting
- 90 Mass Media
- 94 Basic Media Graphics
- 95 Introduction to Broadcasting
- 182 Persuasion, Propaganda, and Public Opinion
- 284 Fundamental Scientific and Industrial Photography
- 285 Fundamental Scientific and Industrial Videotape Techniques
- 286 Communication Law
- 287 The Flow of Scientific and Technial Communication

II. Journalism
- 90 Mass Media
- 91 Scientific Journalism I
- 92 Scientific Journalism II
- 93 Copyediting
- 94 Basic Media Graphics
- 182 Persuasion, Propaganda, and Public Opinion
- 282 Writing for Scientific Publication
- 284 Fundamental Scientific and Industrial Photography
- 288 Industrial Advertising

III. Interpersonal Communication
- 86 Interpersonal Communication
- 87 Discussion Methods
- 88 Parliamentary Procedure
- 183 Communication in the Organization
- 287 The Flow of Scientific and Technical Communication

IV. Public Communication
- 85 Principles of Speech
- 96 Audiovisual Presentations for Science and Industry
- 182 Persuasion, Propaganda, and Public Opinion
- 183 Communication in the Organization
- 283 Business and Professional Speaking

PROPOSED COURSES IN

TECHNICAL AND SCIENTIFIC COMMUNICATION

50 (½ hour; lecture) Communication as a Field of Study. Presentations and discussions of the various areas of concern to the field of communication, including different career options. Open to all students; required of majors.

85 (3 hours; lecture) Principles of Speech. A study of the arts of expression, oral communication, and listening (theory and practice); effective interaction of speech, speaker, listener, and occasion. (Entrance requirements).

~~86~~ 150 (3 hours; lecture) Interpersonal Communication. The study of communication in face-to-face situations as they occur day-to-day. Examines the factors that shape personal, social, and work relationships.

~~87~~ 155 (3 hours; lecture) Discussion Methods. Development of communication skills for small group decision-making. Application of these skills to different types of problems.

~~88~~ delete (1 hour; lecture) Parliamentary Procedure. How to conduct and participate in formal meetings. Review of parliamentary law and its application in a variety of situations.

~~90~~ 240 and Society (3 hours; lecture) Mass Media. Surveys types of mass media. Investigates systems. processes, and effects of radio, television, newspapers, magazines, film, books, and recordings. Appraisal of the performance and future of the media.

~~91~~ 223 (3 hours; lecture/lab) Scientific Journalism. The process and practice of reporting and writing about science and technology for the news media. Explores basic journalistic style and different types of news reports.

~~92~~ 224 (3 hours; lecture/lab) Scientific Journalism II. The continuation of Scientific Journalism. Focuses on special types of news reports, features, and depth reports.

~~93~~ 225 (3 hours; lecture/lab) Copyediting. Editing news copy and pictures, writing headlines, handling wire copy, designing pages for print media. Understanding legal and ethical issues in editing is also considered.

~~94~~ 235 (3 hours; lecture/lab) ~~Basic~~ Media Graphics. Focuses on the tools and techniques available to the communicator in designing graphics for different media.

~~95~~ 100 Electronic Media (3 hours; lecture) Introduction to ~~Broadcasting~~ electronic media. A basic discussion of ~~broadcasting~~, including its history, government regulations, ~~station~~ operation, and program development.

~~96~~ 125 (3 hours; lecture/lab) Audiovisual Presentations for Science and Industry. Focuses on the materials and techniques for audiovisual presentations. Special concern with the presentation of the scientific and technical materials to different audiences.

100 OK (Variable credit) Special Problems. Problems or readings on specific subjects or projects in the department.

101 OK (Variable credit) Special Topics This course is designed to give the department an opportunity to test a new course.

~~150~~ 105 (1 hour; lab) Practicum in Communication. Work on applied projects in the field, with conferences adjusted to the needs of the student. Repeatable to a maximum of four hours credit.

181 OK (3 hours; lecture) Communication Theory. Deals with the concerns addressed by communication theory: language, cybernetics, visual arts, general semantics, information and electronic communications. The University's fairly extensive media and communications resources are made use of, both for their content and for a study of the impact of their forms upon the transfer of information.

~~182~~ 335 (3 hours; lecture) Propaganda, Persuasion, and Public Opinion. Study of the role of the audience in the communication process, as well as the theory and application of concepts related to changing attitudes, beliefs, and social behavior through human communication.

~~183~~ 284 (3 hours; lecture) Communication in the Organization. The effect of communication variables on the structure and function of organizations.

199 Delete (Variable credit) Cooperative Training. This course will provide continuous registration for cooperative work periods.

200 OK (Variable credit) Special Problems. Problems or readings on specific subject or projects in the department.

201 OK (Variable credit) Special Topics. This course is designed to give the department an opportunity to test a new course.

202 Delete (Variable credit) Cooperative Training. On-the-job experience gained through cooperative education with industry, with credit arranged through departmental cooperative advisor. Grade received depends on quality of reports submitted and work supervisots' evaluations.

210 OK (Variable credit) Seminar. Discussion of current topics.

~~250~~ 205 305 (1 hour; lab) Advanced Practicum in Communication. Work on applied projects in the field, with conferences adjusted to the needs of the student. Repeatable to a maximum of four hours credit.

ADD: 185 (3 hours; lecture) Advanced Presentations. The examination and practice of the rhetorical techniques of persuasion in various settings.

Need 2 CC-1 Forms

282 320 (3 hours; lecture/lab) Writing for Scientific Publication. This course focuses on the requirements of professional publication, including style, graphics, and outlets for material.

283 OK (3 hours: lecture) Speech Writing. This course focuses on the professional oral communication such as the technical speech, business-type briefing, or informative report. The student learns about language in oral communication and manuscript preparation, preparation of effective audio-visual devices, microphone speaking, and similar topics.

284 222 (3 hours; lecture/lab) Fundamental Scientific and Industrial Photography. Study of basic photography techniques in field situations with special emphasis on the scientific/technical and industrial setting.

285 265 (3 hours; lecture/lab) Fundamental Scientific and Industrial Videotape Techniques. Exploration and application of video technology in scientific/technical and industrial settings.

286 315 (3 hours; lecture) Communication Law. Considers the legal questions and practices the professional communicator encounters in the practice of writing, editing, and broadcasting.

287 Delete (3 hours; lecture) The Flow of Scientific and Technical Communication. Examines scientist-to-scientist and scientist-to-public flow of communication.

288 Delete (3 hours; lecture/lab) Industrial Advertising. Role of industrial advertising in the media with a special emphasis on industrial, technical, and scientific publications. Basic display layout, writing copy, design, structuring campaigns, and selling advertising are discussed.

300 OK (Variable credit) Special Problems. Problems or readings on specific subjects or projects in the department.

301 OK (Variable credit) Special Topics. This course is designed to give the department an opportunity to test a new course.

310 OK (Variable credit) Seminar. Discussion of current topics. Prerequisite: Senior Standing.

350 370 (3-12 hours; lab) Internship in Communications. On-the-job specialized training in professional communication situations to complement the student's academic training. Apply for participation one semester before enrollment.

390 OK (Variable credit) Undergraduate Research. Designed for the undergraduate student who wishes to engage in research. Does not lead to the preparation of a thesis. Not more than six (6) credit hours allowed for graduation credit. Subject and credit to be arranged with the faculty supervisor. Prerequisite: senior standing.

REQUIREMENTS FOR
THE B.A. IN TECHNICAL AND SCIENTIFIC COMMUNICATION
(SPEECH AND MEDIA STUDIES)

Department of
Applied Arts and Cultural Studies
The University of Missouri-Rolla
December 17, 1984

I. The student will satisfy all requirements of the University for the B.A. degree.

II. Basic Skills and Humanities (33 hours)
- A. English 1: Rhetoric and Composition (3 hrs.)
- B. English 60. Exposition (3 hrs.)
- C. Speech 85: Principles of Speech (3 hrs.)
- D. Foreign Language (12 hrs.)
- E. Humanities selected from two different disciplines (12 hrs.)

III. Social Sciences (12 hours)
- A. Williams' law history/political science requirement (3 hrs.)
- B. Economics 110: Principles of Economics (3 hrs.)
- C. Psychology 50: Introductory Psychology (3 hrs.)
- D. Electives (3 hrs.)

IV. Math, Physical, Biological and Computer Sciences (24 hours)
- A. Math 115: Statistics (3 hrs.)
- B. Computer Science 72/73: Basic Scientific Programming/Lab (3 hrs.)
- C. At least one course in biological and one course in physical sciences (one must be a laboratory class)
- D. Electives to reach a total of 24 hours for this group

V. Major: each student is required to enroll in 12 hours of required core courses. He then elects 24 hours from the offerings listed below, with the consent and recommendations of his advisor. (36 hours)
- A. Core courses required of all students (13 hrs.)
  1. Communication as a Field of Study* (0 hr.)
  2. Communication Theory (3 hrs.)
  3. Mass Media and Society* (3 hrs)
  4. Interpersonal Communication* (3 hrs.)
  5. Advanced Presentations* (3 hrs.)

B. Oral communication skills (Elect 3 hrs.)
   1. Discussion Methods* (3 hrs.)
   2. Audiovisual Presentations for Science and Industry* (3 hrs.)
   3. Business and Professional Communication (3 hrs.)
   4. Persuasion* (3 hrs.)

C. Written communication skills (Elect 6 hrs.)
   1. Scientific Journalism I* (3 hrs.)
   2. Scientific Journalism II* (3 hrs.)
   3. Technical Writing (3 hrs.)
   4. Writing for Scientific Publication* (3 hrs.)
   5. Writing and Editing for the Print Media (3 hrs.)

D. Media (Elect 6 hrs.)
   1. Copyediting* (3 hrs.)
   2. Design and Production for the Print Media (3 hrs.)
   3. Media Graphics* (3 hrs.)
   4. Introduction to Electronic Media* (3 hrs.)
   5. Fundamental Scientific and Technical Photography* (3 hrs.)
   6. Fundamental Scientific and Technical Videotape Techniques* (3 hrs.)
   7. Television Production* (3 hrs.)

E. Theory and Research in Communication (Elect 3 hrs.)
   1. Propaganda, Persuasion, and Public Policy* (3 hrs.)
   2. Communication in the Organization* (3 hrs.)
   3. Communication Law* (3 hrs.)
   4. Communication Criticism* (3 hrs.)
   5. Rhetorical Theory* (3 hrs.)

F. Practica, Internship, Research, Seminars** (Elect 6 hrs.)

V. Minor electives: to be selected in consultation with advisor (up to 15 hrs.)

*New courses to be added in Speech and Media Studies. Courses <u>not</u> marked are already approved offerings.

**Practica <u>and</u> internships to be added as new courses in Speech and Media Studies. Seminars and research are already approved offerings.

REQUIREMENTS FOR THE B.A. IN TECHNICAL AND SCIENTIFIC COMMUNICATION (SPEECH AND MEDIA STUDIES)

Department of
Applied Arts and Cultural Studies
The University of Missouri-Rolla
November 11, 1985
(Revision of 12/17/84 document)

I. The student will satisfy all requirements of the University for the B.A. degree.

II. Basic Skills and Humanities (33 hours)
- A. English 1: Rhetoric and Composition (3 hrs.)
- B. English 60: Exposition (3 hrs.)
- C. Speech 85: Principles of Speech (3 hrs.)
- D. Foreign Language (12 hrs.)
- E. Humanities selected from three different areas of literature, philosophy, and fine arts 12 hrs.)

III. Social Sciences (12 hours)
- A. Williams' law history/political science requirement (3 hrs.)
- B. Economics 110: Principles of Economics (3 hrs.)
- C. Psychology 50: Introductory Psychology (3 hrs.)
- D. Electives (3 hrs.)

IV. Math, Physical, Biological and Computer Sciences (24 hours)
- A. Math 115: Statistics (3 hrs.)
- B. Computer Science 72/73: Basic Scientific Programming/Lab (3 hrs.)
- C. At least one course in biological and one course in physical sciences (one must be a laboratory class)
- D. Electives to reach a total of 24 hours for this group

V. Major: each student is required to enroll in 12 hours of required core courses. He then elects 24 hours from the offerings listed below, with the consent and recommendations of his advisor. (36 hours)
- A. Core courses required of all students (12 hrs.)
  1. 50: Communication as a Field of Study* (0 hr.)
  2. 181: Communication Theory (3 hrs.)
  3. 240: Mass Media and Society* (3 hrs.)
  4. 150: Interpersonal Communication* (3 hrs.)
  5. 185: Advanced Presentations* (3 hrs.)

B.A. in Technical and Scientific Communication
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B. Oral communication skills (Elect 3 hrs.)
   1. 155: Discussion Methods* (3 hrs.)
   2. 190: Audiovisual Presentations for Science and Industry* (3 hrs.)
   3. 283: Business and Professional Communication (3 hrs.)
   4. 230: Persuasion* (3 hrs.)

C. Written communication skills (Elect 6 hrs.)
   1. 223: Scientific Journalism I* (3 hrs.)
   2. 224: Scientific Journalism II* (3 hrs.)
   3. English 160: Technical Writing (3 hrs.)
   4. 320: Writing for Scientific Publication* 3 hrs.)
   5. 220: Writing and Editing for the Print Media (3 hrs.)

D. Media (Elect 6 hrs.)
   1. 225: Copyediting* (3 hrs.)
   2. 121: Design and Production for the Print Media (3 hrs.)
   3. 235: Media Graphics* (3 hrs.)
   4. 140 Introduction to Electronic Media* 3 hrs.)
   5. 221: The Study of Photography (3 hrs.)
   6. 222: Fundamental Scientific and Technical Photography* (3 hrs.)
   7. 265: Fundamental Scientific and Technical Videotape Techniques* (3 hrs.)
   8. 260: Television Production* (3 hrs.)

E. Theory and Research in Communication (Elect 3 hrs.)
   1. 335: Propaganda, Persuasion, and Public Policy* (3 hrs.)
   2. 284: Communication in the Organization* 3 hrs.)
   3. 315: Communication Law* (3 hrs.)
   4. 365: Communication Criticism* (3 hrs.)
   5. 360: Rhetorical Theory* (3 hrs.)

F. Professional Communication Studies (Elect 6 hrs.)
   1. 105, 205, 305: Practica
   2. 370: Internship
   3. 390: Research

FACILITIES FOR THE TECHNICAL AND SCIENTIFIC COMMUNICATION PROGRAM

During the past two years the University of Missouri-Rolla has undertaken extensive building and remodeling in order to facilitate the Communication Program. Part of this work has had a direct effect on the quality of environment in which classes are conducted and in which students must work on Communication coursework. Another part of this work has been of indirect benefit to faculty and students in Communication.

Of direct consequence to students and faculty has been the remodeling of rooms G-8 and G-9 in the Humanities and Social Sciences Building: these rooms have been designed as Communication Classrooms/Laboratories. The University invested $17,000 in remodeling and $7,000 in equipment so participants in the Communication Program could have the most current professional presentation system--the Pendastrip System--complete with flip charts, projection screens, and other devices to help individuals make effective presentations. In addition, the most up-to-date educational videotape equipment is available for use during regular class times and during special Laboratory periods: color cameras, tape decks and monitors are part of this equipment. Furthermore, students have access to slide sorting and projection equipment and overhead transparency equipment. Other features include sound recording and playback systems for both music and voice recordings and carpeting and acoustic treatment to provide a professional atmoshpere.

Of indirect consequence to the Communication Program has been the heavy development of the campus Video Communication Center and Graphics Laboratory in the Library and Learning Resources Center. The VCC consists of two full video classrooms and control rooms, that are designed for recording, playback, video editing, and satellite reception for teleconferences (this is soon to be upgraded to include satellite transmission capabilities). The investment to date in this facility has been $300,000 and includes expenditures on the most current video and audio technology. By working with Mr. Carle Gustavison, Director of the VCC, Dr. Sam Geonetta, who has developed the Communication Program, has arranged for students and faculty to have "hands-on" access to the equipment, both for immediate usage and for long-term professional activities. The Graphics Laboratory is the product of Dr. Geonetta's work with Mr. Ronald Bohley, Head Librarian; by working to develop an active relationship demonstrating the clear place of the

Communication Program on the campus and especially in the Library and Learning Resources Center's media activities, Dr. Geonetta has arranged for students and faculty to have access to a full Graphics Laboratory. This Laboratory includes equipment to support print media--lettering machines, layout tables, drafting equipment, etc.--and equipment to support multi-image work--a copy stand, slide-sorting light tables, slide registration systems, etc. The investment in this facility amounts to about $5,000.

In summary, the proposed degree in Technical and Scientific Communication is ready to function in a positive atmosphere. Students and faculty have excellent equipment for a variety of media at their disposal to make the program functionally sound.

APPENDIX G.

PLAN FOR ENGLISH DEPARTMENT 2002-03 AND PROPOSAL TO OFFER B.S. IN TECHNICAL COMMUNICATION

September 30, 2002

TO: Paula Lutz, Dean,
College of Arts and Sciences

FROM: Larry Vonalt, Interim Chair
Department of English

RE: Plan for English Department 2002-03 and Proposal to offer
B.S. Degree in Technical Communication

When I spoke with Provost Shah he indicated that English needed to have a plan about what it wants to do as a department. This document presents the basic plan for English for 2002-2003 and beyond. The English Department currently has three fundamental missions and would like to add a fourth.

The three missions of the department are to continue to offer a quality program that leads to a B.A. in English, to offer a quality program that leads to teacher certification with a B.A. in English, and to provide instruction in introductory college-level writing and reading for all UMR students. The proposed fourth mission is to develop a B.S. degree in Technical Communication, a degree that is often located in English departments across the nation.

In this document I will first discuss the present status of the English missions and then present a proposal for the Technical Communication B.S. degree in English.

PRESENT AND PROPOSED ENGLISH DEPARTMENT MISSIONS

Overall the English Department is finding it extremely difficult to fulfill its present missions because it has had little opportunity to fill tenure-track positions that have been lost through retirement and resignation. In a department that has functioned well with 12 to 14 tenured and tenure-track personnel, we are limping by with only 7 tenured and tenure-track members and trying to meet the rest of our teaching needs by using adjuncts. This fall we will have two more retirements, which means that the English department in January 2003 will have only two tenured members and **less than half the normal complement of tenured and tenure-track faculty**. This is no way to have a quality program in any discipline.

We desperately need to hire new faculty. The members of the department have indicated unanimously the desire to hire a tenure-track position in American studies. The second need is to hire a tenure-track position in linguistics to fulfill a need in the English

certification program. The third need is to hire a tenure-track position in British literature. In order to have the quality English program that befits UMR, we will need, of course, to replace eventually all of the tenure-track positions we have lost. When I speak about hiring a specialist in a particular area of English studies, I want you to understand that none of the faculty teaches courses only in that specialty. **All of us teach both literature and writing courses.**

MISSION ONE: B.A. IN ENGLISH

The need to hire a **tenure-track Assistant Professor in American Studies** reflects the department's recognition that it must offer the UMR students a better understanding of the American cultures. This request is an extension of a request last semester for a spousal hiring.

The discipline of cultural studies has become a significant field of study in English and is the strength of our younger faculty. These faculty members are the ones that we hope will carry UMR's English program into the 21st century with enthusiasm and the highest standards.

Our newest tenure-track faculty member is preparing a proposal for a Focus Grant from the National Endowment of the Humanities to help promote a new minor in American Studies that the Department plans to have up and running in the fall semester 2003.

Hiring a **tenure-track Assistant Professor in a British Literature** area will help towards bringing our literature offerings to a barely satisfactory position. Three of the positions lost through resignation and retirement have been in this area. We will be able to handle some of the need for a couple of semesters with the rehiring of one of our retirees whose research specialty is British literature.

Mission Two: Teacher Certification and B.A. in English

The need to hire a **tenure-track Assistant Professor in Linguistics** rises out of the department's commitment to the teacher certification program. The teacher certification in English requires a linguistics course and a history of the English language course. This year we have managed, luckily, to offer these courses through the use of adjuncts. Next year we may not be so lucky. If we do not have a tenure-track Assistant Professor in this position, then, more than likely, we will not be able to offer the required certification courses, which will cause both current and potential students to seek the certification degree elsewhere. Yet, the teacher certification in English is a likely area of enrollment growth and should be promoted robustly

In the near future we also should strongly consider proposing a **Master of Arts in Teaching** for English and the other liberal arts areas. All teachers in Missouri must obtain a Masters degree within the first ten years of their teaching or lose their certification. The MAT would correspond to the Master of Science in Teaching that UMR already offers.

MISSION THREE: INTRODUCTORY WRITING & READING COURSES FOR ALL STUDENTS

The loss of tenure-track positions in English has hurt not only the quality of the degree that we offer, but it has also diminished the quality of instruction in our English 20: Exposition and Argumentation, the one course we offer that all UMR students take. This course is UMR's introductory-level writing course. It introduces the first-year students to the practice of writing expository and argumentative essays; in addition, it promotes skills in reading and thinking critically.

The quality of teaching in this course has been weakened by two factors: the lack of oversight of the course caused by a string of Interim Chairs of the department, some of whom have had little or no concern about the course, and by the lack of tenure-track faculty teaching in the course. This year, for example, two-thirds of the sections of English 20 are or will be taught by adjuncts.

As Provost Shah has pointed out, adjuncts often contribute little to the research capabilities of the department and little to the sense of continuity within the program. When adjuncts teach only one or two courses per semester, they have almost no commitment to the quality of the program.

We have found the best success with adjuncts has been when we are able to hire a new Ph.D. as a lecturer for a full-year and then renew that lecturer for a period that totals no more than four years. We have two excellent Ph.D. lecturers this year who are helping the department in the teaching of English 20 and 60, the two basic writing courses the department offers and in such specialties as technical writing and teacher certification, particularly children's and adolescent literature. Both have taught or will teach one of the department's introductory British literature courses.

We cannot expect the same kind of service to the department from part-time adjuncts.

PROPOSED MISSION FOUR: IMPLEMENTING A DEGREE IN TECHNICAL COMMUNICATION

Having talked with both Lance Haynes and David Williams about the communication degree, I have concluded that the communication degree English easily could house is the one in which Lance and David have little interest. That degree is the B.S. in technical communication, a degree that has strong ties to technical writing but also includes, as the Carnegie-Mellon catalogue puts it, "developing and designing web sites, explaining science and technology to the public, developing print and multi-media materials" and other such professional activities.

UMR ought to be a logical site for such a degree, given the English department's experience with the technical writing minor and the expertise of such departments as Information Science and Technology, Psychology, and Speech and Media.

This degree program would be interdisciplinary; its core might consist of some configuration from the following:

English 65: The Technical Writer in Business and Industry
English 240: Layout and Design
English 260: Practicum in Technical Writing
English 281: Theory of Written Communication
IST 51: Algorithms and Programming
IST 151: Introduction to Data Structure and Applications
IST 211: Web Design and Development
Psychology 212: Industrial Psychology
Psychology 311: Human Factors
Psychology 314: Human-Computer Interaction
Speech and Media 85: Principles of Speech
Speech and Media 181: Communication Theory
Added to these would be two to three courses in visual communication.

Development for approval by CBHE of a complete technical communication degree would begin with your and Provost Shah's approval.

It is the kind of degree that could develop a good co-op program and set of internships for UMR students. It would have a thrust of practicality supported with a foundation of theory; its students would know how to perform the practical tasks of communication such as writing, speaking and designing documents that are both printed and electronic, both verbal and visual. They would also understand the concepts that lead to the practice, so that they would be both inventive and competent problem solvers.

To implement this degree program we would need an **Assistant Professor in Technical Writing** and an **Assistant Professor in Visual Communication**. One of our current full-time lecturers has the expertise and experience to be a strong candidate for the position of Assistant Professor in Technical Writing. Even if we are unable to implement the technical communication degree, we will still need to hire a tenure-track assistant professor in technical writing because we are losing the experience in the teaching of technical writing with the retirement this year of one of our department faculty members who has been actively involved in the development of the department's technical writing minor.

If we were able to implement the degree in technical communication say in the Fall semester 2003, we would need to hire the technical writing specialist this year and visual communication specialist for Fall 2004 or perhaps Fall 2005.

SUMMARY

Loss of tenured and tenure-track faculty and the string of interim chairs during the past four years has led to a diminishment of quality in the English Department that can soon be dangerously detrimental to the quality programs that the state of Missouri expects from the University of Missouri-Rolla. In order to strengthen the quality of programs for which the UMR English Department is responsible, we put forward this plan to accomplish our missions:

- Hire a tenure-track assistant professor in American studies
- Hire a tenure-track assistant professor in linguistics
- Hire a tenure-track professor in British literature
- Implement a B.S. degree in Technical Communication
- Hire a tenure-track assistant professor in technical writing/communication
- Hire a tenure-track assistant professor in visual communication.

Thank you for your consideration of this plan. I will be happy to talk with you any time about this plan and proposal. I do understand the budget difficulties, but I also understand that the department needs to hire some young, talented faculty to address with enthusiasm and expertise the challenges and opportunities the department faces. This plan and proposal is the first step in bringing UMR's English Department to the level of quality that befits UMR's students.

APPENDIX H.

PROPOSAL FOR B.S. IN TECHNICAL COMMUNICATION

Bachelor of Science in Technical Communication - UM-Rolla

Executive Summary

The proposed Bachelor of Science degree in Technical Communication, developed from the English Department's existing minor in technical writing, fits well the campus mission, responds to potentially strong student demand and supports Missouri's projected need for technical communication professionals. In addition, it establishes its uniqueness by making efficient use of UMR's technological expertise and resources, including opportunities for undergraduate research and internships.

The degree builds on the current strength in faculty expertise in the English Department, and it will be academically and financially viable in three years. It will not require any new faculty positions and will capitalize on existing department strengths. The only recurring costs will be stipends and a few adjunct faculty to teach undergraduate course and some incidental desktop publishing and multimedia equipment costs. This degree will attract and retain students interested in a technological field other than engineering. Its design ensures that graduates will have the competencies employers are looking for—skills in written, oral, and visual communication; technological expertise; an understanding of organizations, and a foundation in theory that will ensure their flexibility in a changing market. Furthermore, the UMR degree differs considerably from the other two degrees offered in Missouri universities.

The degree is a logical outgrowth of UMR's focus as a technological university, and should be viewed as complementary to UMR's newer degree programs in the School of Management and Information Systems (2001). Its interdisciplinary nature, particularly its requirement of a technical foundation in computer-based information systems, distinguishes it from the other two bachelor-level degrees offered in Missouri.

This 126-hour program includes 45 hours of general education; 30 hours of technical communication; 15 hours of web technical communication; 6 hours of oral communication; 15 hours of ethics, history, and psychology courses related to technical communication; and 15 hours of free electives. The proposing of the B.S. and M.S. degrees together recognizes the interdependency of the two programs for both financial and academic viability. The growth of each program supports the growth of the other in both enrollment and revenue. As the number of B.S. majors increases, more GTA positions will become available, thus making it possible to attract more students into the M.S. program. The combined degrees also enhance the academic viability of the program in terms of both teaching and research.

No. 4

Recommended Action – Bachelor of Science in Technical Communication, UMR

It was recommended by Vice President Lehmkuhle, endorsed by President Floyd, recommended by the Academic and Student Affairs Committee, moved by Curator _____, seconded by Curator _____, and _____ that the following action by approved:

> that the University of Missouri-Rolla be authorized to submit the attached proposal for a Bachelor of Science in Technical Communication to the Coordinating Board for Higher Education for approval.

UNIVERSITY OF MISSOURI ROLLA

BACHELOR OF SCIENCE IN TECHNICAL COMMUNICATION

OPEN-A&SA-4b

1. Form NP

NEW PROGRAM PROPOSAL FORM

Sponsoring Institution(s): University of Missouri-Rolla

Program Title: Technical Communication

Degree/Certificate: Bachelor of Science

Options: N/A

Delivery Site(s): University of Missouri-Rolla

CIP Classification: 23.1101

Implementation Date: January 2005

Cooperative Partners: N/A

Expected Date of First Graduation: December 2009

AUTHORIZATION

Steve Lehmkuhle, V. P. for Academic Affairs _____
Name/Title of Institutional Officer Signature Date

Steve Lehmkuhle 573-882-6396
Person to Contact for More Information Telephone

Table of Contents

2. Need for the Program

Form SE

A. Student Demand

Year	1	2	3	4	5
Full-Time	4	10	15	20	27
Part-Time	1	3	4	5	8
Total	5	13	19	25	35

Enrollment at the end of Year 5 for the program to be Financially and Academically Viable

Year	5
Full-Time	13
Part-Time	5
TOTAL	18

The program enrollment estimates are based on state-wide ACT data from the Enrollment Information Service for the college-bound student classes in 2003 and 2002. For 2003, this data shows that, of the students who took the ACT and indicated an interest in the major of Communication and Communication Technology, 30 had their scores sent to UMR. Most of the prospective students live within 150 miles of Rolla. It is important to remember that this student interest accrued when UMR was not advertising any degree in technical communication.

The context for interpreting these numbers is found in UMR's yield rates. Normal yield data for UMR as a whole indicates that of the students who had ACT scores sent to UMR, about 30% actually enroll. A second data point is also significant. Of the ACT pool, for students who actually apply to UMR, the yield rate is higher—52% of the students who apply actually enroll. Recent enrollment matriculation studies indicate much stronger enrollment yield for Missouri prospective students and out-of-state students living within a three-hour drive of Rolla.

Applying this data to potential majors in technical communication at UMR suggests that we can expect, conservatively, 10-15 new students per year by about the third year (i.e. when the program has become established and advertised). In other words, if 30 students interested in communication/communication tech have their scores sent to UMR, we should enroll between 30-50% of those students. As a point of comparison, enrollment in technical communication degree programs on other engineering campuses indicates that the number of majors ranges from about 25 (Tennessee Tech, New Mexico Tech) to 100 (Michigan Tech, Drexel). [Society for Technical Communication data.]
The numbers in Form SE are assumed to be students who are not currently on the UMR

campus; we do expect, however, to also attract transfer students, particularly from Missouri community colleges with whom UMR has transfer agreements.

B. Market Demand, Societal Needs, and Methodology

The proposed degree is designed to graduate skilled professionals with durable skills for the long-term technical communication career. Its breadth of focus (information technology, computer science, industrial organization, and writing) will enable graduates to adapt to changing needs in business and industry. National and state research groups project a strong market.

U.S. Department of Labor. The 2004-2005 Occupational Outlook Handbook projects a growth rate of 10-20% for technical writers through the year 2012. The report specifically notes that "Opportunities should be best for technical writers and those with training in a specialized field. . . . Developments and discoveries in the law, science, and technology generate demand for people to interpret technical information for a more general audience.

MERIC (Missouri Economic Research and Information Center). Occupation employment data indicates a growth rate of 21% for technical writers from 1998 to 2008. Related occupations also show significant growth: Writers and editors – 17.2%; Public Relations Specialists – 17.9%. MERIC's overall analysis of occupational employment also supports an increasing need for professionals in technical communication: "The ongoing shift to more professional and technical occupations will continue, as 33% of the total growth will occur in the professional, paraprofessional, and technical occupation group." OSEDA (Office of Social and Economic Data Analysis. While the OSEDA data does not focus on occupational data per se, its analysis of Missouri industry data identifies 82 driver industries in the state; these will be potential employers of technical communication students for internships and permanent employment. Of particular interest are the 13 industries that form the state's competitive core. Market surveys by the primary professional organizations in technical communication track the strength, focus, and change in the market. The most recent survey by the International Association of Business Communication (2002) shows that: the market for technical communicators outside the U.S. has increased the field continues to offer equal opportunities for success and advancement to women and men technical communicators are being asked to facilitate more face-to-face communication. The Society for Technical Communication reports that for the next few years, there will be more jobs in defense, government, security, health care, and training.

Significantly, two of UMR's newer degree programs are tied to growth industries—the M.S. in Biological Sciences (2000) and the B.S. and M.S. degrees in the School of Management and Information Systems (2001). Thus, the addition of an undergraduate program in technical communication should be viewed as complementary growth in areas that UMR has already identified as part of its unique mission as Missouri's technological university. Additionally, salaries for these jobs are attractive. For example, the Bureau of Labor Statistics reported that the median annual earnings for salaried technical writers in 2002 were 50,580. The Society of Technical Communication, the major professional society, reported

that the average salary for technical writers and editors in the U.S. rose 3.4% in 2003 (from $59,700 to $61,730).

As this proposal indicates, UMR's degree ensures that the graduates will have the very competencies that employers are looking for—a combination of communication skills, specialization in one or more areas of technology, and an understanding of human factors. The interdisciplinary nature of this degree makes the graduates very competitive in the marketplace.

C Societal Need

Technical communicators provide an essential service to the national and global society in aiding technology transfer. The transfer of technical knowledge and products by developers to users is usually not the transfer of a self-explanatory, physical object but of words, of information and understanding. The technical communicators facilitate that transfer because they are adept in audience analysis, document design, presentations, and writing.

Technical communicators articulate the needs, issues, and implications of changing technologies to those who need the knowledge in fields such as economics, ethics, politics, health sciences, safety and risk management, training, security and privacy. Their skills can make critical documents and information accessible in such areas as insurance, loans, taxation, and medicine.

The graduates of UMR's program, one which is interdisciplinary in nature and combines education in theory, applications, and technology, will be well positioned to make their services felt in many areas of society. Technical communicators analyze various genres of technical documents and can demonstrate the degree to which they assist or hinder the democratic decision making process (e.g. environmental impact statements, research reports on genetically engineering foods, route selections for new highways). Their skills in document design and understanding of the rhetorical impact of various modes of delivery (electronic, print, and visual) give them the potential for being leaders in identifying and developing new modes of communication, as they have been in the development of desk-top publishing in the 1980s, and e-training in the 1990s.

Technical communicators can assist in solving communication problems that arise in society because of audience diversity, the interdisciplinary nature of technology, global and market changes.

D. Methodology of Research

Jay Goff, Dean of Enrollment Management at UMR, provided statistical data pertinent to projecting enrollments; he used ongoing enrollment studies at UMR and state and national data from the Enrollment Information Service.

Sources investigated for employment data and societal needs included the U.S. Department of Labor's Bureau of Statistics (2004-2005 Occupational Outlook Handbook), Missouri

Economic Research and Information Center (MERIC), and the Office of Social and Economic Data Analysis (OSEDA). Also consulted were various publications (surveys, scholarly publications, editorials) by major professional societies including the Society for Technical Communication, the IEEE Professional Communication Society, and the Association for the Teachers of Technical Writing. Specific journals consulted included Technical Communication, IEEE Transactions on Professional Communication, Technical Communication Quarterly, Journal of Business and Technical Communication. The latest edition (2000) of Career Opportunities for Writers was also consulted.

3. Duplication and Collaboration

The number of universities that offer bachelor degrees in technical communication or some version thereof has doubled since 1994 when, according to Education in Scientific and Technical Communication: Academic Programs That Work, twenty-one schools offered the degree. Now, as the Association of Teachers of Technical Writing web page reports, fifty-five colleges and universities offer this degree. Two of these fifty-five are in Missouri: Southwest Missouri State University offers a B.A. and a B.S. degree in Professional and Technical Writing; Missouri Western offers a B.A degree in English/Technical Communication. The enrollment for these programs has ranged between 15 to 40 per year. Michigan Tech, a university comparable to UMR, has 100 majors in its technical communication program.

The University of Missouri-Rolla's proposed B.S. degree in Technical Communication differs considerably from both degree programs offered in Missouri. The major difference is that the UMR program has a 15- hour unit of Information Science Technology courses that forms the science-technology foundation of the degree program. These courses provide the student technical communicator with a large base of computer and web experience that will enable the student to work effectively in a wide range of occupations. No technical communication degree program in Missouri and perhaps the United States requires more such courses. The UMR program requires more hours in psychology related to organizational situations in which the technical communicator will perform than do the other programs. The UMR program also seeks to achieve a balance between the written, oral, and visual elements of technical communication. Finally, what distinguishes UMR's program from others in the state is the opportunity for the student technical communicators to work alongside engineers and scientists on research projects such as the solar car team, the formula car team, and the solar house team. Among the branch campuses of colleges offering courses in Rolla (such as Webster, Drury, and East Central), none offers either a minor or major in technical communication at any degree level (associate, baccalaureate, graduate).

The B.S. degree in Technical Communication does not involve collaboration with any external institution or organization. However, of the local colleges (primarily two-year institutions) in the area, the English Department has a Transfer Assistance Program already in place with East Central College and expects that the agreement would be extended to include the proposed degree in Technical Communication. It is expected that Transfer

agreements will be developed quickly with other community colleges that traditionally send students to UMR.

4. Program Structure

Form PS

A. Total credits required for graduation:	126
B. Residency requirements, if any: last 60 hours	
60Courses (specific courses or distribution area and credits)	
C. General Education: Total Credits	45
Individual Expression: 15 credit hours	
Art 80, 85, Music 50, Theater 90 (select one)	3
English 75, 80, 102, 105, 106, 110 (select one)	3
Speech 85	3
English 20	3
Tech Comm 65 co-listed with English 65	3
Natural Systems: 15 hours	
Psychology 50	3
Biology 110, 231, 235, 251 (select one)	3
Math 4, Statistics 115, and/or Survey of Calculus (select one)	3
Chemistry, Geology, or Physics	3
Natural Systems Elective (select one)	3
Human Institutions: 15 hours	
History 175, 176, 111, or 112 (select one)	3
Micro or macro Economics 121 or 122	3
Political Science 90	3
Art History, Philosophy, Literature (select two courses)	6
D. Major Requirements:	30
Required: 18 hours	
Tech Comm 240 Layout and Design (co-listed with English 240)	3
Tech Comm 260 Practicum in Technical Writing (co-listed with English 260)	3
Tech Comm 302 Research Methods in Technical Communication	3
English 281 Theory of Written Communication	3
Tech Comm 340 Theory of Visual Technical Communication	3
Tech Comm 390 Theory and Practice of Technical Communication	3

(capstone)

Electives: 12 hours

English 160	Technical Writing	3
English 305	History of the English Language	3
Tech Comm 231	Writing for the Web	3
Tech Comm 232	Report Writing	3
Tech Comm 330	Instructions and User Interfaces	3
Tech Comm 331	Technical Editing	3
Tech Comm 332	Writing On-Line Documentation	3
Tech Comm 333	Proposal Writing	3
Tech Comm 334	Script Writing	3
Tech Comm 341	Practice of Visual Technical Communication	3
Tech Comm 342	Video Production for Technical Communicators	3
Tech Comm 343	Introduction to Multimedia Authoring	3
Tech Comm 351	History of Technical Communication	3
Tech Comm 380	Internship	3

E. Interdisciplinary Requirements 39

Web Technical Communication: 15 hours
Required 12 hours

IST 51 Algorithms and Programming (Visual Basic)	3
IST 151 Introduction to Data Structures and Applications (Java)	3
IST 141 Information Systems	3
IST 211 Web Design and Development	3

Elective 3 hours (select one)

IST 221 Internet Concepts and Applications	3
IST 233 Introduction to Computer Networks and Communications	3
IST 241 E-Commerce	3
IST 223 Database Management	3
IST 243 Systems Analysis	3

Oral Communication: 6 hours
Required 3 hours

Speech and Media 181 Theory of Communication	3
Elective 3 hours	
Speech and Media 235 Intercultural Communication	3
Speech and Media 283 Business and Professional Communication	3
Speech and Media 250 Interpersonal Communication 3	

Ethics, History, Psychology and Technical Communication 15 hours
Required 3 hours

Philosophy 25 Ethics of Engineering Practice 3

Philosophy 35 Business Ethics	3
Philosophy 212 Ethics of Computer Usage	3
Philosophy 320 Minds and Machines	3
Philosophy 350 Environmental Ethics	3

Required 3 hours

History 270 History of Technology	3
History 274 History of Art and Technology	3
History 275 History of Science	3
History 374 Twentieth Century Technology	3

Required 6 hours

Psychology 212 Industrial Psychology	3
Psychology 311 Human Factors	3
Psychology 314 Human-Computer Interaction	3
Psychology 315 Environmental Psychology	3
Psychology 372 Group Dynamics	3
Psychology 374 Organizational Psychology	3

Ethics, History, Psychology Elective (select one)	3

F. Free Elective Credits: 15

G. Requirements for thesis, internship or other capstone experience:
Internship is recommended Tech Comm 390 is the required capstone course.

H. Any unique features such as interdepartmental cooperation: None

Explanation.
This degree is built on the technical writing minor that has been offered by the English Department for the past ten years. The three courses that are required for the minor—English 65, 240, and 260—are also required for the technical communication major. The technical communication degree is not a degree in technical writing or professional writing, but a degree that provides students with the knowledge and skill to communicate effectively visually, orally, and in writing. The degree is designed so that it incorporates both theory and practice in these communication areas as well as giving the student a solid background in web design, and business related psychology and history courses.

The 66 credit hours required for the major reflects this interdisciplinary nature for it includes the 15 hours in Information, Science, and Technology, 6 hours of speech and media courses, 3 hours of ethics, and 12 hours in psychology and history. Technical communication courses required for the major amount to 30 hours. Although the internship will be strongly recommended that course is not required, because of the difficulty in finding industries and businesses to provide internships for the larger number of graduates anticipated as the

program grows.

5. Form FP

Financial Projections

	Year 1	Year 2	Year 3	Year 4	Year 5
1. Expenditures A. One-time:					

New/renovated space					
Equipment					
Library					
Consultants					
Other					
Total: One-Time Expenditures					
B. Recurring					
Faculty					
Staff					
Adjunct Faculty*		15,300	15,300	22,950	22,950
Benefits		1,170	1,170	1,756	1,756
Equipment	4,000	4,000	6,000	6,000	
Library	2,000	2,000	2,000	2,000	5,000
Other (travel etc.)	3,000	3,000	3,000	3,000	2,000
Total: Recurring Expenditures	9,000	25,470	27,470	35,706	3,000
TOTAL (A + B)	9,000	25,470	27,470	35,706	34,706
					34,706
2. Revenues					
State Aid—CBHE					
State Aid—DESE					
Tuition/Fees**	4,925	19,450.95	41,046.07	49,900.70	64,675.52
TOTAL REVENUES	4,925	19,450.95	41,046.07	49,900.70	64,675.52

*Adjunct faculty @$3825 per course; 50% or less teaching load.
**PT students in-state @ $195 per credit hour, discounted at 31%
FT students in-state @ $195 per credit hour, discounted at 31%
FT students out-state @ $510 per credit hour, discounted at 31%.
(of total PT and FT students, ¾ are in-state; ¼ out-of-state.)

This projection refers only to new students and excludes any sense of retaining students who leave another degree program on campus.

Financial Justification

A. Budget Justification

One-time Expenditures. No one-time expenditures have been figured into this budget. Certain kinds of equipment, *i.e.*, video cameras, video editing equipment, software programs, might be considered one-time expenditures, but, because this equipment needs to be regularly updated, we have calculated such equipment as recurring expenses rather than one-time.

Recurring Expenditures. Primary expenses will be for adjunct faculty or GTAs, library, and the purchase and upgrading of equipment vital to the teaching of desktop publishing, multi-media, and video production courses. According to Jay Goff, Dean of Enrollment Management, adequate classroom space is available; his recent classroom utilization report indicates an average seat utilization of 75% and an average classroom utilization of 82.6% at the peak daytime hours.

GTA's/Faculty. The English department currently has two assistant professors who specialize in technical communication and four faculty members who teach the courses in the department's minor in technical writing; these courses form the foundation for the proposed technical communication program. The addition of new faculty, GTAs, and adjuncts will be directly tied to the enrollment. As enrollment increases, hiring will occur; but recurring expenses will be held to a minimum by replacing one full-time adjunct with two part-time technical communication adjuncts and by replacing one retiring faculty with one technical communication specialist. GTAs will be given teaching stipends as the undergraduate enrollment materializes. GTAs will teach only lower level courses such as English 65 and English 160.

The adjunct faculty will be mostly local professionals—a videographer, a public relations director, or publication director—who will provide instruction in their areas of expertise. Consequently, most of the adjunct faculty will teach no more than two classes per semester, and most will probably teach only one class per semester. This faculty will bring to the program many years of experience in their particular fields of knowledge. An example is a professor who plans to retire in the Rolla area and has expressed a strong interest in teaching in the technical communication program. This particular person has helped develop one of the country's stronger technical communication programs and, in addition, has edited a journal in the field of technical communication for over ten years.

The GTAs will be graduate students in the M.S. degree program in technical communication, which is outlined in the companion proposal.

Equipment. Recurring expenses are substantial because they include the purchase, maintenance, and upgrading of various types of equipment. In addition to this annual equipment cost, the department will need to increase its budget for faculty and student travel to professional meetings, for both faculty and student research, for recruiting students, and for developing internships. This increase is shown in the "Other" column.

Library. The recurring expenses for the library ($2000 per year for the first five years include subscriptions to the main publication of the Society for Technical Communicators and to the journal of the Associated Teachers of Technical Writing (ATTW), as well as other, lesser journals, and monographs published in the technical communication field. Financial viability of the B.S. program will be achieved by Year 3.

B. Administrative Structure

The B.S. degree will be an integral part of the Department of English; the B.S. degree will be administered by the chair of the department and the voting faculty. When the degree is approved, the department will change its name to the Department of English and Technical Communication to accurately reflect its mission.

C. Revenues

Revenues are exclusively from tuition/fees and are calculated based on the tuition/fees as listed in the 2003-2004 University of Missouri – Rolla catalogue. The following assumptions were used in calculating tuition/fee revenue:

1. SCH fee: $195 in-state; $510 out-of-state
   SCH discount: 31%

2. Only revenues from the credit hours taken in technical communication and English courses are counted. In the senior year, in addition to the technical communication courses and electives, it is assumed that 6 hours of the free electives will also be technical communication courses.

3. All students are new; they enter the program as freshmen and they follow the paradigm (Appendix C.) Part-time students will enroll approximately at 50%.

4. Of the total students each year, ¾ are in-state, ¼ are out-of-state.

What is clear from examining the expenditures and revenues is that recruitment and retention of students are very high priorities in order for the program to pay its own way. But it is important to note that these financial projections do not include any transfer students or money from grants and University Advancement fund raising. It is expected that transfer students will be enrolling in the B.S. program—both from other departments at UMR, and from off-campus, particularly community colleges with whom UMR has Transfer Assistance Programs. By Year 5, it is expected that new money will be coming into the program from research grants and from proposals that University Advancement has presented to donors.

D. Facilities and Environment

Current UMR computer learning centers, particularly the one in the Writing Center, will accommodate the technical communication majors and their special software needs during the early years of the program. With a solid increase of students, more facilities will be needed eventually. Although that time may be more than five years from now, we will be discussing what kinds of facilities and faculty will be needed to best serve the technical communication program and to alert the development officers towards finding potential donors for the welfare of the technical communication program.

Form PG

6. Program Characteristics and Performance

Institution Name:	University of Missouri-Rolla
Program Name:	Technical Communication
Date	August, 2004

A. Student Preparation
Students will be required to meet the standard admission requirements for the University of Missouri-Rolla

B. Faculty Characteristics:
Special requirements. This program will be supported with a combination of existing and new faculty. New faculty hires will be expected to hold a Ph.D. or its equivalent and have the potential to contribute to UMR's mission in the areas of teaching, research, and service. Adjunct faculty with expertise and work experience as technical communicators will occasionally be hired. Estimated % of credit hours assigned to full-time faculty: 75%

Expectations:
Faculty at UMR are expected to participate in teaching, research, service, and outreach activities. The faculty members are also expected to use the innovations in multimedia in the classroom. Annual reviews, promotion and tenure, and annual salary adjustments ensure the quality of faculty activities.

C. Enrollment Projections:
Student FTE majoring in program by the end of five years: 32 (Form SE). Full-time and part-time enrollment by the end of five years: 87.5% full-time students; 12.5% part-time students.

D. Student and Program Outcomes:
Number of graduates per annum at five years after implementation: 10

Special skills specific to the program:

- Understanding of and practice in the production of a variety of technical documents (e.g. manuals, instructions, training materials, proposals, position papers) in both print and electronic forms.
- Theory and practice of writing and editing documents that facilitate the transfer of technical knowledge from experts to users.
- Theory and practice of the integration of visual communication tools (e.g., drawings, diagrams, 3-D models, animation) with written and spoken communication.
- Experience with the process of project management in a user community, including needs assessment, audience analysis, design, development, technology transfer,

usability testing, and support.
- Programming for and practice in web design and development
- Knowledge of computer-based information systems
- Knowledge of the psychology of the business and industrial workplace.
- Background in the history and ethics of technology
- Expertise in focused professional areas such as web communication, information systems, organizational psychology, multimedia production, and public policy development.
- Understanding of the challenges of a global society in technology transfer.
- Commitment to the professional ethics and responsibilities of a technical communicator

Proportion of students who will achieve licensing, certification, or registration: At present, there are no professional groups licensing, certifying, or registering graduates of B.S. programs. Graduates, however, will become members of the professional societies such as the Society for Technical Communication, the Professional Communications Society of the Institute for Electrical and Electronics Engineers, and the Special Interest Group on Documentation (SIGDOC) of the Association for Computing Machinery.

Performance on national and/or local assessments: Currently there are no national normed assessments for students in technical communication. Local assessment will be conducted by faculty review of a senior portfolio and by an exit interview with the technical communication faculty and the chair of the department.

Placement rates in related fields, in other fields, unemployed: Based on surveys from professional organizations in technical communication and the U.S. Bureau of Labor Statistics, there will continue to be growing opportunities for technical communicators; therefore, we expect nearly 100% of our graduates to be employed.

Transfer rates, continuous study: The proposed program will prepare the students for a life-long learning process. Special effort will be made to work out a transfer agreement with community colleges and 2-year institutions, modeled on those agreements already in place, in order to ensure transfer credit.

E. Alumni and Employer Surveys

The department will design as part of the student's graduation exit interview a survey to measure satisfaction in the following areas of the program:
- mission
- educational objectives
- faculty
- services
- and facilities

This same survey will be given to the alumni three years after graduation. At the same time, the department will also gather data concerning employment alumni concerning employment

after graduation, promotions, and/or new positions, continuing education, and other evidence of career advancement.

Drawing on information from the technical communication professional societies and the experience of other departments at UMR, the department will develop appropriate rating sheets, interviews, focus group protocols, and surveys for gathering the information. A mixed method of evaluation that combines both qualitative and quantitative forms of data will be used for the assessment of the program. In addition the department will develop a web-based assessment and evaluation plan for the curriculum in technical communication. Given these assessment methods, the department should have an excellent understanding of its alumni's evaluation of the technical communication program. The goal for alumni satisfaction is 90%.

The department will use similar assessment techniques to measure employers' evaluations of its graduates. The goal for employer satisfaction is 90%.

7. Accreditation

The University of Missouri-Rolla has a history of seeking and obtaining accreditation for its programs. This degree will come under the auspices of the Commission on Institutions of Higher Education of the North Central Association of Colleges and Schools which currently accredits UMR. Accreditation by a reputable board in technical communication would certainly be sought by UMR if such an accrediting board were launched by professional technical communication societies.

8. Institutional Characteristics

The University of Missouri-Rolla is particularly well suited and equipped to support a Bachelor of Science degree program in Technical Communication to be offered by the Department of English. Key factors include the strength of the Department of English; the nature of UMR as a technological university; and opportunities for research, internships, and co-ops in the vicinity, as well as potential adjunct faculty.

A. Department of English

The department has several years of experience developing and teaching courses in technical communication as part of its existing minor in technical writing. These courses in the technical writing help form the foundation of the required courses in the B.S. in Technical Communication. Faculty are members of the Society for Technical Communication and the Association of Teachers of Technical Writing.

Because UMR is a research university, the faculty have a strong tradition of research, teaching, and service; thus new faculty will be appropriately mentored for the UMR environment.

B. UMR as Missouri's Technological University

UMR's strong reputation as the state's technological university and as one of the top undergraduate institutions in the country makes it a logical home for a technical communication program. The interdisciplinary nature of the program means that students will combine a foundation in computer-based technology, the theory and practice of technical communication (written, oral, visual), and an understanding of the workplace through organizational psychology and ethics. It should be further noted that UMR has recently been approved for new degrees in Applied and Environmental Biology (M.S. 2000) and Information Science and Technology (B.S. and M.S. 2001); employers of graduates in both of these areas also hire technical communicators.

C. Opportunities for Faculty and Students

Hiring faculty. Adjunct faculty with specialized expertise in technological communication (e.g. corporate environment, multimedia authoring, needs assessment, web development) can be recruited from among the professional technical communicators employed in the area (high tech companies, government agencies such as US Geological Survey, and UMR's own publications unit).

Student opportunities. Faculty in the program will seek projects, internships, and co-op experiences for students in the immediate vicinity of Rolla, and in larger communities such as St. Louis, Kansas City, Springfield, Jefferson City, and Ft. Leonard Wood. On-campus projects could include the alumni office, publications department, and academic units in which journals are edited and published. The Career Opportunities Center is committed to helping the faculty find internships and co-op positions for the technical communication students.

Alumni of the Department of English are working as technical communicators in many parts of the country; their support and assistance will be sought in developing work experience for students prior to graduation.

Appendix I

CBHE CLARIFYING COMMENTS

Bachelor of Science Degree in Technical Communication at UMR

1. Alignment with Campus Mission.
The proposed BS degree in Technical Communication is closely aligned with UMR's mission to offer "educational programs in major disciplines that are technology-based, technology-dependent, or complementary to these programs." As the state's technological university, UMR is a logical home for this technical communication program. The interdisciplinary nature of the program means that students will combine a foundation in computer-based technology, the theory and practice of technical communication (written, oral, visual), and an understanding of the workplace through organizational psychology and ethics.

2. Student and Market Demand; Importance to Missouri's Economic and Educational Needs.

A. Student Demand
Enrollment in technical communication degree programs on other engineering campuses indicates that the number of majors ranges from about 25 (Tennessee Tech, New Mexico Tech) to 100 (Michigan Tech, Drexel). Using the marketing plan that has been devised for this new degree program, the Department of English is confident that students will be attracted to the major at UMR—as new students, transfer students from community colleges, and transfer students from other degree programs at UMR.

According to data from the Enrollment Information Services, there is considerable interest in communication and communication technology major by students who have taken the ACT. For example, 491 students within 110 miles of Rolla indicated an interest in communication which compares favorably with those students interested in majors already established at UMR such as basic engineering (588), computer and information science (393), biology (282), and computer science (227). In the state of Missouri, 707 students indicated an interest in communication, compared with basic engineering (794), computer and information science (590), biology (390), and computer science (345). Because there are no other professional degrees in technical communication in the state, UMR should be able to attract the attention of these students once the degrees are approved and recruitment begins.

Preliminary data indicates that a projection of 10-15 new majors per year is a very conservative goal for the program once it is established. The program enrollment estimates are based on ACT data from the Enrollment Information Service for the college-bound student classes in 2003 and 2002. For 2003, this data shows that, of the students who took the ACT and indicated an interest in the major of Communication and Communication Technology, 30 had their scores sent to UMR. Normal yield data for UMR as a whole indicates that of the students who had ACT scores sent to UMR, about 30% actually enroll.

A second data point is also significant. Of the ACT pool, for students who actually apply to UMR, the yield rate is higher—52% of the students who apply actually enroll. In other words, if 30 students interested in communication/communication tech have their scores sent to UMR, we should enroll between 30-50% of those students.

B. Market Demand

National and state research groups project a strong market for technical communicators. In its 2004-2005 Occupational Outlook Handbook, the U.S. Department of Labor projects a growth rate of 10-20% for technical writers through the year 2012, noting that "Opportunities should be best for technical writers and those with training in a specialized field." The Missouri Economic Research and Information Center (MERIC) predicts a slightly higher growth rate—21% for technical writers from 1998 to 2008.

C. Missouri's Economic and Educational Needs

Missouri data on technical writers and related occupation categories such as writers and editors and public relations specialists has not been the focus of detailed analysis, perhaps because the actual number of jobs in this profession is relatively small in contrast to the occupations with the highest number of jobs in the state. However, both MERIC and the Office of Social and Economic Data Analysis (OSEDA) have identified as growth industries those in which technical communicators are most needed.

MERIC's "Missouri Employment Outlook: Projections to 2008 for Industries and Occupations" shows an increase in jobs in the industries of transportation, communications, utilities (8% growth); finance, insurance and real estate (11.3% growth); and government (7.4% growth). Two recent special reports have focused on high technology occupations. In its report "Gateway Careers 1998-2008: Emerging Occupations, Essential Skills," MERIC identifies occupations in the computer, finance, and information systems industries. In "Skill Based Analysis of High Technology Employment," MERIC reports that 2.5% of all Missouri workers are in high-technology occupations, earning an average wage of $60,537, compared to $33,800 per work in all occupations. In this same report, MERIC points out that high-technology intensive industries are found in several categories: "eleven in services, six in manufacturing, two in transportation, communications and public utilities, and one in banking," making a total of twenty industries in Missouri. These industries are the very ones that employ technical communication professionals.

MERIC reports on information technology and life science industries in Missouri are highly relevant. "Information Technology in Missouri" shows the growth in these related industries between 1990 and 1999 and makes a strong case for the state to recruit and retain such industries in the future. "Life Science in Missouri: Industry Overview" shows a 3.7% growth in jobs between 1996 and 2002 and an 8.13% growth in firms for the same period. Significantly, two of UMR's newer degree programs are tied to these very industries: the B.S. and M.S. degrees in the School of Management and Information Systems (2001) and the M.S. in Biological Sciences (2000). Thus, the addition of the proposed technical communication degree complements growth in areas that UMR has already identified as part of its unique mission as Missouri's technological university.

3. Efficient Use of Resources.

The proposed B.S. in technical communication uses UMR's human and physical resources efficiently. The Department of English already has two specialists in technical communication as well as several other faculty who have been teaching the courses in the existing technical writing minor. The more senior of the two faculty members is Dr. Edward Malone who has experience in the development of the English/technical communication degree at Missouri Western, published research in the history of technical communication, and an outstanding teaching record having received the Governor's Excellence in Teaching Award in 2001. Dr. Kathryn Northcutt is joining the faculty in June 2004, having completed her Ph.D. in Technical Communication at Texas Tech, one of the top undergraduate and graduate programs in the nation. Her published research is in visual rhetoric, and she was noted for teaching excellence in her graduate and post-graduate work at Texas Tech. Consequently, no new faculty will be hired for the program until enrollments generate sufficient income.

Physical resources critical to the program include classroom space and computer labs, both of which are sufficient for the early years of the program. According to Jay Goff, Dean of Enrollment Management, adequate classroom space is available; his recent classroom utilization report indicates an average seat utilization of 75% and an average classroom utilization of 82.6% at the peak daytime hours. UMR has several technology-equipped classrooms; the two located in the building that houses the Department of English are under-utilized at present. The UMR Writing Center has a computer lab and technology-equipped classroom which is available for the new technical communication courses.

Some recurring expenditures will be necessary for purchase, maintenance, and upgrading of various types of document design equipment. In addition, funds will be sought from donors as part of University Advancement's current campaign. A preliminary proposal has already been submitted to Advancement for a facility dedicated to the Technical Communication program. Initial needs would include a computer lab with document design software, equipment for usability studies, and a classroom specifically equipped for advanced oral presentations.

4. Collaboration; Explanation of Non-Duplication

The B.S. degree in Technical Communication does not involve collaboration with any external institution or organization. However, Transfer Assistance Programs will be developed with community colleges that traditionally send students to UMR. The proposed degree does not duplicate other programs in the state. In Missouri, there are only two programs in the area of scientific and technical communication. Southwest Missouri State University offers a B.A. and a B.S. degree in Professional and Technical Writing; Missouri Western offers a B.A degree in English/Technical Communication. The University of Missouri-Rolla's proposed B.S. degree in Technical Communication differs considerably from both degree programs offered in Missouri. The major difference is that the UMR program has a 15- hour unit of Information Science Technology courses that forms the science-technology foundation of the degree program. These courses provide the student

technical communicator with a large base of computer and web experience that will enable the student to work effectively in a wide range of occupations. No technical communication degree program in Missouri and perhaps the United States requires more such courses. The UMR program requires more hours in psychology related to organizational situations in which the technical communicator will perform than do the other programs. The UMR program also seeks to achieve a balance between the written, oral, and visual elements of technical communication. Finally, what distinguishes UMR's program from others in the state is the opportunity for the student technical communicators to work alongside engineers and scientists on research projects such as the solar car team, the formula car team, and the solar house team.

Among the branch campuses of colleges offering courses in Rolla (such as Webster, Drury, and East Central), none offers either a minor or major in technical communication at any degree level (associate, baccalaureate, graduate).

Appendix II

UM System President's Criteria

Bachelor of Science Degree in Technical Communication at UMR

1. Effect on Existing Programs.
The proposed BS degree in Technical Communication is expected to have little effect on existing programs.

The degree will be housed in the UMR Department of English; upon approval of the degree, the name will be changed to Department of English and Technical Communication. No new administrative structure will be implemented; the chair of the department and the tenure-track faculty will supervise the program, along with the current literature and education majors. Because the department has considerable experience in operating as a committee of the whole for most issues (annual budget, curriculum, faculty hiring and mentoring, program development, student recruitment and assessment), the faculty already have considerable knowledge of the technical communication profession and the proposed degree and a commitment to cooperating with and mentoring new technical communication faculty. Two faculty with expertise in technical communication are already in place, and adjuncts (preferably with industry experience) will be hired as enrollment materializes.

The B.A. degrees in English and English education, crucial elements in the functioning of the university's degree programs, will be maintained at an effective, viable level. No competition for students is foreseen; the new students coming into technical communication will be more oriented toward science and technology than the current B.A. majors. In fact, the presence of additional courses in technical communication is only seen as a positive influence on the traditional B.A. majors. The literature majors may wish to add a technical communication minor to enhance their job flexibility; the education majors may wish to add a course or two in order to prepare themselves to teach a high school technical communication or technical/professional writing course, both relatively new offerings appearing in Missouri high schools.

No significant effect on existing programs in other departments is expected. The courses that the technical communication students need already exist, and faculty with the expertise are already in place. The projected number of new majors can be absorbed into the courses designated in the interdisciplinary requirements for the proposed degree. In the event that the number of majors should be larger than anticipated, it is expected that additional fee income--both from this program and from the general increased fee income as UMR's overall enrollment grows—will cover the modest additional expenditure needed by this new degree.

No significant effect on existing programs at other UM campuses or other Missouri colleges and universities is expected. None of the other UM campuses has a technical communication degree. Southwest Missouri State University offers B.A. and B.S. degrees in

Professional and Technical Writing; Missouri Western offers a B.A. degree in English/Technical Communication. Because both of these degree programs include coursework in the traditional literature curriculum and do not include extensive coursework in other disciplines including information science and technology, the UMR degree will not be competing for students with these other programs. The two existing degree programs in Missouri and the proposed UMR degree will attract different segments of the student population.

2. Market Analysis.

Enrollment estimates are based on state-wide ACT data from the Enrollment Information Service for the college-bound student classes in 2003 and 2002. For 2003, this data shows that, of the students who took the ACT and indicated an interest in the major of Communication and Communication Technology, 30 had their scores sent to UMR. Most of the prospective students live within 150 miles of Rolla. It is important to remember that this student interest accrued when UMR was not advertising any degree in technical communication. The context for interpreting these numbers is found in UMR's yield rates. Normal yield data for UMR as a whole indicates that of the students who had ACT scores sent to UMR, about 30% actually enroll. A second data point is also significant. Of the ACT pool, for students who actually apply to UMR, the yield rate is higher—52% of the students who apply actually enroll. Recent UMR enrollment matriculation studies indicate much stronger enrollment yield for Missouri prospective students and out-of-state students living within a three-hour drive of Rolla.

Applying this data to potential majors in technical communication at UMR suggests that we can expect, conservatively, 10-15 new students per year by about the third year (i.e. when the program has become established and advertised). In other words, if 30 students interested in communication/communication tech have their scores sent to UMR, we should enroll between 30-50% of those students. As a point of comparison, enrollment in technical communication degree programs on other engineering campuses indicates that the number of majors ranges from about 25 (Tennessee Tech, New Mexico Tech) to 100 (Michigan Tech, Drexel). [Society for Technical Communication data.]

The numbers in Form SE (see page 5) are assumed to be students who are not currently on the UMR campus; we do expect, however, to also attract transfer students, particularly from Missouri community colleges with whom UMR has transfer agreements.

A. National and state data.

National and state research groups project a strong market for technical communicators. In *its* 2004-2005 Occupational Outlook Handbook, the U.S. Department of Labor projects a growth rate of 10-20% for technical writers through the year 2012, noting that "Opportunities should be best for technical writers and those with training in a specialized field." The Missouri Economic Research and Information Center (MERIC) predicts a slightly higher growth rate—21% for technical writers from 1998 to 2008.

A complete picture of the market for the graduates of this proposed degree, particularly in Missouri must also include the market analyses for industries that employ technical communicators.

C. Missouri data on industries employing technical communicators.

Missouri data on technical writers and related occupation categories such as writers and editors and public relations specialists has not been the focus of detailed analysis, perhaps because the actual number of jobs in this profession is relatively small in contrast to the occupations with the highest number of jobs in the state. However, both MERIC and the Office of Social and Economic Data Analysis (OSEDA) have identified as growth industries those in which technical communicators are most needed.

MERIC's "Missouri Employment Outlook: Projections to 2008 for Industries and Occupations" shows an increase in jobs in the industries of transportation, communications, utilities (8% growth); finance, insurance and real estate (11.3% growth); and government (7.4% growth). Two recent special reports have focused on high technology occupations. In its report "Gateway Careers 1998-2008: Emerging Occupations, Essential Skills," MERIC identifies occupations in the computer, finance, and information systems industries. In "Skill Based Analysis of High Technology Employment," MERIC reports that 2.5% of all Missouri workers are in high-technology occupations, earning an average wage of $60,537, compared to $33,800 per work in all occupations. In this same report, MERIC points out that high-technology intensive industries are found in several categories: "eleven in services, six in manufacturing, two in transportation, communications and public utilities, and one in banking," making a total of twenty industries in Missouri. These industries are the very ones that employ technical communication professionals.

MERIC reports on information technology and life science industries in Missouri are highly relevant. "Information Technology in Missouri" shows the growth in these related industries between 1990 and 1999 and makes a strong case for the state to recruit and retain such industries in the future. "Life Science in Missouri: Industry Overview" shows a 3.7% growth in jobs between 1996 and 2002 and an 8.13% growth in firms for the same period. Significantly, two of UMR's newer degree programs are tied to these very industries: the B.S. and M.S. degrees in the School of Management and Information Systems (2001) and the M.S. in Biological Sciences (2000). Thus, the addition of the proposed technical communication degree complements growth in areas that UMR has already identified as part of its unique mission as Missouri's technological university.

3. Business Plan

A. Financial Projection

With no one-time expenditures and recurring expenditures held to a minimum, the proposed degree program should be financially viable by the fifth year. Furthermore, launching the degree program involves no financial risk.

Recurring expenses will be for faculty, equipment, and library resources. Because two tenure-track professors in technical communication have already been hired, faculty expenses will be held to a minimum. The department has four additional faculty members

who teach the courses in the department's minor in technical writing, courses that form the foundation of the proposed new degree. Flexibility in meeting the demand as majors are recruited will be met by the hiring of adjunct faculty, primarily local professionals, who will teach one or two classes per semester and bring considerable industrial experience to the classroom. If student demand exceeds the projections, an additional technical communication faculty member could be hired as a replacement for one of two faculty retirements expected within the next five years.

Recurring expenses for equipment include the purchase, maintenance, and upgrade of tools essential to the production of technical documents, presentations, and web sites. Existing computer labs can be used in the first two years of the program, particularly the Writing Center lab (equipped with desktop publishing programs such as Quark Xpress) and the Computer Science Windows lab. To exchange ideas on research and pedagogy, the faculty will need a budget for attending professional meetings.

Recurring expenses for the library include subscriptions to the major journals in the profession of technical communication, as well as monographs published in the major technical communication series. In the meantime, however, if the library acquires additional databases that provide full-text articles from the major journals, this expense can be reduced.

All of the above are no-risk expenses; the faculty, equipment, and library resources would be used anyway in the current technical writing courses which students from other degree programs take as requirements or electives.

B. Recruitment

Market Assessment and Share

According to data from the Enrollment Information Services, there is considerable interest in communication and communication technology major by students who have taken the ACT. For example, 491 students within 110 miles of Rolla indicated an interest in communication which compares favorably with those students interested in majors already established at UMR such as basic engineering (588), computer and information science (393), biology (282), and computer science (227). In the state of Missouri, 707 students indicated an interest in communication, compared with basic engineering (794), computer and information science (590), biology (390), and computer science (345). Because there are no other professional degrees in technical communication in the state, UMR should be able to attract the attention of these students once the degrees are approved and recruitment begins.

Preliminary data indicates that a projection of 10-15 new majors per year is a very conservative goal for the program once it is established. The program enrollment estimates are based on ACT data from the Enrollment Information Service for the college-bound student classes in 2003 and 2002. For 2003, this data shows that, of the students who took the ACT and indicated an interest in the major of Communication and Communication Technology, 30 had their scores sent to UMR. Normal yield data for UMR as a whole indicates that of the students who had ACT scores sent to UMR, about 30% actually enroll. A second data point is also significant. Of the ACT pool, for students who actually apply to

UMR, the yield rate is higher—52% of the students who apply actually enroll. In other words, if 30 students interested in communication/communication tech have their scores sent to UMR, we should enroll between 30-50% of those students. As a point of comparison, enrollment in technical communication degree programs on other engineering campuses indicates that the number of majors ranges from about 25 (Tennessee Tech, New Mexico Tech) to 100 (Michigan Tech, Drexel). [Society for Technical Communication data.]

Marketing Objectives

1. Increase the portion of Midwest, prospective communication and liberal arts students who enroll at UMR.
2. Develop a recruitment cycle, similar to the programs for existing majors, for technical communication prospects. The Admissions Office with the English and Technical Communication Department serving as the program's academic home and faculty support base would coordinate this program.
3. Develop an internal recruitment plan targeted at undecided Arts and Sciences students and current students who are considering leaving UMR to study at another school with broader degree options. The latter group will include students from all four academic divisions (College of Arts and Sciences, School of Engineering, School of Management and Information Systems, and School of Mines and Metallurgy).
4. Create greater public awareness of the new degree program that allows more latitude for students interested in technical or writing careers but not desiring to study in one of the traditional fields.

Target Audiences

1. The primary audience will be college-bound students from Missouri and surrounding states interested in technical communication, or who are undecided about a major but have strong technical and communication skills.
2. Several secondary audiences will also be targeted, including:
   a. Non-traditional students in the area who are seeking a new or first career which has the flexibility of including consulting or contract work at an attractive wage.

   b. Personnel and family members of personnel at Ft. Leonard Wood who are seeking a degree they can earn in four years or less and which is extremely portable and is suitable for either full-time or part-time work in the future or part-time work while in school.

   c. Community colleges in the state, particularly those from whom we get the highest number of transfer students and with whom UMR already has Transfer Assistance Programs in place.

   d. Current UMR freshmen and sophomores, both American and international, with strong technical and communication skills who have not identified a major at UMR that matches their interests. This audience will include students who may be considering leaving UMR, rather than remaining to graduate.

3. The tertiary audience will be adults who are known to influence prospective students in the college decision making process—high school and community college counselors; English, communication, math and science teachers; and parents. The members of the St. Louis chapter of the Society for Technical Communication will also be enlisted for recruitment in the metropolitan area.

Campaign

A recruitment campaign, designed for the targeted audiences, will be developed using methods proven to be effective at UMR: direct mail publications, telecounseling, email, and a degree-specific web site. The pieces will focus on the advantages of a technical communication degree in today's high tech society, competitive market, and mobile population. The pieces will highlight successful UMR graduates who developed careers in technical communication and outstanding UMR graduates who can testify to the significance of technical communication in their own companies. As the major develops, the pieces will include UMR students who are putting their skills to use while still in school as they work as communicators in a campus office, on a student design team, or in one of the high tech industries in Rolla, at Ft. Leonard Wood, or in summer internships.

Each piece will feature the benefits of the new program and encourage students to take three actions:

a. Explore the Technical Communication website and curriculum.
b. Visit the campus and speak with faculty in the Technical Communication program.
c. Apply for admission to UMR.

Action Plan

The Admissions Office and the Chair of English and Technical Communication will assign individuals to be responsible for each strategy/objective and will prepare a step-by-step outline of tasks with an action timeline. Implementation will be coordinated around the existing new student recruitment cycle.

Evaluation

Overall, the effectiveness of the campaign will be measured by the number of students who have enrolled in the program at the end of the initial five-year implementation. Weekly monitoring by the Admissions Office of the recruitment will include the number of prospective students, campus visitors, degree webpage users, and admission applications will be shared with the English and Technical Communication Department.

Feedback from the new student survey, ACT prospective student profiles, and campus surveys will be tabulated by the Enrollment Management Office at the end of each academic year and used to plan and revise recruitment each summer.

C. Retention

Retention data will be tracked by semester; critical factors in retaining students are the quality of the faculty and the facilities (equipment, labs, and library resources), opportunities for professional development, and part-time and full-time employment of students and graduates.

The more senior of the two faculty members is Dr. Edward Malone who has experience in the development of the English/technical communication degree at Missouri Western, published research in the history of technical communication, and an outstanding teaching record having received the Governor's Excellence in Teaching Award in 2001. Dr. Kathryn Northcutt is joining the faculty in June 2004, having completed her Ph.D. in Technical Communication at Texas Tech, one of the top undergraduate and graduate programs in the nation. Her published research is in visual rhetoric, and she was noted for teaching excellence in her graduate and post-graduate work at Texas Tech.

The UMR climate is a very healthy one for the technical communication program and it is expected that the faculty and students will benefit from and enhance the campus expertise in technology, management and information systems, and biological sciences. In fact, students may be attracted to minor, major, or double major in technical communication; these options will help improve UMR's retention rates.

Entries in this Business Plan for the Career Opportunities Center, UMR Development Office, and the Advisory Board speak to the other critical factors in the retention of students. Specific goals for retention include the following:

1. By the end of Year 1, complete a proposal for UMR Development for a Technical Communication Lab.
2. By the end of Year 2, complete the application for a student chapter of the Society for Technical Communication.
3. By the end of Year 2, hold the first meeting of the Advisory Board.
4. By the end of Year 3, have at least three students involved in UMR's undergraduate research program (OURE).
5. By the end of Year 3, have a total of three internships (off-campus and/or on-campus) for technical communication in place.
6. At the end of Year 4, complete the first self-study questionnaire from the Council for Programs in Technical and Scientific Communication.

D. Employment of Graduates

The UMR Career Opportunities Center is very successful in attracting companies that hire students in engineering, science, information systems and technology, and computer science. Because these same companies hire technical communicators, it is expected that their interviewers will also want to evaluate these students for co-ops, internships, and permanent employment.

E. Development of External Funding

From the faculty involved in the technical writing minor, University Advancement has already received a preliminary proposal for a sophisticated computer lab dedicated to the production of technical documents, presentations, and web sites. Upon the arrival of the second faculty member in technical communication, it is expected that University Advancement will work closely with the faculty to finalize the proposal which is expected to include renovation of space, purchase of equipment and software, and endowed funds to upgrade and maintain equipment.

The funding of such a proposal will replace the need to request general operating dollars for this purpose. The Department of English has been involved in two significant gifts from engineering graduates in the past (the Beverly Moeller Writing Studio and the Maxwell Weiner Endowed Humanities Professor and Scholarships), so it is reasonable to expect that additional support might come from beyond the department's own graduates.

F. Advisory Board

An Advisory Board will be created early in the program. Composed of alumni and friends of the department with careers and expertise in high tech industries, the Board will help guide the program; identify opportunities for internships, co-ops, and permanent employment; assist with raising funds for scholarships, faculty development, and equipment; and provide advice from the workplace.

G. Evaluation

Recruitment and retention data on a semester basis will initially be the most critical data for evaluation of the new program. Evaluation of curriculum, program development, equipment, and course materials will be sought from the Advisory Board on an annual basis.

For the long term, the self-study materials available from the Council for Programs in Technical and Scientific Communication (CPTSC) will be used, culminating in a formal review by a CPTSC representative when funding is available.

Appendix III
Bachelor of Science in Technical Communication Sample Program

First Year

First Semester	Credit
English 20-Exposition & Argumentation	3
Math 4-College Algebra	3
Psychology 50-General Psychology	3
IST 51-Visual Basic	3
Humanities, Art, Music, Theater	3
	15

Second Semester	Credit
TCom 65-Technical Writer in Bus & Indus.	3
BioSci 110,231, 235, or 251	3
History 175, 176, 111, or 112	3
IST 151-Java	3
Econ 121-Microeconomics	3
	15

Second Year

First Semester	Credit
Speech & Media 85-Principles of Speech	3
English-Literature	3
TCom 240-Layout and Design	3
English 281-Theory of Written Comm.	3
IST 141-Information Systems	3
	15

Second Semester	Credit
Humanities, Art, Music, Theater	3
Political Science 90-American Govt.	3
TCom 260-Practicum in Technical Writing	3
TCom Elective	3
Physical Science	3
IST 211-Web Design	3
	18

Third Year

First Semester	Credit
Speech & Media 181-Theory of Comm.	3
IST 221, 233, 241, 223, or 243	3
Math/Statistics	3
Psychology 212, 311, 314, 315, 372, or 374	3
TCom 302-Research Methods	3
	15

Second Semester	Credit
TCom 340-Theory of Visual TCom	3
Speech & Media 235, 250, or 283	3
TCom elective	3
TCom elective	3
Psychology 212,311, 314, 315, 372, or 374	3
Free Elective	3
	18

Fourth Year

First Semester	Credit
History 270, 274, or 275	3
TCom elective	3
Philosophy 25, 35, 212, 320, 350	3
Free Elective	3
Free Elective	3
	15

Second Semester	Credit
TCom 390-Capstone	3
History or Psychology elective	3
TCom elective	3
Free Elective	3
Free Elective	3
	15

Appendix IV

Course Descriptions.

Undergraduate Courses

Technical Communication 65 (3) The Technical Writer in Business and Industry
Introduction to the role of the professional technical communicator in business and industry and practice in methods of developing technical documents. (Co-listed with English 65)

Technical Communication 230 (3) Writing for the Web
Development of skills required for designing a web site including writing and editing text, creating or acquiring graphics, writing compliant HTML code, and working with style sheets.

Technical Communication 231 (3) Report Writing
Students will learn the conventions and genre characteristics of communications with clients, supervisors, and government agencies, including the recommendation report, feasibility study, cost-benefit analysis, risk analysis, and status report.

Technical Communication 240 (3) Layout and Design
Theory and practice of layout and design for print and electronic media. Prerequisite: TCom 65. (Co-listed with English 240)

Technical Communication 260 (3) Practicum in Technical Writing
Practice in writing, editing, and designing layouts of technical publications using the personal computer for desktop publication. Prerequisite: TCom 65 and 240. (Co-listed with English 260).

Undergraduate/Graduate Courses

Technical Communication 300 (Variable) Special Problems
Problems or readings on specific subjects or projects in the department. Const of instructor required.

Technical Communication 301 (Variable) Special Topics
This course is designed to give the department an opportunity to test a new course. Prerequisite: TCom 65 and 240

Technical Communication 302 (3) Research Methods in Technical Communication
Students learn essential research methods in technical communication, including audience analysis, interviewing techniques, working with subject matter experts, and experimental research design. Prerequisite: TCom 65 and 240.

Technical Communication 330 (3) Instructions and User Interfaces
Theory and Practice of writing user manuals, help-files, and other forms of documentation for end users, emphasizing the role of print and on-line documents in managing users' experience of products and services and the role of the technical communicator as user advocate in the design process. Prerequisite: TCom 65 and 240.

Technical Communication 331 (3) Technical Editing
The principles and practices of technical editing, including usability, audience analysis, contextual editing, the conventions of scientific and technical communication, and the role of the editor in document development and publication. Students will also learn standard practices of copy editing and the use of style guides. Prerequisite: TCom 65 and 240.

Technical Communication 332 (3) Writing On-Line Documentation
Principles and practices of writing on-line documentation, including techniques of audience analysis, writing for usability, and the development tools used by writers of on-line documentation. Prerequisite: TCom 65 and 240.

Technical Communication 333 (3) Proposal Writing
This course focuses on the proposal as a fundamental aspect of corporate, government, and academic institutions, with emphasis on the conventions and rhetorical elements of the proposal genre.
Prerequisite: TCom 65 and 240.

Technical Communication 334 (3) Script Writing
Study of the construction of various video scripts for corporations and the practice of writing video scripts for corporate and technical purposes. Prerequisite: TCom 65 and 240.

Technical Communication 340 (3) Theory of Visual Technical Communication
A study of the relationships between visual and conceptual elements of technical communication. Prerequisite: TCom 65 and 240.

Technical Communication 341 (3) Video Production for Technical Communicators
An introduction to the techniques of video production for technical and corporate subjects. Students plan, shoot, edit, and produce videos that may be used for training or other corporate or technical purposes. Prerequisite TCom 65 and 240.

Technical Communication 342 (3) Introduction to Multimedia Authoring
An introduction to multimedia authoring with an emphasis on rhetorical issues. Students will study the history of multimedia. Analyze multimedia projects rhetorically, and use Macromedia Director MX to create a project for output on CD or DVD. Prerequisite TCom 65 and 240.

Technical Communication 361 (3) History of Technical Communication
Introduction to the roles of the technical communicator and the technologies of communication from ancient cultures to the present. Prerequisite TCom 65 and 240.

Technical Communication 380 (variable) Internship
Internship will involve students applying critical thinking skills and discipline specific knowledge in a work setting based on a project designed by the student, advisor, and employer. Activities will vary depending on the students' background and the setting. Prerequisite: Senior status; must have completed 24 hours in the major core curriculum.

Technical Communication 390 (3) Theory and Practice of Technical Communication
This capstone course enables the student to work on individual and group projects that put into play the theories and practices of technical communication. Students are expected to develop professional portfolios. Prerequisite: Senior Status and TCom 65 and 240.

APPENDIX I.

PROPOSAL FOR M.S. IN TECHNICAL COMMUNICATION

PROPOSAL FOR A MASTER OF SCIENCE DEGREE PROGRAM IN TECHNICAL COMMUNICATION

Department of English

236 Humanities/Social Sciences

University of Missouri-Rolla

Rolla, Missouri 65409-0560

(573) 341-4681

March 2003

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EXECUTIVE SUMMARY

Executive Summary

The proposed Master of Science degree in Technical Communication fulfills campus, state, and societal needs. The proposed degree will attract new graduate students, as well as retain students who have completed B.S. degrees at UMR. The graduate program will help the campus attract and retain quality faculty with active research programs. For the state of Missouri, the research completed by faculty and students, as well as the graduation of technical communicators with advanced skills, will support the strategic plan for economic development which has targeted seven areas that employ technical communicators. The degree is designed to ensure that graduates will have the competencies employers are looking for, especially in their search for people with advanced skills who can move quickly into managerial positions. Academic institutions also seek technical communicators with M.S. degrees to teach in their undergraduate programs.

The degree is a logical outgrowth of UMR's focus as a technological university, and should be viewed as complementary to UMR's new graduate degrees in the School of Management and Information Systems. Southwest Missouri State offers an M.A. in technical writing which is distinctly different from the UMR proposed degree. The M.S. degree at UMR requires students to have a strong foundation in a specialized area of technology and focuses on the development, design, and management of information. Thus it does not duplicate any other graduate degree in Missouri.

This 30-hour program includes a thesis option, technical communication core courses and electives, and a module of courses outside the department. Conservative enrollment and financial projections show that the degree will produce revenue beginning in the first year of its existence.

1. Need for Program

Form SE (Student Demand)

Year	1	2	3	4	5
Full Time	2	4	6	8	10
Part Time	3	5	7	9	11
Total	5	9	13	17	21

2. Market Demand, Societal Needs, and Methodology

Summary of Need for Program

The Master of Science degree in Technical Communication will fulfill the following needs:

- Satisfy current and prospective student interest in a graduate program in technical communication.
- Strengthen UMR's ability to recruit and retain graduate students with an interest in a technological field other than engineering.
- Provide new opportunities for graduate research.
- Support the State of Missouri's strategic plan for economic development which calls for growth in seven targeted areas, all of which require technical communicators.
- Fulfill the market's need for technical communications with a specialization in one or more areas of technology
- Meet the societal need for communicators who facilitate technology transfer.
- Meet the societal need for communicators who clarify critical documents and information for the general public.
- Strengthen UMR's ability to recruit and retain quality faculty.

Employment of Graduates

According to the 2002-2003 Bureau of Labor Statistics and the major professional societies in technical communications, the job outlook for graduates is good and salaries are attractive. For example, the median annual earnings for salaried technical writers in 2000 were $47,790; and an above average increase in the employment of writers and editors is predicted through 2010. The employment of technical writers and editors is especially strong due to rapid changes in technology, electronics, science, law, and the internet. The Society for Technical Communication notes the need for technical communicators with advanced skills, such as an M.S. graduate would have.

As in all areas of technology, of course, the trend of rapid growth, an expanding job market, and ever-increasing salaries has ended. However, the proposed M.S. degree is designed to graduate skilled professionals, i.e., people with durable skills for the long-term technical communication career. Its breadth of focus (information technology, computer science, industrial organization, and writing) will enable graduates to adapt to market fluctuations. The most recent survey by the International Association of Business Communication (2002) shows a salary and budget slowdown. But the survey also revealed that:

- the market for technical communicators outside the U.S. has increased
- the field continues to offer equal opportunities for success and advancement to women and men
- technical communicators are being asked to facilitate more face-to-face communication

The Society for Technical Communication reports that for the next few years, there will be fewer jobs in telecommunications, personal computing, and software development but more jobs in defense, government, security, health care, and training. The organization also reports that although it takes an individual longer to find a job than it did in the late 1990s, most technical communicators are finding employment.

The Bureau of Labor Statistics points out that the job outlook is especially good for technical writers:

> Opportunities should be best for technical writers and those with training in a specialized field. Rapid growth and change in the high technology and

electronics industries result in a greater need for people to write users' guides, instruction manuals, and training materials. Developments and discoveries in the law, science, and technology generate demand for people to interpret technical information for a more general audience. This work requires people who are not only technically skilled as writers, but also familiar with the subject area. Also, individuals with the technical skills for working on the Internet may have an advantage finding a job as a writer or editor.

The areas that employ the most technical communicators are as follows:

- computer manufacturing and software development
- consumer electronics
- banking and financial institutions
- telecommunications
- chemical and pharmaceutical
- hospitals and research labs
- academic institutions and libraries

Technical communicators work in various departments within these areas, including product development, risk assessment, marketing, training, public relations, and communications. Their primary job titles have been writer, editor, technical writer, and technical editor. However, the latest edition of *Career Opportunities for Writers* indicates a wide variance of job titles for technical communicators and identifies five career areas where they are employed: business communications and public relations; advertising; federal government; scholastic, academic, and nonprofit institutions; and freelance services and self-publishing.

Very recently two new job titles--information designer, information developer--have surfaced in order to more accurately reflect technical communicators' role as not only transmitters of knowledge but also developers of knowledge in contemporary workplaces. Current research indicates that technical communicators frequently find themselves between technical experts who cannot always articulate what needs to be known in order for someone to access and use a new product and users who do not know what to ask in order to access and use the product. Michael Hughes has proposed that instead of defining technical communicators as being professionals who "take technical

information and make it understandable to those that need it," they should be defined more broadly as professionals who "help their organizations define and communicate technical knowledge in ways that create value both for those who create products and services and for those who use them" (*TC 02*).

In addition to the business and industry market, higher education needs teachers for entry-level teaching positions in technical communication. As the president of the Association of Teachers of Technical Writing reported in 2001, technical communication majors at his institution have a nearly 100% placement rate at salaries so rewarding that few, if any, opt to begin a Ph.D. program in the field. Thus a technical communication graduate with an M.S. degree would be an attractive candidate for large academic programs and community colleges.

All seven of the "targeted growth industries," as identified by the Missouri Department of Economic Development, require technical communicators:

- Life Sciences/Biotechnology
- Information Technology
- Advanced Manufacturing
- Transportation Manufacturing
- Agribusiness
- Financial Services
- Information and Media

These targeted areas match the list of areas that employ the most technical communicators. Recent reports from the Department's Economic Research and Information Center examine employment needs in Information Technology, foreseeing growth not only in urban areas but also in rural Missouri. Regional trade centers, towns with universities and/or government agencies, as well as attractive natural landscapes, are showing an increase in IT jobs. More urban in focus are the areas of advanced manufacturing and biotechnology. For example, the establishment of new centers in St. Louis for biological research goes far to making St. Louis a national center of growth in this area. Significantly, two of UMR's newer degree graduate programs are tied to growth industries—the M.S. degree in Biological Sciences (2000) and the M.S. degrees in the School of Management and Information Systems (2001). Thus, the addition of a

graduate program in technical communication should be viewed as complementary growth in areas that UMR has already identified as part of its unique mission as Missouri's technological university.

As this proposal indicates, UMR's degree ensures that the graduates will have the very competencies that employers are looking for—a combination of communication skills, specialization in one or more areas of technology, and an understanding of human factors. The interdisciplinary nature of these degrees makes the graduates very competitive in the marketplace.

Societal Need

Technical communicators provide an essential service to the national and global society in aiding technology transfer. The handing off of technical knowledge and products by developers to users is usually not the transfer of a self-explanatory, physical object but is a transfer of words, of information and understanding. The technical communicators facilitate that transfer because they are adept in audience analysis, document design, presenting, and writing.

This essential service is manifested in several ways. Technical communicators articulate the needs, issues, and implications of changing technologies to those who need the knowledge in fields such as economics, ethics, politics, health sciences, safety and risk management, training, security and privacy. Their skills can make critical documents and information accessible in such areas as insurance, loans, taxation, and medicine.

The graduates of UMR's program, one which is interdisciplinary in nature and combines education in theory, applications, and technology, will be well positioned to make their services felt in many areas of society. Technical communicators analyze various genres of technical documents and can demonstrate the degree to which they assist or hinder the democratic decision making process (e.g. environmental impact statements, research reports on genetically engineering foods, route selections for new highways). Their skills in document design and understanding of the rhetorical impact of various modes of delivery (electronic, print, and visual) give them the potential for being leaders in identifying and developing new modes of communication, as they have been in the development of desk-top publishing in the 1980s, and e-training in the 1990s.

Technical communicators can assist in solving communication problems that arise in society because of audience diversity, the interdisciplinary nature of technology, global and market changes. As experts in the whole complex process of interfacing, technical communicators serve all aspects of society.

Methodology of Research

Sources investigated for employment data and societal needs included the U.S. Department of Labor's Bureau of Statistics (*2002-2003 Occupational Outlook Handbook*), Missouri Department of Economic Development (http:www.ded.state.mo.us/business/) , and various publications (surveys, scholarly publications, editorials) by major professional societies including the Society for Technical Communication, the IEEE Professional Communication Society, and the Association for the Teachers of Technical Writing. Specific journals consulted included *Technical Communication, IEEE Transactions on Professional Communication, Technical Communication Quarterly, Journal of Business and Technical Communication.* The latest edition (2000) of *Career Opportunities for Writers* was also consulted.

3. Duplication and Collaboration

According to the Association of Teachers of Technical Writing web page, thirty-nine universities offer a Master of Arts or Master of Science degree in technical communication. Of these universities, only one is in Missouri. Southwest Missouri State University offers a Master of Arts degree in Technical Writing.

The University of Missouri-Rolla's proposed M.S. in Technical Communication differs from that of Southwest Missouri State's M.A. in that the UMR degree focuses not solely on technical writing but on the development, design, and management of information. UMR's degree balances theory and practice, and, perhaps most importantly, it is situated in a very strong technological environment where students can work alongside engineers and scientists.

The M.S. degree in Technical Communication does not involve collaboration with any external institution or organization.

4. Program Structure

Form PS

Program Structure

A. **Total credits required for graduation** 30 hrs

The proposed M.S. degree in Technical Communication will meet or exceed requirements listed in the UMR Graduate Catalogue. The program structure will vary according to the interests of candidates for the degree. Candidates either will pursue a plan of study that emphasizes the writing of a thesis in technical communication or one that prepares them to pass the comprehensive exam of the non-thesis option.

B. **Residency requirements:**

Research work normally must be performed on the UMR campus. A maximum of 6 credit hours may be performed off campus.

C. **Courses (general)**

With guidance from the advisor and the graduate committee, each candidate will complete a plan of study to satisfy interests of the candidate and the advisor plus requirements for the Master of Science degree, as described in the UMR Graduate Catalogue:

Master's Degree with Thesis—minimum of 30 hrs graduate credit; at least 6 hrs to be 400 level courses; at least 6 hrs to be out-of-department courses; no more than 6 hrs of 200 level out-of department courses; 6 hr minimum devoted to Graduate Research, TCom 490; no more than 12 hrs for research, special readings, and seminar.

Master's Degree without Thesis—minimum of 30 hrs graduate credit; at least 9 hrs to be 400 level courses; at least 6 hrs to be out-of-department courses; no more than 6 hrs of 200 level out-of-department courses; no more than 4 hrs for special readings, special problems, and seminar.

D. **Major requirements:**

As part of this proposed M.S. degree program, candidates for the degree will complete four required courses:

Technical Communication Core

Required 12 hours

(3) Technical Communication 402 Foundations of Technical Communication
(3) Technical Communication 403 Theoretical Approaches to Technical Communication
(3) Technical Communication 450 Information Management
(3) Technical Communication 331 Technical Editing

In addition, candidates will select three to four courses from the following technical communication courses:

Technical Communication Electives

Electives 9-12 hours

(3) English 305	History and Structure of the English Language
(3) Technical Communication 302	Research Methods in Technical Communication
(3) Technical Communication 330	Instructions and User Interfaces
(3) Technical Communication 332	Writing On-Line Documentation
(3) Technical Communication 333	Proposal Writing
(3) Technical Communication 334	Script Writing
(3) Technical Communication 340	Theory of Visual Technical Communication
(3) Technical Communication 341	Video Production for the Technical Communicator
(3) Technical Communication 342	Introduction to Multimedia Authoring
(3) Technical Communication 361	History of Technical Communication
(3) Technical Communication 380	Internship
(3) Technical Communication 400	Special Problems
(3) Technical Communication 404	Teaching of Technical Communication
(3) Technical Communication 410	Seminar
(3) Technical Communication 411	International Technical Communication
(3) Technical Communication 430	Multimedia Authoring
(3) Technical Communication 441	Reporting Technical Information
(6) Technical Communication 490	Research

For the out-of-department courses in the M.S. degree in Technical Communication, candidates are advised to group theses courses into a module that fits their special interest.

Sample Modules of Out-of-Department Courses

6-9 hours

(3) Speech and Media 235 Intercultural Communication
(3) Speech and Media 283 Business and Professional Communication
(3) Speech and Media 250 Interpersonal Communication

(3) Philosophy 350 Environmental Ethics
(3) Psychology 315 Environmental Psychology
(3) Biological Sciences 251 Ecology

(3) Psychology 212 Industrial Psychology
(3) Psychology 311 Human Factors
(3) Psychology 314 Human-Computer Interaction
(3) Psychology 372 Group Dynamics
(3) Psychology 374 Organizational Psychology

(3) Political Science 325 Science, Technology, and Politics
(3) Political Science 315 Public Policy Analysis

Catalogue Description of Graduate Courses in Technical Communication

Technical Communication 300 (Variable) Special Problems
Problems or readings on specific subjects or projects in the department. Consent of instructor required.

Technical Communication 301 (Variable) Special Topics
This course is designed to give the department an opportunity to test a new course. Prerequisite: TCom 65 and 240

Technical Communication 302 (3) Research Methods in Technical Communication
Students learn essential research methods in technical communication, including audience analysis, interviewing techniques, working with subject matter experts, and experimental research design. Prerequisite: TCom 65 and 240.

Technical Communication 310 (3) Seminar
Discussion of current topics.

Technical Communication 330 (3) Instructions and User Interfaces
Theory and Practice of writing user manuals, help-files, and other forms of documentation for end users, emphasizing the role of print and on-line documents in managing users' experience of products and services and the role of the technical communicator as user advocate in the design process. Prerequisite: TCom 65 and 240.

Technical Communication 331 (3) Technical Editing
The principles and practices of technical editing, including usability, audience analysis, contextual editing, the conventions of scientific and technical communication, and the role of the editor in document development and publication. Students will also learn standard practices of copy editing and the use of style guides. Prerequisite: TCom 65 and 240.

Technical Communication 332 (3) Writing On-Line Documentation

Principles and practices of writing on-line documentation, including techniques of audience analysis, writing for usability, and the development tools used by writers of on-line documentation. Prerequisite: TCom 65 and 240.

Technical Communication 333 (3) Proposal Writing

This course focuses on the proposal as a fundamental aspect of corporate, government, and academic institutions, with emphasis on the conventions and rhetorical elements of the proposal genre. Prerequisite: TCom 65 and 240.

Technical Communication 334 (3) Script Writing

Study of the construction of various video scripts for corporations and the practice of writing video scripts for corporate and technical purposes. Prerequisite: TCom 65 and 240.

Technical Communication 340 (3) Theory of Visual Technical Communication

A study of the relationships between visual and conceptual elements of technical communication. Prerequisite: TCom 65 and 240.

Technical Communication 341 (3) Video Production for Technical Communicators

An introduction to the techniques of video production for technical and corporate subjects. Students plan, shoot, edit, and produce videos that may be used for training or other corporate or technical purposes. Prerequisite TCom 65 and 240.

Technical Communication 342 (3) Introduction to Multimedia Authoring

Through the use of current multimedia tools, this course introduces the technical skills necessary for designing and developing interactive media. Prerequisite TCom 65 and 240.

Technical Communication 361 (3) History of Technical Communication

Introduction to the roles of the technical communicator and the technologies of communication from ancient cultures to the present. Prerequisite TCom 65 and 240.

Technical Communication 380 (variable) Internship

Internship will involve students applying critical thinking skills and discipline specific knowledge in a work setting based on a project designed by the advisor and employee. Activities will vary depending on the students' background and the setting. Prerequisite: Senior status; must have completed 24 hours in the major core curriculum.

Technical Communication 400 (Variable) Special Problems

Problems or readings on specific subjects or projects in the department. Consent of instructor required.

Technical Communication 401 (Variable) Special Topics

This course is designed to give the department an opportunity to test a new course.

Technical Communication 402 (3) Foundations of Technical Communication
Introduction to themes and issues, methods, and genres that define technical communication.

Technical Communication 403 (3) Theoretical Approaches to Technical Communication
Examines representative theories and research in written, oral, and visual modes of technical communication. Includes issues such as ethics, document design, rhetorical methods, and people-machine communication.

Technical Communication 404 (3) Teaching of Technical Communication.
Provides a theoretical and pedagogical foundation for teaching workshops and undergraduate courses in technical communication. Includes both traditional and electronic settings.

Technical Communication 410 (Variable) Seminar
Discussion of current topics.

Technical Communication 411 (3) International Technical Communication
Examines complexity of communication of technical information worldwide. Includes topics such as graphics, icons, symbols; user interface design; cross-cultural communication.

Technical Communication 430 (3) Multimedia Authoring
Theory and practice of using multimedia resources (graphics, text, animation, video, sound) combined into a digital resource (cds, websites, dvds, discs). Includes study of guidelines for effective designs, developing in-house products, evaluating existing products, and e-training.

Technical Communication 441 (3) Reporting Technical Information
Study of theory and practice for particular document forms, such as environmental impact statements, press releases, strategic plans, mission statements.

Technical Communication 450 (3) Information Management
Study of and practice in directing projects related to such areas as multimedia, web sites, strategic planning, newsletters. Includes writing planning documents, selecting team members, synchronizing assignments, testing prototypes, and issuing a final report.

Technical Communication 490 (Variable) Research
Investigations of an advanced nature leading to the preparation of a thesis or dissertation. Consent of instructor required.

E. **Free Electives**

Twelve hours are required, leaving 18 hours to be selected by candidates in consultation with their advisors.

F. **Requirements for Thesis, Internship, or Other Capstone Experiences:**

All candidates will present a portfolio of their work at the conclusion of their course work; those who select the thesis option will write a thesis; those who select the non-thesis option will take a comprehensive exam at the completion of their course work. An internship is recommended but not required.

G. **Unique features**

There are no specific unique features, though certainly interdisciplinary work might be expected.

5. FINANCIAL PROJECTIONS

Form FP
Financial Projections

	Year 1	Year 2	Year 3	Year 4	Year 5
1. Expenditures					
A. One-time					
New/renovated space					
Equipment					
Library					
Consultants					
Other					
Total for One-Time Expenditures	00.00	00.00	00.00	00.00	00.00
B. Recurring					
Faculty					
Staff					
Benefits					
Equipment					
Library					
Other					
GTA & GRA slots @ $28,000 each FTE per year	14,000	42,000	70,000	84,000	126,000
# FTE GTA &GRA slots / year	(.5)	(1.5)	(2.5)	(3)	(4.5)
Total for Recurring Expenditures	14,000	42,000	70,000	84,000	126,000
TOTAL (A + B)	14,000	42,00	70,00	84,000	126,000
ALL EXPENDITURES FOR THE M.S. EXCEPT FOR GTA & GRA EXPENDITURES ARE INCLUDED IN THE B.S. EXPENDITURES					

2. Revenues					
State Aid—CBHE					
State Aid—DESE					
Tuition/Fees *	22,332	53,171	72,313	103.752	128,143
Other					
TOTAL REVENUES	22,332	53,171	72,313	103,752	128,143

* ¾ FT students in-state @ $6,381 per year (2002-2003 catalogue)
¼ FT students out-state @ $18,078 per year
PT students in-state @ $3190 per year

A. Budget Justification

Except for the expenditures for the Graduate Teaching Assistants and the Graduate Research Assistants, all expenditures are included in the proposed B.S. degree in Technical Communication. *(See Appendix A: B.S. TCom Financial Projections)*

One-time expenditures

The one-time expenditures in Year 4 are for 25% of the cost of space renovation and equipment for a technical communication center. The majority of the cost (75% or $xxx) has been placed in the budget for the B.S. proposal. It is expected that all of the funds for this center will come from the development campaign that UMR is currently conducting. This center will be housed in renovated space and will include a computer-learning center with equipment and software appropriate for advanced technical communication projects and courses. The center will also include conference space for students collaborating on projects and office space (for two faculty members, two graduate students, and one staff person).

Recurring expenditures

The recurring expenses for faculty and staff have been placed in the budget for the B.S. proposal. These include salaries and benefits for hiring new faculty as the enrollments increase—1 person in Year 2, 1 person in Year 3, and 1 person in Year 5 and one staff person when the technical communication center is completed.

New recurring expenditures specific to the M.S. degree are funds for graduate student research and teaching assistantships. We project two assistantships in Years 2 and 3, and three assistantships in Years 4 and 5.

B. Administrative Structure

The M.S. degree will be an integral part of the Department of English; the B.S. degree will be administered by the chair of the department and the voting faculty. By Year 4, when the technical communication center is created, a director of the center will be appointed. The director will report to the chair of the Department of English.

C. Facilities and Environment

Current UMR computer learning centers, particularly the one in the Writing Center, will accommodate the technical communication majors and their special software needs. New facilities are projected for the B.S. degree program which will also be shared by the M.S. degree program.

6. Program Characteristics and Performance Goals

Form PG

Institution Name: University of Missouri-Rolla

Program Name: Technical Communication, Master of Science

Date August, 2003

Student Preparation:

- Students will be required to meet the standard admission requirements for the University of Missouri-Rolla

Faculty Characteristics:

- *Any special requirements (degree status, training, etc.) for assignment of teaching for this degree program?* This program will be supported with a combination of existing and new faculty. New faculty hires will be expected to hold a Ph.D. or its equivalent and have the potential to contribute to UMR's mission in the areas of teaching, research, and service. Adjunct faculty with expertise and work experience as technical communicators will occasionally be hired.
- *Estimated percentage of credit hours that will be assigned to full-time faculty*: 75%
- *Expectations for professional activities, special student contact, teaching/learning innovation*. Faculty at UMR are expected to participate in teaching, research, service, and outreach activities. The faculty members are also expected to use the

innovations in multimedia in the classroom. Annual reviews, promotion and tenure, continuing membership on the graduate faculty, and annual salary adjustments ensure the quality of faculty activities.

Enrollment Projections:

- *Student FTE majoring in program by the end of five years:* 21 (Form SE)
- *Percent of full-time and part-time enrollment by the end of five years*: 48% full-time students; 52% part-time students.

Student and Program Outcomes:

- *Number of graduates per annum at five years after implementation*: 6
- *Special skills specific to the program*:
  - ✓ Understanding of and practice in the production of a variety of technical documents (e.g. manuals, instructions, training materials, proposals, position papers) in both print and electronic forms.
  - ✓ Theory and practice of writing and editing documents that facilitate the transfer of technical knowledge from experts to users.
  - ✓ Theory and practice of the integration of visual communication tools (e.g., drawings, diagrams, 3-D models, animation) with written and spoken communication.
  - ✓ Experience with the process of project management in a user community, including needs assessment, audience analysis, design, development, technology transfer, usability testing, and support.
  - ✓ Programming for and practice in web design and development
  - ✓ Knowledge of computer-based information systems
  - ✓ Knowledge of the psychology of the business and industrial workplace.
  - ✓ Background in the history and ethics of technology
  - ✓ Expertise in focused professional areas such as web communication, information systems, organizational psychology, multimedia production, and public policy development.
  - ✓ Understanding of the challenges of a global society in technology transfer.
  - ✓ Commitment to the professional ethics and responsibilities of a technical communicator

- *Proportion of students who will achieve licensing, certification, or registration:* Graduates will become members of the professional societies such as the Society for Technical Communication, the Professional Communications Society of the Institute for Electrical and Electronics Engineers, and the Special Interest Group on Documentation (SIGDOC) of the Association for Computing Machinery. At present, there are no professional groups licensing, certifying, or registering graduates of M.S. programs in technical communication.
- *Performance on national and/or local assessments, e.g., percent of students scoring above the 50th percentile on normed tests:* 80% of our students are expected to score above the 50th percentile on normed tests.
- *Placement rates in related fields, in other fields, unemployed*: Based on surveys from professional organizations in technical communication and the U.S. Bureau of Labor Statistics, there will continue to be growing opportunities for technical communicators in the professions and in academia; therefore, we expect 100% of our graduates to be employed.
- *Transfer rates, continuous study:* The proposed program will prepare the students for a life-long learning process. The concept of specialty modules proposed in the program will enable transfer students to integrate into the technical communication program at UMR.

Alumni and Employer Survey:

- *Expected satisfaction rates for alumni including timing and method of surveys:* UMR will develop a web-based assessment and evaluation plan for the curriculum in technical communication. Drawing on information from our professional societies and the experience of other departments at UMR, we will develop appropriate rating sheets, interviews, focus group protocols, and surveys for gathering the information. A mixed method of evaluation that combines both qualitative and quantitative forms of data will be used for the assessment of the program. We expect 90% satisfaction rate of the alumni of the program.
- *Expected satisfaction rates for employers including timing and method of surveys:* UMR will develop a web-based evaluation and assessment instrument

for gathering the information from the employers of the graduates. We expect 90% satisfaction from the employers.

7. Accreditation

There is no accreditation for graduate programs in technical communication.

8. Institutional Characteristics

The University of Missouri-Rolla is particularly well suited and equipped to support a Master of Science degree program in Technical Communication to be offered by the Department of English. Key factors include the strength of the Department of English, the nature of UMR as a technological university, and opportunities for research, internships, and co-ops in the vicinity, as well as potential adjunct faculty.

Department of English

The department has several years of experience developing and teaching courses in technical communication as part of its minor in technical writing. Courses in layout and design and a practicum in technical writing are two of the most recent offerings. Faculty are members of the Society for Technical Communication and the Association of Teachers of Technical Writing.

Because UMR is a research university, the faculty have a strong tradition of research, teaching, and service; thus new faculty will be appropriately mentored for the UMR environment.

UMR as Missouri's Technological University

UMR's strong reputation as the state's technological university and as one of the top providers of M.S. and Ph.D. graduates in engineering and science in the country make it a logical home for a technical communication program. The interdisciplinary nature of the program means that students will combine a foundation in computer-based technology, the theory and practice of technical communication (written, oral, visual), and an understanding of the workplace through organizational psychology and ethics. It should be further noted that UMR has recently been approved for new degrees in Applied and Environmental Biology (M.S. 2000) and Information Science and Technology (B.S.

and M.S. 2001); employers of graduates in both of these areas also hire technical communicators.

Opportunities for Faculty and Students in Vicinity

Hiring faculty. Adjunct faculty with specialized expertise in technological communication (e.g. corporate environment, multimedia authoring, needs assessment, web development) can be recruited from among the professional technical communicators employed in the area (high tech companies, government agencies such as US Geological Survey, and UMR's own publications unit).

Student opportunities. Faculty in the program will seek projects, internships, and co-op experiences for students in the immediate vicinity of Rolla, and in larger communities such as St. Louis, Springfield, Kansas City, Jefferson City, and Ft. Leonard Wood. On-campus projects could include the alumni office, publications department, and academic units in which journals are edited and published.

Alumni of the Department of English are working as technical communicators in many parts of the country; their support and assistance will be sought in developing work experience for students prior to graduation.

Research opportunities. Because of the presence of high tech companies and the expansion of Ft. Leonard Wood's research base, research projects for technical communication faculty and/or graduate students will develop quickly once the M.S. degree is in place. As relations with UMR alumni and with Missouri's businesses are developed, the field for research will be even wider.

Appendix A: B.S. TCom Financial Projections

Form FP
Financial Projections

	Year 1	Year 2	Year 3	Year 4	Year 5
1. **Expenditures**					
A. One-time:					
New/renovated space				50,000	
Equipment				500,000	
Library					
Consultants					
Other					
Total: One-Time Expenditures				550,000	
B. Recurring					
Faculty		45,000	92,000	95,680	146,611
Staff				20,000	21,000
Benefits @ 21.83 %		9,825	20,083	25,253	36,589
Equipment	2,000	10,000	2,000	2,000	2,600
Library	1,000	1,100	1,200	1,300	1,500
Other	2,000	3,000	5,000	6,000	8,000
Total: Recurring Expenditures	5,000	68,925	120,283	150,233	216,300
TOTAL (A + B)	5,000	68,925	120,283	700,233	216,300

* ¾ FT students in-state @ $5,160 per year (2002-2003 catalogue)
¼ FT students out-state @ $14,293 per year
PT students in-state @ $2,580 per year

** Source of these monies is development

Effective Term: FS2003 **CC File #**

Course Change Form (CC)

This form is for creating or modifying permanent courses.

Course Changes (Check all changes.)

New Course ☒ **Course Deletion** ☐ **Credit Hours** ☐ **Prerequisites** ☐
Course Title ☐ **Catalog Description** ☐ **Course Number** ☐ **Co-listing** ☐

Course Information (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. School/College: College of Arts & Sciences **Department:** English

2. Discipline and Course Number: **Present :** **Proposed:** TCom 400

3. Course Title: **Present:**

Proposed: Special Problems

Abbreviated Course Title: Special Problems
(24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. Catalog Description *(40 Words or Less)*

Present:

Proposed: Problems or readings on specific subjects or projects in the department. Consent of instructor required.

5. Credit Hours: **Present:** **Lecture:** **Lab:** **Total:**
Proposed: **Lecture:** **Lab:** **Total: Vari**

6. Prerequisites:
Present:

Proposed:

7. Required for Majors: ☐ **Elective for Majors:** ☒

8. Justification: Course for new Technical Communication MS Degree

9. Semesters previously offered as an experimental course (101, 201, 301, 401):

10. List all co-listed courses, initialed by Dept. Chair(s) and Dean(s) if signatures do not appear below.

1) **4)**

2) **5)**

3) **6)**

Recommended by Department _____ Date: _____
(Chair signature)

Recommended by School/College: _____ Date: _____
(Dean signature)

Recommended by UMR Curricula Committee: _____ Date: _____
(Chair signature) (Action)

Recommended by Academic Council: _____ Date: _____
(Chair signature) (Action)

05/12/03 (Revised 2/14/02)

Effective Term: FS2003 CC File #

Course Change Form (CC)

This form is for creating or modifying permanent courses.

Course Changes (Check all changes.)

New Course ☒ Course Deletion ☐ Credit Hours ☐ Prerequisites ☐
Course Title ☐ Catalog Description ☐ Course Number ☐ Co-listing ☐

Course Information (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. School/College: College of Arts & Sciences Department: English
2. Discipline and Course Number: Present : Proposed: TCom 401
3. Course Title: Present:
   Proposed: Special Topics
   Abbreviated Course Title: Special Topics
   (24 Spaces or Less. Only needed for New Courses or Title Changes.)
4. Catalog Description *(40 Words or Less)*
   Present:

   Proposed: This course is designed to give the department an opportunity to test a new course.

5. Credit Hours: Present: Lecture: Lab: Total:
   Proposed: Lecture: Lab: Total: Vari
6. Prerequisites:
   Present:

   Proposed:

7. Required for Majors: ☐ Elective for Majors: ☒
8. Justification: Course for new Technical Communication MS Degree

9. Semesters previously offered as an experimental course (101, 201, 301, 401):
10. List all co-listed courses, initialed by Dept. Chair(s) and Dean(s) if signatures do not appear below.

1) 4)
2) 5)
3) 6)

Recommended by Department _____ (Chair signature) Date: _____

Recommended by School/College: _____ (Dean signature) Date: _____

Recommended by UMR Curricula Committee: _____ (Chair signature) Date: _____ (Action)

Recommended by Academic Council: _____ (Chair signature) Date: _____ (Action)

05/12/03 (Revised 2/14/02)

Effective Term: FS2003 **CC File #**

Course Change Form (CC)

This form is for creating or modifying permanent courses.

Course Changes (Check all changes.)

New Course ☒ **Course Deletion** ☐ **Credit Hours** ☐ **Prerequisites** ☐
Course Title ☐ **Catalog Description** ☐ **Course Number** ☐ **Co-listing** ☐

Course Information (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. **School/College:** College of Arts & Sciences **Department:** English
2. **Discipline and Course Number: Present :** **Proposed:** TCom 402
3. **Course Title: Present:**
   Proposed: Foundations of Technical Communication
   Abbreviated Course Title: Tech Comm Foundations
   (24 Spaces or Less. Only needed for New Courses or Title Changes.)
4. **Catalog Description** *(40 Words or Less)*
   Present:

   Proposed: Introduction to themes and issues, methods, and genres that define technical communication.

5. **Credit Hours:** **Present:** **Lecture:** **Lab:** **Total:**
   Proposed: **Lecture: 3.0** **Lab:** **Total:**
6. **Prerequisites:**
   Present:

   Proposed:

7. **Required for Majors:** ☒ **Elective for Majors:** ☐
8. **Justification:** Course for new Technical Communication MS Degree

9. **Semesters previously offered as an experimental course (101, 201, 301, 401):**
10. **List all co-listed courses, initialed by Dept. Chair(s) and Dean(s) if signatures do not appear below.**

1) 4)
2) 5)
3) 6)

Recommended by Department _____ (Chair signature) Date: _____

Recommended by School/College: _____ (Dean signature) Date: _____

Recommended by UMR Curricula Committee: _____ (Chair signature) Date: _____ (Action)

Recommended by Academic Council: _____ (Chair signature) Date: _____ (Action)

05/12/03 (Revised 2/14/02)

Effective Term: FS2003 **CC File #**

Course Change Form (CC)

This form is for creating or modifying permanent courses.

Course Changes (Check all changes.)

New Course ☒ **Course Deletion** ☐ **Credit Hours** ☐ **Prerequisites** ☐
Course Title ☐ **Catalog Description** ☐ **Course Number** ☐ **Co-listing** ☐

Course Information (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. School/College: College of Arts & Sciences **Department:** English

2. Discipline and Course Number: **Present :** **Proposed:** TCom 403

3. Course Title: **Present:**

Proposed: Theoretical Approcaches to Technical Communication

Abbreviated Course Title: Theoretical Approaches
(24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. Catalog Description *(40 Words or Less)*

Present:

Proposed: Examines representaqtive theories and research in written, oral, and visual modes of technical communication. Includes such issues as ethics, document design, rhetorical methods, and people-machine communication.

5. Credit Hours: **Present:** **Lecture:** **Lab:** **Total:**
Proposed: **Lecture: 3.0** **Lab:** **Total:**

6. Prerequisites:
Present:

Proposed:

7. Required for Majors: ☒ **Elective for Majors:** ☐

8. Justification: Course for new Technical Communication MS Degree

9. Semesters previously offered as an experimental course (101, 201, 301, 401):

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3) **6)**

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05/12/03 (Revised 2/14/02)

Effective Term: FS2003 **CC File #**

Course Change Form (CC)

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Course Changes (Check all changes.)

New Course ☒ **Course Deletion** ☐ **Credit Hours** ☐ **Prerequisites** ☐
Course Title ☐ **Catalog Description** ☐ **Course Number** ☐ **Co-listing** ☐

Course Information (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. School/College: College of Arts & Sciences **Department:** English

2. Discipline and Course Number: **Present :** **Proposed:** TCom 404

3. Course Title: **Present:**

Proposed: Teaching of Technical Communication

Abbreviated Course Title: Teaching Tech Com
(24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. Catalog Description *(40 Words or Less)*

Present:

Proposed: Provides a theoretical and pedagogical foundation for teaching workshops and undergraduate courses in technical communication. Includes both traditional and electronic settings.

5. Credit Hours: **Present:** **Lecture:** **Lab:** **Total:**
Proposed: **Lecture: 3.0** **Lab:** **Total:**

6. Prerequisites:
Present:

Proposed:

7. Required for Majors: ☐ **Elective for Majors:** ☒

8. Justification: Course for new Technical Communication MS Degree

9. Semesters previously offered as an experimental course (101, 201, 301, 401):

10. List all co-listed courses, initialed by Dept. Chair(s) and Dean(s) if signatures do not appear below.

1) **4)**

2) **5)**

3) **6)**

Recommended by Department _____ Date: _____
(Chair signature)

Recommended by School/College: _____ Date: _____
(Dean signature)

Recommended by UMR Curricula Committee: _____ Date: _____
(Chair signature) (Action)

Recommended by Academic Council: _____ Date: _____
(Chair signature) (Action)

05/12/03 (Revised 2/14/02)

Effective Term: FS2003 **CC File #**

Course Change Form (CC)

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Course Changes (Check all changes.)

New Course ☒ **Course Deletion** ☐ **Credit Hours** ☐ **Prerequisites** ☐
Course Title ☐ **Catalog Description** ☐ **Course Number** ☐ **Co-listing** ☐

Course Information (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. School/College: College of Arts & Sciences **Department:** English

2. Discipline and Course Number: **Present:** **Proposed:** TCom 410

3. Course Title: **Present:**

Proposed: Seminar

Abbreviated Course Title: Seminar
(24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. Catalog Description *(40 Words or Less)*
Present:

Proposed: Discussion of current topics.

5. Credit Hours: **Present:** **Lecture:** **Lab:** **Total:**
Proposed: **Lecture:** **Lab:** **Total: Vari**

6. Prerequisites:
Present:

Proposed:

7. Required for Majors: ☐ **Elective for Majors:** ☒

8. Justification: Course for new Technical Communication MS Degree

9. Semesters previously offered as an experimental course (101, 201, 301, 401):

10. List all co-listed courses, initialed by Dept. Chair(s) and Dean(s) if signatures do not appear below.

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2) **5)**

3) **6)**

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Recommended by School/College: _____ (Dean signature) Date: _____

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Effective Term: FS2003 **CC File #**

Course Change Form (CC)

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Course Changes (Check all changes.)

New Course ☒ **Course Deletion** ☐ **Credit Hours** ☐ **Prerequisites** ☐
Course Title ☐ **Catalog Description** ☐ **Course Number** ☐ **Co-listing** ☐

Course Information (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. **School/College:** College of Arts & Sciences **Department:** English
2. **Discipline and Course Number:** **Present :** **Proposed:** TCom 411
3. **Course Title:** **Present:**
   Proposed: International Technical Communication
   Abbreviated Course Title: International Tech Com
   (24 Spaces or Less. Only needed for New Courses or Title Changes.)
4. **Catalog Description** *(40 Words or Less)*
   Present:

   Proposed: Examines complexity of communication of technical information worldwide. Includes topics such as graphics, icons, symbols; user interface design; cross-cultural communication.

5. **Credit Hours:** **Present:** **Lecture:** **Lab:** **Total:**
   Proposed: **Lecture: 3.0** **Lab:** **Total:**
6. **Prerequisites:**
   Present:

   Proposed:

7. **Required for Majors:** ☐ **Elective for Majors:** ☒
8. **Justification:** Course for new Technical Communication MS Degree

9. **Semesters previously offered as an experimental course (101, 201, 301, 401):**
10. **List all co-listed courses, initialed by Dept. Chair(s) and Dean(s) if signatures do not appear below.**

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2) 5)
3) 6)

Recommended by Department _____ Date: _____
(Chair signature)

Recommended by School/College: _____ Date: _____
(Dean signature)

Recommended by UMR Curricula Committee: _____ Date: _____
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05/12/03 (Revised 2/14/02)

Effective Term: FS2003 **CC File #**

Course Change Form (CC)

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Course Changes (Check all changes.)

New Course ☒ **Course Deletion** ☐ **Credit Hours** ☐ **Prerequisites** ☐
Course Title ☐ **Catalog Description** ☐ **Course Number** ☐ **Co-listing** ☐

Course Information (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. **School/College:** College of Arts & Sciences **Department:** English
2. **Discipline and Course Number:** **Present :** **Proposed:** TCom 430
3. **Course Title:** **Present:**
   Proposed: Multimedia Authoring
   Abbreviated Course Title: Multimedia Authoring
   (24 Spaces or Less. Only needed for New Courses or Title Changes.)
4. **Catalog Description** *(40 Words or Less)*
   Present:

   Proposed: Theory and practice of using multimedia resources (graphics, text, animation, video, sound) combined into a digital resource (cds, websites, dvds, discs). Includes study of guidelines for effective designs, developing inhouse products, evaluating existing products, and e-training.

5. **Credit Hours:** **Present:** **Lecture:** **Lab:** **Total:**
   Proposed: **Lecture: 3.0** **Lab:** **Total:**
6. **Prerequisites:**
   Present:

   Proposed:

7. **Required for Majors:** ☐ **Elective for Majors:** ☒
8. **Justification:** Course for new Technical Communication MS Degree

9. **Semesters previously offered as an experimental course (101, 201, 301, 401):**
10. **List all co-listed courses, initialed by Dept. Chair(s) and Dean(s) if signatures do not appear below.**

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2) 5)
3) 6)

Recommended by Department _____ (Chair signature) Date: _____

Recommended by School/College: _____ (Dean signature) Date: _____

Recommended by UMR Curricula Committee: _____ (Chair signature) Date: _____ (Action)

Recommended by Academic Council: _____ (Chair signature) Date: _____ (Action)

05/12/03 (Revised 2/14/02)

Effective Term: FS2003 **CC File #**

Course Change Form (CC)

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Course Changes (Check all changes.)

New Course ☒ **Course Deletion** ☐ **Credit Hours** ☐ **Prerequisites** ☐
Course Title ☐ **Catalog Description** ☐ **Course Number** ☐ **Co-listing** ☐

Course Information (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. School/College: College of Arts & Sciences **Department:** English

2. Discipline and Course Number: **Present :** **Proposed:** TCom 441

3. Course Title: **Present:**

Proposed: Reporting Technical Information

Abbreviated Course Title: Reporting Tech Info
(24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. Catalog Description *(40 Words or Less)*

Present:

Proposed: Study of theory and practice for particular document forms, such as environmental impact statements, press releases, strategic plans, mission statements.

5. Credit Hours: **Present:** **Lecture:** **Lab:** **Total:**
Proposed: **Lecture: 3.0** **Lab:** **Total:**

6. Prerequisites:
Present:

Proposed:

7. Required for Majors: ☐ **Elective for Majors:** ☒

8. Justification: Course for new Technical Communication MS Degree

9. Semesters previously offered as an experimental course (101, 201, 301, 401):

10. List all co-listed courses, initialed by Dept. Chair(s) and Dean(s) if signatures do not appear below.

1) **4)**

2) **5)**

3) **6)**

Recommended by Department _____ Date: _____
(Chair signature)

Recommended by School/College: _____ Date: _____
(Dean signature)

Recommended by UMR Curricula Committee: _____ Date: _____
(Chair signature) (Action)

Recommended by Academic Council: _____ Date: _____
(Chair signature) (Action)

05/12/03 (Revised 2/14/02)

Effective Term: FS2003 **CC File #**

Course Change Form (CC)

This form is for creating or modifying permanent courses.

Course Changes (Check all changes.)

New Course ☒ **Course Deletion** ☐ **Credit Hours** ☐ **Prerequisites** ☐
Course Title ☐ **Catalog Description** ☐ **Course Number** ☐ **Co-listing** ☐

Course Information (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. School/College: College of Arts & Sciences **Department:** English

2. Discipline and Course Number: **Present :** **Proposed:** TCom 450

3. Course Title: **Present:**

Proposed: Information Management

Abbreviated Course Title: Information Management
(24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. Catalog Description *(40 Words or Less)*

Present:

Proposed: Study of and practice in directing projects related to such areas as multimedia, web sites, strategic planning, newsletters. Includes writing planning documents, selecting team members, synchronizing assignments, testing prototypes, and issuing a final report.

5. Credit Hours: **Present:** **Lecture:** **Lab:** **Total:**
Proposed: **Lecture: 3.0** **Lab:** **Total:**

6. Prerequisites:
Present:

Proposed:

7. Required for Majors: ☐ **Elective for Majors:** ☒

8. Justification: Course for new Technical Communication MS Degree

9. Semesters previously offered as an experimental course (101, 201, 301, 401):

10. List all co-listed courses, initialed by Dept. Chair(s) and Dean(s) if signatures do not appear below.

1) **4)**

2) **5)**

3) **6)**

Recommended by Department _____ Date: _____
(Chair signature)

Recommended by School/College: _____ Date: _____
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Recommended by UMR Curricula Committee: _____ Date: _____
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05/12/03 (Revised 2/14/02)

Effective Term: FS2003 **CC File #**

Course Change Form (CC)

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Course Changes (Check all changes.)

New Course ☒ **Course Deletion** ☐ **Credit Hours** ☐ **Prerequisites** ☐
Course Title ☐ **Catalog Description** ☐ **Course Number** ☐ **Co-listing** ☐

Course Information (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. School/College: College of Arts & Sciences **Department:** English

2. Discipline and Course Number: **Present :** **Proposed:** TCom 490

3. Course Title: **Present:**

Proposed: Research

Abbreviated Course Title: Research
(24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. Catalog Description *(40 Words or Less)*

Present:

Proposed: Investigations of an advanced nature leading to the preparation of a thesis or dissertation. Consent of instructor required.

5. Credit Hours: **Present:** **Lecture:** **Lab:** **Total:**
Proposed: **Lecture:** **Lab:** **Total: Vari**

6. Prerequisites:
Present:

Proposed:

7. Required for Majors: ☐ **Elective for Majors:** ☒

8. Justification: Course for new Technical Communication MS Degree

9. Semesters previously offered as an experimental course (101, 201, 301, 401):

10. List all co-listed courses, initialed by Dept. Chair(s) and Dean(s) if signatures do not appear below.

1) **4)**

2) **5)**

3) **6)**

Recommended by Department _____ (Chair signature) Date: _____

Recommended by School/College: _____ (Dean signature) Date: _____

Recommended by UMR Curricula Committee: _____ (Chair signature) Date: _____ (Action)

Recommended by Academic Council: _____ (Chair signature) Date: _____ (Action)

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