



CATALOG YEAR 2006-2008
(Please use separate form for each add/change)

COLLEGE: Arts and Sciences

Current Catalog Page(s) Affected p. 70 and p. 436

Course: Add: _____ Delete: _____ Change: Number _____ Title _____
(check all that apply) SCH _____ Description _____ Prerequisite _____

If new, provide Course Prefix, Number, Title, SCH Value, Description, prerequisite, and lecture/lab hours if applicable. If in current catalog, provide change and attach page with changes in red and provide a brief justification.

Program: Add: _____ Change: X Attach new/changed Program of Study description and 4-year plan. If in current catalog, provide change and attach page with changes in red.

The purpose of this proposal is to add MATH 2371 to the Core Curriculum in the area of Communication. Full justification for these changes is provided below. Every program change is sent in a separate proposal.

We would like to comment that we consulted with the Department of Language and Literature before submitting this proposal and received their support.

Minor: Add: _____ Delete: _____ Change: _____ Attach new/changed minor. If in current catalog, provide change and attach page with changes in red.

Faculty: Add: _____ Delete: _____ Change: _____ Attach new/changed faculty entry. If in current catalog, provide change and attach page with changes in red.

College Introductory Pages: Add information: _____ Change information: _____ .Attach new/changed information. If in current catalog, provide change and attach page with changes in red.

Approvals:	Signature	Date
Chair Department Curriculum Committee	_____	_____
Chair Department	_____	_____
Chair College Curriculum Committee	_____	_____
Dean	_____	_____

Change in Page 70

Component Area	Course Options	SCH
Communication	ENGL 1301 and 1302 and one of the following: ENGL 2311/HUM 2301/SPCH 1311/ MATH 2371*	9

Change in Page 436 (Appendix A):

COMPONENT AREA	COURSE OPTIONS	SCH
Communication	ENGL 1301 and 1302 and one of the following: ENGL 2311, HUM 2301, SPCH 1311, or MATH 2371*	6 3

N.B.: The star “*” next to MATH 2371 maintains the meaning of the current star “*” next to SPCH 1311 in the current version of the catalog, and therefore is not part of this proposal.

Justification for Inclusion of MATH 2371 in the Core Curriculum

Communication, be it oral or written, is recognized as an important component of society. It is the way in which knowledge has been transmitted through generations. The members of the Department of Mathematical and Physical Science recognize communication as an essential component of our program, and would like to present a proposal for a new course in the core curriculum designed specially to help students communicate in the field of Mathematics.

In recent years, communication in mathematics has become an increasingly important issue. This can be seen by the addition of many required writing and communication courses in mathematics degrees across the country [LSU], [MIT], [MO], [RI], [TAMU], [UW].

It has been widely recognized by faculty in our department that students lack the ability to communicate effectively when they write mathematics. For example, consider the sentence “ $\triangle ABC$ implies $\overline{AB} \cup \overline{BC} \cup \overline{AC}$ ”. This sentence was written by a student in a Geometry course. The sentence is improper since the word *implies* can only be used to join propositions, not sets.

Across the state of Texas, public institutions offer courses in their core curriculum in the area of communication. The purpose of the communication area as defined by Senate Bill 148 is *to enable the student to communicate effectively in clear and correct prose in a style appropriate to the subject, occasion and audience*. [ACGM].

While most public institutions in the state offer ENGL 1301 and ENGL 1302 as required courses in their communication area, they also offer other courses in this area. For example, in many universities a course in elementary Spanish, French or German is considered part of this area. However, the way in which the goal of communication is reached across the state is not limited to *language specific* courses. For example, Texas Tech University recognizes that the courses Chemical Engineering 2306 – *Exposition of Technical Information*, and Petroleum Engineering 3308 – *Engineering Communications* can be used to satisfy part of the communication requirement in the core curriculum. The gamut of courses across the state includes News Photography, Sign Language, TV & Film Genre, Debate, Forensic Activities and many more [CORE].

The communication area at Texas A&M International (TAMIU) includes three courses: ENGL 1301, ENGL 1302 and an elective course which could be chosen from ENGL 2311, HUM 2301 and SPCH 1311. Our intention is to designate a new course, namely MATH 2371 in the communication area, which will help our students improve their communication skills at a technical level. They need this course to improve their abilities to communicate with peers and faculty, write presentation papers and at a more basic level to communicate their knowledge in proper sentences to others that have not achieved a good level of understanding in mathematics. Additionally, a course like MATH 2371 will introduce students to the language of higher mathematics. Mathematics is a science where language is used to represent concepts or ideas, and the sentences that are constructed using that language have very precise meanings. Students must learn that language before they can understand a more advanced level of mathematics which they will study in their 3000 and 4000 level courses.

Besides the benefits mentioned above, it has been shown through research that writing improves the level of understanding of students in Mathematics. See [LOUI] and the references therein.

Students will also have the opportunity to familiarize themselves with mathematical writing software. We intend to teach LaTeX. This is the software used today by mathematicians around the world to write professional papers.

We believe that MATH 2371 also complements the Quality Enhancement Plan (QEP) (see [QEP]) adopted by TAMIU. For example, the QEP states on page 29 that

- Upon completion of their academic major, students will be able to produce short writing samples that:
 - 5) demonstrate the ability to employ external sources to support and develop their writing in ways that are appropriate to their academic major (**research**).
 - 6) demonstrate an awareness of strategies and requirements appropriate to their academic major, and reflect their ability to approach complex writing tasks that demand creativity and/or higher-order critical thinking skills (**discipline-specific writing**).

In addition, the section entitled “Writing Inventory of Undergraduate Academic Programs by Department” of the QEP states (page 33) the following:

- Mathematical and Physical Sciences: Designate a writing intensive course for its programs and develop an electronic thread on projects or assignments with writing components.

We believe that adding this course for Mathematics students will help TAMIU reach the QEP goal number 3:

QEP Goal 3: To ensure that TAMIU graduates have mastered those writing skills necessary for professional success in their chosen careers.

Because of the above stated reasons we believe that this course satisfies all requisites to be part of the communication area of the core curriculum at TAMIU.

References

- [ACGM] *Lower Division Academic Courses Guide Manual*. See <http://www.thecb.state.tx.us/AAR/UndergraduateED/WorkforceED/acgm.htm>
- [CORE] *The Texas General Education Core Web Center*. Find their web site at <http://statecore.its.txstate.edu/>
- [LOUI] *Using Writing to Learn Mathematics*. Find the full article at <http://www.louisville.edu/provost/wroffice/math72.html>
- [LSU] *MATH 1201, MATH 1202, MATH 2203, MATH 4020, MATH 7001, MATH 7002*. Several courses at Louisiana State University that emphasize communication and writing.
- [MIT] *18.096 Principles of Mathematics Presentation*. Course in the Mathematics CI-M course at Massachusetts Institute of Technology.

- [MO] *MATH 256* Foundations of Higher Mathematics. Course for mathematics students at the University of Montana.
- [QEP] *Quality Enhancement Plan*. See <http://www.tamtu.edu/sacs/pd/QEP-Final.pdf>
- [RI] *MATH 130 Mathematical Thinking and Writing*. Course for mathematics students at Ripon College.
- [TAMU] *MATH 696 Mathematical Communication and Technology*. Course for graduate students at Texas A&M, College Station.
- [UW] *MATH 310 Introduction to Mathematical Reasoning*. Course in the Bachelor Program at the University of Washington.