

This is a proposal to add a new prefix, MTHT, which would be used by the Math and Computer Science Department to identify courses specifically designed for future teachers.

The Math and Computer Science Department from the School of Business and Technology is requesting the addition of the prefix MTHT to represent **Mathematics Teaching**. This prefix would be used for courses specifically used to prepare teachers to teach mathematics.

The courses affected would be:

- MATH 1300 Mathematics for Teachers I
- MATH 1350 Mathematics for Teachers II
- MATH 4310 Methods and Materials for Teaching Mathematics
- MATH 4320 Mathematics Methods for Disabled Learners
- MATH 4450 Middle-School Mathematics Methods
- MATH 4460 Secondary Mathematics Methods

The request is to change them to:


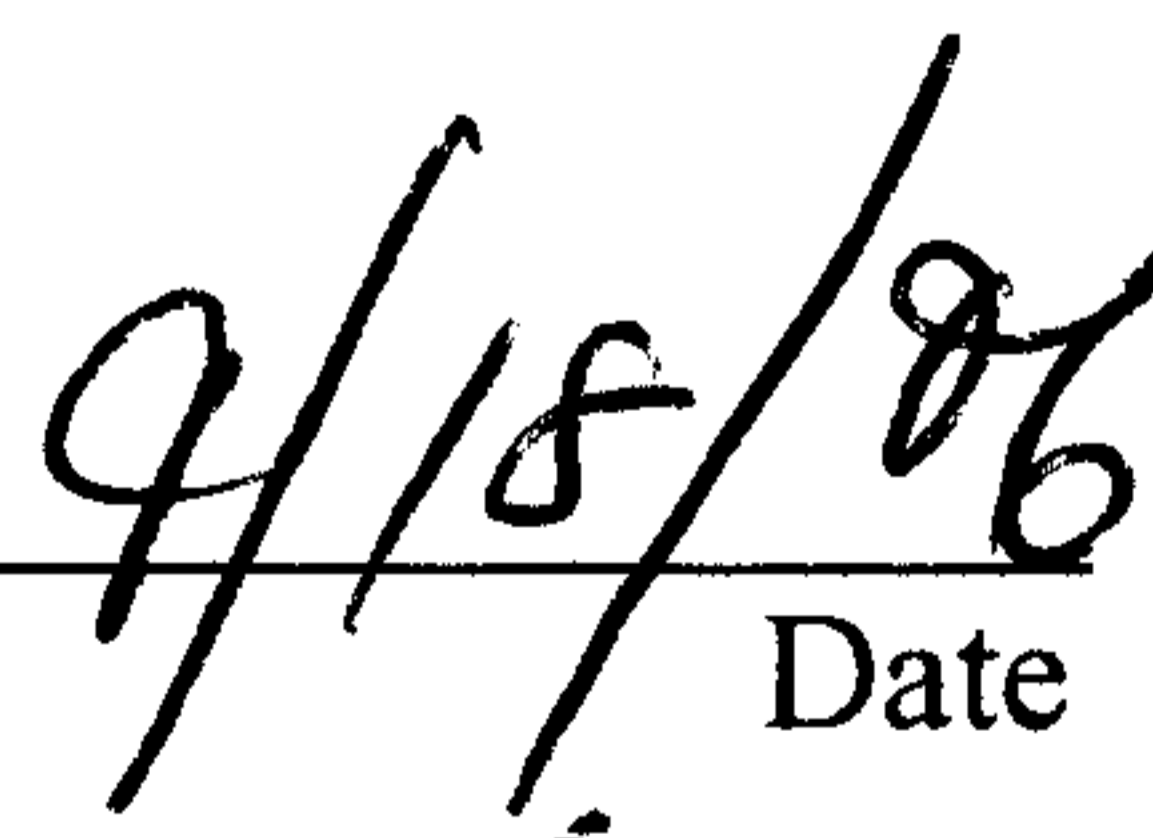
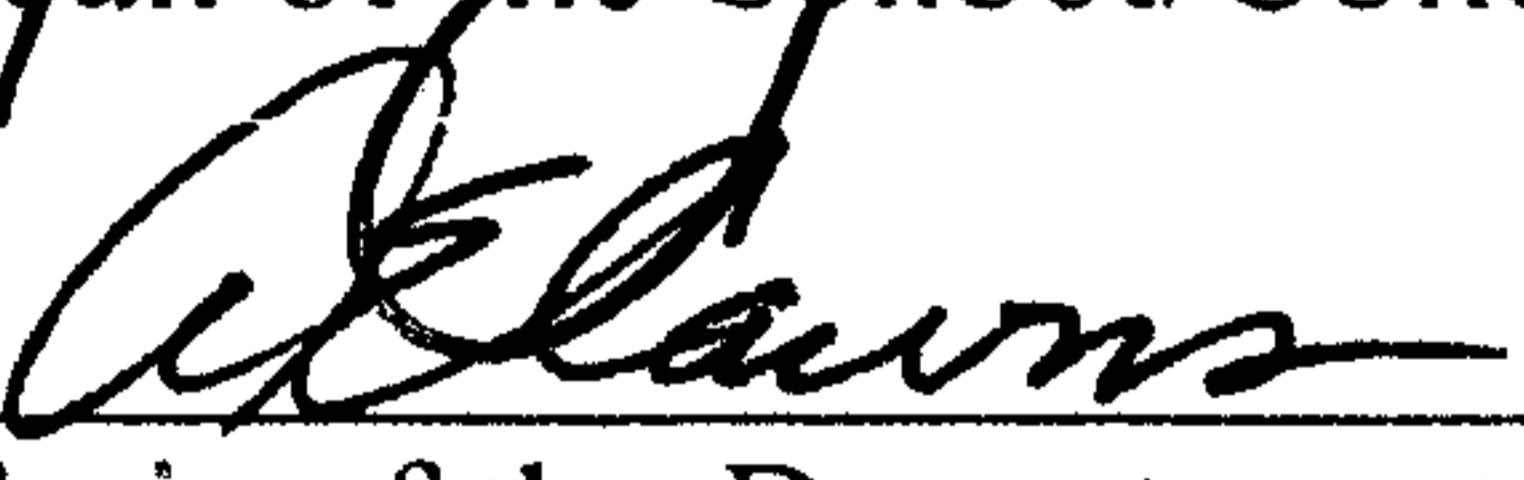

- MTHT 1300 Mathematics for Teachers I
- MTHT 1350 Mathematics for Teachers II
- MTHT 4310 Methods and Materials for Teaching Mathematics
- MTHT 4320 Mathematics Methods for Disabled Learners
- MTHT 4450 Middle-School Mathematics Methods
- MTHT 4460 Secondary Mathematics Methods

SA 2007
J. Staley

The current practice of using the MATH prefix for both general purpose and teacher preparation courses causes confusion. The use of the prefix MTHT would distinguish the above courses from the other mathematics courses offered by the department. There is no question as to which courses should use the new prefix as they are already segregated in the undergraduate catalog under the heading Mathematics Education. The new prefix would clarify the purpose of the courses and group them together in course schedule listings and other publications.

The B.A. and B.S. in mathematics require upper level mathematics courses. Currently any text describing the requirements must point out that MATH 4310, 4320, 4450 and 4460 do not qualify. If this proposal is approved those courses would be MTHT courses and there would be no need to mention them as exceptions. This would make it easier to clearly communicate the requirements for these programs. The use of the MTHT prefix is for clarity. It does not involve any changes to the curriculum.

Referenced parts of the catalog are attached.

 _____ Dean of the School/College	 _____ Date
 _____ Chair of the Department	 _____ Date

Chair, Curriculum Committee
REV. 2006

Date

Mathematics and Computer Science

Majors and Degrees Offered

Computer Science (B.S.)* (offered in Orlando and St. Louis)

Computer Science (B.S.) with an emphasis in:

Information Management*

Information Technology

Mathematics (B.A.)

Mathematics (B.S.)

**Also offered at the international campuses.*

Minors Offered

Computer Applications* (offered in Orlando, San Diego, and St. Louis)

Computer Science* (offered in Orlando and St. Louis)

Mathematics* (offered in St. Louis)

Web Site Design (offered in Orlando, San Diego, and St. Louis)

Web Site Development (offered in Orlando, San Diego, and St. Louis)

**Also offered at the international campuses.*

Certificates Offered

Web Site Design (offered in Geneva, Kansas City, Orlando, San Diego, St. Louis, and Vienna)

Web Site Development (offered in Geneva, Kansas City, Orlando, San Diego, St. Louis, and Vienna)

Special Study Opportunities

Mathematics is a powerful tool used in the natural and social sciences for understanding and predicting the world around us. It also has a beauty of logic and structure within itself, as well as being useful for a wide variety of applications. Students interested in the natural and social sciences are encouraged to have a second major or a minor in mathematics. Students with a major in mathematics would be employed anywhere there is a need to solve numerical and logical problems.

The computer field is growing rapidly and has had a profound impact on almost every facet of our lives. Students in this field prepare for the world of the future. The computer science program at Webster offers a unique blend of theory and practice, with many classes taught by professionals in the field. Small classes provide personalized attention for each student. The computer labs allow students to gain hands-on experience, usually providing a computer for each student.

The information management emphasis is business-oriented. Information is viewed as a valuable resource that should be managed for its greatest potential to the organization. Students learn both the technical aspects of the computer as well as the business needs of the organization. Students with this emphasis would be employed in data processing or MIS departments as programmers, systems analysts, and managers. They are able to function as intermediaries between technical experts and business managers. For this reason, many students also complete a major or a minor in business or management.

The information technology emphasis is technology-oriented. Students concentrate on the inner workings of the computer and learn both hardware and software. Students with this emphasis would be employed to write new software programs, usually as part of a team. Graduates might write efficient interfaces between different software programs or between a software program and a hardware device.

The computer applications minor provides students with an opportunity to enhance their major with technical knowledge and skills in modern technology. Students with a major in media communications often take computer graphics courses as electives.

Internships and Co-Op Education

An internship is a thoughtfully planned and monitored work or service experience in which a student has intentional learning goals and reflects actively on what he/she is learning through the experience. This credit-bearing experience should be completed in one semester. The student may be paid or unpaid.

Cooperative education is a structured educational strategy integrating classroom studies with learning through productive work experiences in a field related to a student's academic or career goals. It provides progressive experiences in integrating theory and practice. This credit-bearing experience must span two or more semesters. The student must be paid. Interested students should contact the department co-op coordinator.

Dual Degree Opportunity

Students who fulfill the requirements for the B.A. degree in any major that leads to that degree, and also fulfill the requirements for a major that leads to a B.S. degree, will receive both a B.A. degree and a B.S. degree.

Teacher Certification Opportunity

Students interested in middle school or secondary mathematics education generally earn majors in mathematics and education while completing the requirements for state certification. The coordinator of Mathematics Pre-Service Education works closely with these students to assure they are prepared and qualified for their practice teaching experience.

Special Requirements

Mathematics, computer science, and computer applications courses completed with a grade of D or D+ may not be applied to the specific course requirements in the major or minor.

B.A. in Mathematics

Degree Requirements

40 required credit hours

27 general education credit hours

61 elective credit hours

Required Courses

MATH 1610, 1620, 2510 Calculus I-III 15 hours

MATH 2600 Differential Equations 3 hours

MATH 2980 Introduction to Algebraic Structures 3 hours

Four mathematics courses numbered 3000 and above,
excluding 4310, 4320, 4450, and 4460 12 hours

COSC 1550 Computer Programming I* 3 hours

PHYS 1030 General Physics I** 3 hours

PHYS 1031 General Physics I: Lab** 1 hour

* COSC 1550 is not required of students with a major or minor in computer science.

Mathematics and Computer Science

** PHYS 1030 and PHYS 1031 are not required of students with a major or minor in biological sciences or those getting a middle school or secondary teaching certificate.

All other students are required to take COSC 1550, PHYS 1030, and PHYS 1031.

At least 18 of the required 33 mathematics credit hours must be taken at Webster University.

B.S. in Mathematics

Degree Requirements

- 55 required credit hours
- 12 general education credit hours
- 61 elective credit hours

Required Courses

MATH 1610, 1620, 2510 Calculus I-III	15 hours
MATH 2600 Differential Equations	3 hours
MATH 2980 Introduction to Algebraic Structures	3 hours
Six mathematics courses numbered 3000 and above, excluding 4310, 4320, 4450, and 4460	18 hours
COSC 1550, 1560 Computer Programming I and II*	6 hours
Two additional COSC courses*	6 hours
PHYS 1030 General Physics I**	3 hours
PHYS 1031 General Physics I: Lab**	1 hour

* COSC 1550 is not required of students with a major or minor in computer science.

** PHYS 1030 and PHYS 1031 are not required of students with a major or minor in biological sciences or those getting a middle school or secondary teaching certificate.

All other students are required to take COSC 1550, PHYS 1030, and PHYS 1031.

At least 18 of the required 33 mathematics credit hours must be taken at Webster University.

Minor in Mathematics

A minor in mathematics is defined as 18 credit hours of MATH courses numbered 1500 and above (except MATH 4310 and 4320) taken at Webster University.

Computer Science (without an Emphasis)

Degree Requirements

- 36 required credit hours
- 27 general education credit hours
- 65 elective credit hours

At least 18 of the required 36 computer science credit hours must be taken at Webster University. Computer applications courses are not applicable toward the major.

Required Courses

COSC 1540 Introduction to Information Processing	3 hours
COSC 1550 Computer Programming I	3 hours
COSC 1560 Computer Programming II	3 hours
COSC 1570 Mathematics for Computer Science	3 hours
COSC 2250 Data Structures I	3 hours

COSC 2610 Operating Systems	3 hours
COSC 2810 Systems Analysis and Design	3 hours
COSC 3100 Data Structures II	3 hours
Computer science courses numbered 3000 or above, excluding COSC 3900 Practicum and COSC 3910 Project	12 hours

Computer Science with an Emphasis in Information Management

Degree Requirements

- 51 required credit hours
- 12 general education credit hours
- 65 elective credit hours

At least 18 of the required 36 computer science credit hours must be taken at Webster University.

Required Courses

COSC 1540 Introduction to Information Processing	3 hours
COSC 1550, 1560 Computer Programming I, II	6 hours
COSC 1570 Mathematics for Computer Science	3 hours
COSC 2250 Data Structures I	3 hours
COSC 2610 Operating Systems	3 hours
COSC 2810 Systems Analysis and Design	3 hours
COSC 3100 Data Structures II	3 hours
COSC 4110 Database Concepts	3 hours
COSC 4120 Database Applications	3 hours
COSC 4810, 4820 Information Systems I, II	6 hours

Students who do not have a second major or a minor in business or management are required to take the following courses:

ACCT 2010 Financial Accounting	3 hours
ACCT 2025 Managerial Accounting	3 hours
MNGT 2100 Management Theory and Practices	3 hours
Any two of the following courses:	
BUSN 2750 Introduction to Statistics	3 hours
ECON 2010 Principles of Macroeconomics	3 hours
ECON 2020 Principles of Microeconomics	3 hours
FINC 3210 Principles of Finance	3 hours

Computer Science with an Emphasis in Information Technology

Degree Requirements

- 74 required credit hours
- 12 general education credit hours
- 42 elective credit hours

At least 18 of the required 42 computer science credit hours must be taken at Webster University.

Required Courses

COSC 1540 Introduction to Information Processing	3 hours
COSC 1550, 1560 Computer Programming I, II	6 hours
COSC 1570 Mathematics for Computer Science	3 hours

Mathematics and Computer Science

Mathematics Education Course Listings

MATH 1300 Mathematics for Teachers I (3)

Provides students with a deeper understanding of the real number system and its subsystems, along with topics in logic and measurement. Appropriate for prospective elementary school teachers.

MATH 1350 Mathematics for Teachers II (3)

Covers topics in mathematics relevant to elementary teachers. Includes elementary concepts in number theory, algebra, geometry, probability, and statistics.

MATH 4310 Methods and Materials for Teaching Mathematics (2)

Presents methods, curricula, and materials for elementary school mathematics, including Dienes blocks, Cuisenaire rods, chip trading activities, games, and examination of basic texts. Analyzes algorithms of addition, subtraction, multiplication, and division. Prerequisites: MATH 1300 and acceptance to the Teacher Certification Program or permission of the director of teacher certification and field experiences.

MATH 4320 Mathematics Methods for Disabled Learners (3)

Focuses on the development of mathematics instruction for students with special needs. Gives an overview of the cognitive and behavioral disabilities most frequently associated with learning disabled, behavior disordered, and mentally retarded students, and the effect each disability has on the development of mathematical concepts. Instructional alternatives address specific math disabilities. Prerequisites: MATH 4310 and acceptance to the Teacher Certification Program or permission of the director of teacher certification and field experiences.

MATH 4450 Middle-School Mathematics Methods (3)

This course analyzes the curriculum and methods of middle-school mathematics, as well as the principal materials available for teaching. Prerequisites: 3 credit hours of mathematics at the 3000 level and acceptance to the Teacher Certification Program or permission of the director of teacher certification and field experiences.

MATH 4460 Secondary Mathematics Methods (3)

Analyzes the curriculum and methods of secondary school mathematics, as well as the principal materials available for teaching. Prerequisites: 6 credit hours of mathematics at the 3000 level and acceptance to the Teacher Certification Program or permission of the director of teacher certification and field experiences.

Mathematics Course Listings

MATH 1010 Fundamentals of Mathematics (3)

Develops and strengthens the concepts and skills of elementary mathematics, particularly skills related to various disciplines of the college curriculum. For credit only. May be repeated once for credit.

MATH 1050 Basic Algebra (3)

Introduces the basic topics of algebra, including linear and quadratic equations. For credit only.

MATH 1200 Topics in Mathematics (3)

For students interested in applications of elementary mathematics to everyday life. May be repeated for credit if content differs.

MATH 1360 Business Mathematics (3)

This course provides the student with a variety of opportunities to

strengthen math skills necessary for analyzing numerical information and solving practical business problems. Students will learn to translate business-related problems into simple equations. Topics include applications of ratio and proportion, computing taxes, commercial discounts, simple and compound interest, basic statistics, and graphs.

MATH 1370 Business Applications of Algebra (3)

This course will emphasize the use of basic algebra concepts in solving numerical problems common in business and management. Students will apply skills of writing, solving, and graphing elementary equations. Students will apply basic linear programming methods to management science problems.

MATH 1410 Introductory College Mathematics (3)

Covers various topics of mathematics that are both conceptual and practical. Course is designed to enable a student to appreciate mathematics and its application to numerous disciplines and professions. Prerequisite: MATH 1050 or equivalent competence.

MATH 1420 Modular Algebra (3)

This course is an introduction to number theory and to algebraic structures. It focuses on the arithmetic and algebra of the modular systems and includes a variety of empirical applications. The course is appropriate for students who wish to develop a deeper insight and broader perspective of ordinary arithmetic and algebra. Prerequisite: MATH 1050 or equivalent competence.

MATH 1430 College Algebra (3)

Covers sets, the real number system, functions, equations, inequalities, and logarithms. Prerequisite: two years high school algebra or MATH 1050.

MATH 1440 Trigonometry (3)

Presents trigonometric functions using the unit circle. Prerequisite: MATH 1430 or equivalent competence.

MATH 1470 Survey of Calculus (3)

Introduces the ideas of calculus without the rigor associated with the course in the standard calculus sequence. It can be used by students who are not mathematics or science majors to understand the concepts of calculus well enough to apply them to their own discipline. It might also be used as a stepping stone to get a head start before taking the standard calculus course. The emphasis is on computational ability, problem solving, and applications. Prerequisite: proficiency in algebra.

MATH 1490 Finite Mathematics (3)

Studies set terminology and operations, subsets, the power set, Cartesian products, and finite cardinality, relations as sets of ordered pairs, characteristic functions, digraphs, functions as relations, types of functions and relations. Prerequisite: MATH 1430.

MATH 1580 Formal Logic (3)

Covers all the fundamental topics in deductive logic. A thorough introduction to propositional and predicate logic. Cross-listed with PHIL 1600 and COSC 1580.

MATH 1600 Calculus I Lab (1)

Supplementary experiences with applications and technology designed to augment the understanding of Calculus I. May be repeated once for credit. Prerequisite: taken concurrently with MATH 1610.

MATH 1610 Calculus I (5)

Introduces differential and integral calculus of one variable, culminating in the fundamental theorem of calculus. Introduces calculus of