

	lec.	lab.	sem.hrs
Senior Year - Spring			
CSCI400 - Princ. Of Programming Lang.	3.0		3.0
CSCI - Computer Science Elective	3.0		3.0
LAIS/EBGN - H&SS Cluster Elective III	3.0		3.0
FREE - Free Elective	3.0		3.0
FREE - Free Elective	3.0		3.0
Total			15.0

Degree Total: 129.5

* Students may choose from the remainder of the Distributed Science (SYGN101 (4 Cr. Hr.), BELS101 (4 Cr. Hr.), CHGN122 (4 Cr. Hr.)) course list for this course.

** Students should take EBG201 with one of these courses and SYGN200 with the other.

Minor/ASI Mathematical and Computer Sciences Computational and Applied Math (CAM)

For an Area of Special Interest (ASI) in Computational and Applied Mathematics (CAM), the student should take the following:

MATH225 or MATH235 – Differential Equations
MATH332 or MATH342 – Linear Algebra
MATH/CSCI407 – Intro. to Scientific Computing

3 credit hours of CAM courses (1 course) from the CAM Courses List below.

For a Minor in Mathematical Sciences, the student should take the following:

MATH225 or MATH235 – Differential Equations
MATH332 or MATH342 – Linear Algebra
MATH/CSCI407 – Intro. to Scientific Computing

9 credit hours of CAM courses (3 courses) from the CAM Courses List below.

CAM Courses:

MATH348 – Advanced Engineering Mathematics
MATH401 – Intro. to Analysis
MATH/CSCI406 - Algorithms
MATH433 – Mathematical Biology
MATH440 – Parallel Scientific Computing
MATH/CSCI441 – Computer Graphics
MATH454 – Complex Analysis
MATH455 – Partial Differential Equations
MATH484 – Mathematical & Computational Modeling
MATH498 – Special Topics in CAM
MATH5xx – Graduate CAM Electives

Statistics:

For an Area of Special Interest (ASI) in Statistics, the student should take the following:

MATH323– Probability & Statistics for Engineers
MATH334 – Intro. to Probability
MATH335 – Intro. to Mathematical Statistics
MATH424 – Intro. to Applied Statistics

For a Minor in Statistics, the student should take the following:

MATH323– Probability & Statistics for Engineers
MATH334 – Intro. to Probability
MATH335 – Intro. to Mathematical Statistics
MATH424 – Intro. to Applied Statistics

6 credit hours of Statistics courses (2 courses) from the Statistics Courses list below.

Statistics Courses:

MATH332 or MATH342 – Linear Algebra
MATH436 – Advanced Statistical Modeling
MATH437 – Multivariate Analysis
MATH438 – Stochastic Models
MATH482 – Statistics Practicum
MATH498 – Special Topics in Statistics
MATH5xx – Graduate Statistics Elective

Mathematical Sciences (could include a mixture of CAM and Statistics courses)

For an Area of Special Interest (ASI) in Mathematical Sciences, the student should take the following:

MATH225 or MATH235 – Differential Equations

9 credit hours of Mathematics courses (3 courses) from the Mathematical Sciences Courses List below, including one course at the 400-level.

For a Minor in Mathematical Sciences, the student should take the following:

MATH225 or MATH235 – Differential Equations

15 credit hours of Mathematics courses (5 courses) from the Mathematical Sciences

Courses List below, including one course at the 400-level.

Mathematical Sciences Courses:

MATH323– Probability & Statistics for Engineers
MATH332 or MATH342 – Linear Algebra
MATH334 – Intro. to Probability
MATH335 – Intro. to Mathematical Statistics
MATH348 – Advanced Engineering Mathematics
MATH358 – Discrete Mathematics
MATH401 – Intro. to Analysis
MATH/CSCI406 - Algorithms
MATH/CSCI407 – Intro. to Scientific Computing
MATH424 – Intro. to Applied Statistics
MATH433 – Mathematical Biology
MATH436 – Advanced Statistical Modeling
MATH437 – Multivariate Analysis
MATH438 – Stochastic Models
MATH440 – Parallel Scientific Computing
MATH/CSCI441 – Computer Graphics
MATH/CSCI444 – Advanced Computer Graphics
MATH/CSCI447 – Scientific Visualization
MATH454 – Complex Analysis
MATH455 – Partial Differential Equations

MATH482 – Statistics Practicum
MATH484 – Mathematical & Computational Modeling
MATH498 – Special Topics
MATH5xx – Graduate Electives

Computer Science

For an **Area of Special Interest in Computer Sciences**, the student should take:

CSCI262 Data Structures
CSCI306 Software Engineering
and either:
CSCI358 Discrete Mathematics & Algebraic Structures and
CSCI406 Algorithms
-or-
CSCI341 Computer Organization and
CSCI442 Operating Systems

For the **Minor in Computer Sciences**, the student should take:

CSCI262 Data Structures
CSCI306 Software Engineering
and either:
CSCI358 Discrete Math & Algebraic Structures and
CSCI406 Algorithms
-or-
CSCI341 Computer Organization
CSCI442 Operating Systems
and:
CSCI4XX – 2 400-level Computer Science courses, which may not be languages transferred from another university

Combined BS/MS in Mathematical and Computer Sciences

The Department of Mathematical and Computer Sciences offers a combined Bachelor of Science/Master of Science program in both Computer Science and Applied Mathematics that enables students to complete a Bachelor of Science and a Master of Science simultaneously. The student takes an additional 30 credit hours of coursework at the graduate level, in addition to the undergraduate requirements, and completes both degrees at the same time. Interested students should contact the department for further information.

Description of Courses

MATH100. INTRODUCTORY TOPICS FOR CALCULUS (S) An introduction and/or review of topics which are essential to the background of an undergraduate student at CSM. This course serves as a preparatory course for the Calculus curriculum and includes material from Algebra, Trigonometry, Mathematical Analysis, and Calculus. Topics include basic algebra and equation solving, solutions of inequalities, trigonometric functions and identities, functions of a single variable, continuity, and limits of functions. Does not apply toward undergraduate degree or g.p.a. Prerequisite: Consent of Instructor. 2 hours lecture, 2 semester hours.

CSCI101. INTRODUCTION TO COMPUTER SCIENCE (I, II, S) An introductory course to the building blocks of Com-

puter Science. Topics include conventional computer hardware, data representation, the role of operating systems and networks in modern computing, algorithm design, large databases, SQL, and security. A popular procedural programming language will be learned by students and programming assignments will explore ideas in algorithm runtimes, computer simulation, computational techniques in optimization problems, client-server communications, encryption, and database queries. Prerequisite: none. 3 hours lecture; 3 semester hours.

MATH111. CALCULUS FOR SCIENTISTS AND ENGINEERS I (I, II, S) First course in the calculus sequence, including elements of plane geometry. Functions, limits, continuity, derivatives and their application. Definite and indefinite integrals; Prerequisite: precalculus. 4 hours lecture; 4 semester hours. Approved for Colorado Guaranteed General Education transfer. Equivalency for GT-MA1.

MATH112. CALCULUS FOR SCIENTISTS AND ENGINEERS II (I, II, S) Vectors, applications and techniques of integration, infinite series, and an introduction to multivariate functions and surfaces. Prerequisite: Grade of C or better in MATH111. 4 hours lecture; 4 semester hours. Approved for Colorado Guaranteed General Education transfer. Equivalency for GT-MA1.

MATH113. CALCULUS FOR SCIENTISTS AND ENGINEERS II - SHORT FORM (I, II) This is a bridge course for entering freshmen and new transfer students to CSM who have either a score of 5 on the BC AP Calculus exam or who have taken an appropriate Calculus II course at another institution (determined by a departmental review of course materials). Two, three and n-dimensional space, vectors, curves and surfaces in 3-dimensional space, cylindrical and spherical coordinates, and applications of these topics. Prerequisites: Consent of Department. 1 hour lecture; 1 semester hour.

MATH122. CALCULUS FOR SCIENTISTS AND ENGINEERS II HONORS (I) Same topics as those covered in MATH112 but with additional material and problems. Prerequisite: Consent of Department. 4 hours lecture; 4 semester hours.

MATH/CSCI198. SPECIAL TOPICS (I, II, S) Pilot course or special topics course. Topics chosen from special interests of instructor(s) and student(s). Usually the course is offered only once. Prerequisite: Consent of Instructor. Variable credit: 1 to 6 semester hours. Repeatable for credit under different titles.

MATH/CSCI199. INDEPENDENT STUDY (I, II, S) Individual research or special problem projects supervised by a faculty member; also, when a student and instructor agree on a subject matter, content, and credit hours. Prerequisite: Independent Study form must be completed and submitted to the Registrar. Variable Credit: 1 to 6 credit hours. Repeatable for credit.