



Ucsd math minor

Last Updated: July 18, 2024 3:59:36 PM PDT If you're an undergraduate and you want to declare a minor, follow the steps below. Find your Undergraduate Minor Code. Facts about minors A minor is a set of courses within a well-defined subject. Examples: African Studies, Philosophy, etc. Academic departments and programs may offer minors. The requirements must include at least 28 units, including at least 20 upper-division units. Declare a minor 1. Make sure you understand the general university requirements for minors. Lower-division courses (a maximum of eight units) to fulfill the requirements for a minor that have also been used to satisfy the requirements of a major. You cannot use an upper-division course to satisfy the requirements of more than one minor. Review Upper Division Course to satisfy the requirements of more than one minor. Read your minor's entry in the General Catalog's courses and curricula section. If you want to declare a minor that is not in the catalog, check with your college requires a program of concentration and how that would affect your eligibility for declaring a minor. 3. Be aware of department and college approval is required for all requests to declare a minor. You are not in Good Standing. You are required to submit a quarter by quarter plan for any request that requires college approval. A quarter by quarter plan should begin with the current quarter and list all current and future courses in which you plan to enroll between now and graduation, ensuring that all needed major, minor, GE, and university requirements are included. 4. Complete an Undergraduate Declaration of Minor using the Major/Minor tool. If you need to change a course in your approved minor, contact the department directly. Allow 3 to 5 business days if your request only requires both department and college approval. The rules for earning a Minor in Mathematics are stated in the UC San Diego General Catalog under the heading "Minor in Mathematics". The general campus procedure for choosing a minor is stated here. It is possible to earn the Minor in Mathematics with as few as 4 upper-division mathematics with as few as 4 upper-division mathematics with a few as 4 upper-division mathematics. Mathematics. If your major is closely related to mathematics, then mathematics as a minor may be a good supplement. If you choose to minor in mathematics to give you a greater foundation in the subject, then taking an entire sequence or two is recommended. You may take minor courses P/NP. Lower-division coursework can overlap with your major to any extent, but no more than 2 upper-division courses can overlap with your major. With instructor approval through an Undergraduate Student Petition (obtainable here), you can also take mathematics graduate courses and have them applied toward the requirements of a mathematics minor. To submit a Minor Add request for Mathematics, please use the Major/Minor Tool on TritonLink. Instructions for adding a Math Minor online: You may submit your request before or after you take the minimum number of courses. Include all 7 planned courses for the Minor in your request. Upper-division electives must be specified (Subject and Course Number) in the request. If your request is approved, you may change your planned courses are MATH 18 (or 31AH), MATH 20D, and MATH 20D, and MATH 20D, and MATH 100-194 and must be at least 4 units each. A minimum of 4 upper-division Math courses must be taken, but students may take more if they do not plan to complete all three eligible lower-division courses. The mathematics education minor is intended for students who want to understand how people learn mathematics and for those interested in teaching at the K-12 levels or in a college setting. This minor is also useful for university students who simply want to become better learners. The minor requires 34 units of courses, a course is cross-listed. For example, MATH 95 and EDS 30 are the same course; if one of the two is filled, you may register for the other one. All campus majors are welcome to earn this minor, but be aware that the MATH 10 or MATH 20 calculus sequences is a prerequisite for some of the minor's required upper-division courses. The UC San Diego Department of Education Studies has information about becoming a teacher, including requirements for the credential. The Division of Physical Sciences has answers to common questions about this minor and the California Teach program. Pathways into teaching at different levels: Sample Mathematics Education Minor Course Schedule (The year/quarter you take these courses could be different) (total 34 quarter units) Year/Quarter Fall Winter Spring Freshman MATH 87: Teaching Mathematics - The Challenge (Freshman Seminar; 1 unit). This course is optional for the minor. Sophomore MATH 95 / EDS 30: Introduction to Teaching Mathematics (2) EDS 39: Practicum in Teaching and Learning (2) Junior EDS 117: Language, Culture & Education (4) MATH 121A / EDS 121A Foundations of Teaching and Learning Mathematics I (4) MATH 121B / EDS 121B Foundations of Teaching and Learning (4) EDS 129A: Introduction to Teaching and Learning (2) EDS 129B: Introduction to Teaching and Learning (4) EDS 129B: Introduction to Teaching and Learning (4) EDS 129B: Introduction to Teaching and Learning (2) EDS 129B: Introduction to Teaching and Learning (2) EDS 129B: Introduction to Teaching and Learning (2) EDS 129B: Introduction to Teaching and Learning (4) EDS 129B: Introduction to Teaching and Learning (2) EDS 129B: Introduction to Teaching and Learning (2) EDS 129B: Introduction to Teaching and Learning (2) EDS 129B: Introduction to Teaching and Learning (4) EDS 129B: Introduction to Teaching and Learning (2) EDS 129B: Introducti 129C: Introduction to Teaching and Learning (4) EDS 139: Practicum in Teaching and Learning (2) All courses, faculty listings, and curricular and degree requirements described herein are subject to change or deletion without notice. The mathematics department offers a wide range of courses in pure and applied mathematics for its majors and for students in other disciplines. The department offers six majors leading to the BS: mathematics, applied mathematics, and economics, mathematics, applied science and probability and statistics, and one leading to the BA: mathematics, math in mathematics or mathematics education. The department also has an Honors Program for exceptional students in any of the eight majors. See the sections on major programs and the courses offered by the department. You may visit our website, , for more information, including course web pages, career advising, and research interests of our faculty. Entering students must take the Mathematics Placement Exam (MPE) prior to orientation unless they have an appropriate score on an AP calculus exam, an appropriate score on the International Baccalaureate Higher Level Mathematics Exam, credit by means of a foreign exam (e.g., GCE), or transferable college credit in calculus. The purpose of the MPE is to recommend placement for entering students in MATH 2, 3B, 3C, 4C, 10A, or 20A. Students can also receive placement into MATH 18 (Linear Algebra). For more information about the MPE (test dates, test description, sample exams, online practice tests), see the Mathematics Testing and Placement website, . Prerequisites for MATH 2, 3B, 3C, 4C, 10A-B-C, 18, 20A-B-C-D-E, and 31AH-BH-CH are enforced through TritonLink. Students need to ensure that test scores and transferable college credit are submitted to the Registrar prior to enrollment through TritonLink. MATH 3C is the department's preparatory course for the MATH 10 sequence, providing a review of algebraic skills, facility in graphing, and working with exponential and logarithmic functions. MATH 4C is the department's preparatory course for the MATH 20 sequence, providing a brief review of college algebra followed by an introduction to trigonometry and a more advanced treatment of graphing and functions. MATH 10A-B-C is one of three calculus sequences. The students in this sequence have completed a minimum of two years of high school mathematics. and life sciences. It fulfills the mathematics requirements of Revelle College and the option of the general-education requirements of Muir College. MATH 18 (formerly numbered MATH 20F) is our lower-division course in linear algebra. This course sits outside the traditional calculus sequence, MATH 20A-B-C, is taken mainly by students who have completed four years of high school mathematics or have taken a college level precalculus course such as MATH 4C. This sequence fulfills all college level requirements met by MATH 10A-B-C and is required of many majors, including chemistry and biochemistry, bioengineering, cognitive science, economics, mathematics are strongly encouraged to take MATH 20 since it provides the foundation for MATH 20D and 20E, which are required for some science and engineering majors. Certain transfers between the MATH 10 and MATH 20 sequences are possible, but such transfers should be carefully discussed with a departmental adviser. Able students who begin the MATH 10 sequence and who wish to transfer to the MATH 20A, with MATH 20A, with MATH 10B or MATH 10B, receiving two units of credit for MATH 20B, receiving two units of credit for MATH 20B. Follow MATH 10C with MATH 20B, receiving two units of credit for MATH 20B and two units of credit for MATH 20B and two units of credit for MATH 20 sequence. The department also offers a three-quarter Honors Calculus sequence in Multivariable and Vector Calculus and Linear Algebra. This sequence, MATH 31AH-BH-CH, is designed for well-prepared students who have both a strong aptitude and a deep interest in mathematics and who wish to undertake a challenging series of courses. The sequence has a prerequisite of a score of 5 on the AP Calculus BC exam. These demanding, proof-based courses cover the material in MATH 18, 20C, and 20E respectively—and entering students with a 5 on the Calculus BC exam should consider starting in the Honors sequence if their major (or minor) program requires them to take, at least, MATH 18 and 20A-B-C. Math majors who complete the entire three-quarter honors sequence will have also satisfied the requirement of MATH 109 for their major program. They would be able to replace MATH 109 with any four-unit upper-division mathematics, (2) applied mathematics, (2) applied mathematics, (3) mathematics, (3) mathematics, (3) mathematics and economics, (5) mathematics. applied science, (6) probability and statistics, and (7) mathematical biology, and one leading to the BA: (1) mathematics—secondary education. The specific emphases and course requirements for these majors are described in the following sections. All majors must obtain a minimum 2.0 grade point average in the upper-division courses used to satisfy the major requirements. Further, the student must receive a grade of C- or better in any course to be counted toward fulfillment of the major requirements. Unless otherwise stated, any mathematics course numbered 100-194 may be used as an upper-division elective. (Note: MATH 195, 196, 197, 198, 199, and 199H cannot be used toward any mathematics major.) All courses used to fulfill the major must be taken for a letter grade. No more than three upper-division courses taken externally from UC San Diego can be counted toward any major. Special exceptions may be considered via petition. It is strongly recommended that all mathematics majors review their programs at least annually with a departmental adviser, and that they consult with the Advising Office in AP&M before making any changes to their programs. Current course offering information for the entire academic year is maintained on the department's web page at . Special announcements are also emailed to all majors. Students who plan to go on to complete a PhD in mathematics should be advised that only the best and most motivated students are admitted. Many graduate schools expect that students will have completed a full sequence of analysis (MATH 140A-B-C) as well as a full sequence of analysis (MATH 100A-B-C) as well as a full sequence of analysis (MATH 140A-B-C). material covered in the last quarter of analysis or algebra. In addition, it is advisable that students consider Summer Research Experiences for Undergraduates. This is a program funded by the National Science Foundation to introduce students to math research while they are still undergraduates. In their senior year or earlier, students should consider taking some graduate courses so that they are exposed to material taught at a higher level. In their junior year, students should begin to think of obtaining letters of recommendation from professors who are familiar with their abilities. Note: MATH 20D and 20E do not need to be taken in order. Math majors are strongly advised to take 18 as early as possible (i.e., it can be taken concurrent with 20A, 20B, or 20C). Students may be able to participate in the UC Education Abroad Program (OAP) while still making progress toward the major. Students interested in this option should contact the Study Abroad UC San Diego office in the Matthews Quad Building and discuss their plans with the mathematics advising officer before going abroad. The department must approve courses taken abroad Program" section of the UC San Diego General Catalog and the website . The upper-division curriculum provides programs for mathematics majors as well as courses for students who will use mathematics as a tool in the biological, physical and behavioral sciences, and the humanities. One of the following sequences: Linear Algebra and Calculus: MATH 18 and 20A-B-C-D-E Honors Calculus: MATH 31AH-BH-CH, MATH 20D A total of thirteen upper-division courses (totaling fifty-two units) are required: MATH 109.) One of the following sequences: Foundations of Real Analysis: MATH 140A-B Introduction to Analysis: MATH 142A-B and MATH 120A (MATH 120A (MATH 120A)) One of the following sequences: Foundations of Real Analysis: MATH 140A-B Introduction to Analysis: MATH 142A-B and MATH 120A (MATH 120A) One of the following sequences: Foundations of Real Analysis: MATH 140A-B Introduction to Analysis: MATH 142A-B and MATH 120A (MATH 120A) One of the following sequences: Foundations of Real Analysis: MATH 140A-B Introduction to Analysis: MATH 142A-B and MATH 120A (MATH 120A) One of the following sequences: Foundations of Real Analysis: MATH 140A-B Introduction to Analysis: MATH 142A-B and MATH 120A (MATH 120A) One of the following sequences: Foundations of Real Analysis: MATH 140A-B Introduction to Analysis: MATH 142A-B and MATH 120A (MATH 120A) One of the following sequences: Foundations of Real Analysis: MATH 140A-B Introduction to Analysis: MATH 142A-B and MATH 120A (MATH 120A) One of the following sequences: Foundations of Real Analysis: MATH 140A-B Introduction to Analysis: MATH 142A-B and MATH 120A (MATH 120A) One of the following sequences: Foundations of Real Analysis: MATH 140A-B Introduction to Analysis: MATH 140A-B Introd 140A-B-C recommended for graduate school) One of the following sequences: Abstract Algebra: MATH 100A-B Modern Applied Algebra: MATH 103A-B and MATH 102 (MATH 100A-B-C recommended for graduate school) Upper-division electives to complete thirteen four-unit courses (totaling fifty-two units), chosen from any mathematics course numbered between 100 and 194 (including those taken from the requirements listed above) As with all departmental requirements, more advanced courses on the same material may be substituted with an approved petition from mathematics faculty. To be prepared for a strong major curriculum, students should complete through at least MATH 20D and MATH 109 before the end of their sophomore year. Either MATH 140A-B or 100A-B should be taken during the junior year. A major in applied mathematics is also offered. The program is intended for students planning to work on the interface between mathematics and other fields. One of the following sequences: Linear Algebra and Calculuss MATH 18 and 20A-B-C-D-E Honors Calculus: MATH 31AH-BH-CH, MATH 20D Programming (one of the following): CSE 8A-B (Intro to Computer Sci: Java, Accelerated Pace) ECE 15 (Engineering Computation) A total of thirteen upper-division courses (totaling fifty-two units) are required: Mathematical Reasoning: MATH 109 (Note: Students completing MATH 31AH-BH-CH may substitute a four-unit upper-division mathematics elective for MATH 140A-B or MATH 181A; further, note that duplication of credit exists between MATH 180A/183 and ECON 120A) Two of the following sequences: Combinatorics: MATH 110 and MATH 130 Numerical Methods: Any three from MATH 170A-B-C, 175, 179 Optimization: MATH 171A-B Probability: MATH 180A-B-C Statistics: MATH 181A-B, or any two from MATH 181D, 181F, 185, or 189 Upper-division electives to complete at least thirteen four-unit courses (totaling fifty-two units), chosen from any mathematics course numbered between 100 and 194 (including those taken from the requirements listed above) except Up to three upper-division courses (twelve units) may be taken from outside the department in an approved applied mathematical area. A petition specifying the courses to be used must be approved by applied mathematical area. A petition specifying the courses to be used must be approved by applied mathematical area. curriculum, students should complete through at least MATH 20D and MATH 109 before the end of their sophomore year. This major is designed for students with a substantial interest in probability theory and statistics. It is useful preparation for many fields of employment as well as graduate school. One of the following sequences: Linear Algebra and Calculus: MATH 18 and 20A-B-C-D-E Honors Calculus: MATH 31AH-BH-CH, MATH 20D Programming (one of the following): CSE 8A-B (Java) CSE 11 (Java: Accelerated Pace) ECE 15 (Engineering Computation) A total of fourteen upper-division courses (totaling fifty-six units) are required: MATH 31AH-BH-CH, MATH 109 (Note: Students completing MATH 31AH-BH-CH may substitute a four-unit upper-division mathematics elective for MATH 140A-B-C recommended for graduate school) Probability: MATH 180A-B-C (Note that duplication of credit exists between MATH 180A and ECON 120A.) Mathematical Statistics: MATH 181A-B Applied/Computational Statistics: MATH 185 or MATH 185 or MATH 185 or MATH 185, 189, 194 Upper-division electives to complete fourteen upper-division courses (totaling fifty-six units) including those from the requirements listed above, from the following list: MATH 100A-B-C, 103A-B, 110, 111A-B, 112A-B, 114, 120A-B, 130, 140C, 144, 146, 148, 152, 154, 155A, 158, 170A-B-C, 171A-B, 173A-B, 194 At least fourteen four-unit upper-division mathematics courses (totaling fifty-six units) are required, except Up to two upper-division electives (totaling eight units) may be outside the department in an approved applied mathematical area. A petition approved by a probability and statistics faculty is required. MAE 107, ECON 120A-B-C, MATH 195-199 cannot be counted toward the upper-division requirements. To be prepared for a strong major curriculum, students should complete through at least MATH 20D and MATH 109 before the end of their sophomore year. This major is designed for students with a substantial interest in mathematics and its applications to a particular field such as physics, biology, chemistry, biochemistry, cognitive science, computer science, economics, management science, or engineering. One of the following sequences: Linear Algebra and Calculus: MATH 18 and 20A-B-C-D-E Honors Calculus: MATH 31AH-BH-CH. MATH 20D Programming (one of the following is required): CSE 8A-B (Intro to Computer Sci: Java) CSE 11 (Intro to Computer Sci: Java) CSE 11 (Intro to Computer Sci: Java) CSE 15 (Engineering Computation) A total of fourteen upper-division courses (totaling fifty-six units) are required (seven courses from the Departments): Mathematical Reasoning: MATH 109 (Note: Students completing MATH 31AH-BH-CH may substitute a four-unit upper-division mathematics elective for MATH 109.) Linear Algebra: MATH 102 or MATH 170A Analysis: MATH 140A-B, 171A-B, 174-175, 174-175, 174-175, 174-175, 174-175, 174-175, 174-175, 174-179, 180A-B, 103A-B, 104A-B, 110-130, 110-148, 155A-B, 155A-B, 155A-B, 158-188, 160A-B, 171A-B, 171A-B, 173A-B, 174-175, 174-179, 180A-B, 120-146, 146-148, 150A-B, 154-184, 155A-B, 158-188, 160A-B, 170A-B, 170A-B, 174-175, 174-179, 180A-B, 120-146, 146-148, 150A-B, 154-184, 155A-B, 158-188, 160A-B, 170A-B, 171A-B, 174-175, 174-179, 180A-B, 120-146, 146-148, 150A-B, 150-146, 146-148, 150A-B, 154-184, 155A-B, 158-188, 160A-B, 170A-B, 170A-B, 174-175, 174-175, 174-179, 180A-B, 170-146, 146-148, 150A-B, 150-146, 146-148, 150-146, 146-148, 150-146, 146-148, 150-146, 146-148, 150-146, 146-148, 150-146, 146-148, 150-146, 146-148, 150-146, 146-148, 150-146, 146-148, 150-146, 146-148, 150-146, 146-148, 150-146, 146-148, 150-146, 146-148, 150-146, 146-148, 150-148, 150-146, 146-148, 150-180A-194, 181A-B, 187A-B, 190A-B, 193A-B Upper-division electives to complete at least seven four-unit courses, chosen from any mathematics courses (totaling twenty-eight units) selected from one or two other departments (these cannot be from mathematics). At least three of these seven upper-division courses must require calculus (MATH 20B or a subsequent course in the MATH 20 series) as a prerequisite. Students must submit an individual plan for approval by a mathematics department adviser before taking their applied science course work, and all subsequent courses must require calculus (MATH 20B or a subsequent course in the changes to the plan must be approved by a mathematical aspects and foundations of computer science or in the computer science applications of mathematical aspects and foundations of computer science major is not allowed to also minor in computer science in the Department of Computer Science and Engineering. The detailed curriculum is given in the list below: One of the following sequences: Linear Algebra and Calculus: MATH 18 and 20A-B-C-D-E Honors Calculus: MATH 31AH-BH-CH, MATH 20D CSE 8A-B Introduction to Computer Science: Java, or CSE 11 Introduction to Computer Science: Java (Accelerated) Software Tools and Techniques Laboratory: CSE 15L or CSE 29 Basic Data Structures and Object-Oriented Design: CSE 12 Students interested in taking course work on computer architecture and design techniques (CSE 140-140L, CSE 141-141L, CSE 142-142L, CSE 148) should take CSE 30 as preparation. A total of fourteen upper-division courses (totaling fifty-six units) are required: MATH 109 (Note: Students completing MATH 109.) Modern Applied Algebra: MATH 103A-B or Modern Algebra: MATH 100A-B Theory of Computability: CSE 105 (Note: CSE 21 or MATH 100A or MATH 184A must be taken prior to CSE 105.) Computer Implementations of Data Structures: CSE 100 (Note: CSE 21 or MATH 184A must be taken prior to CSE 105.) Computer Implementations of Data Structures: CSE 105.) Comput a prerequisite for MATH 181A; further, note that duplication of credit exists between MATH 180A/183 and ECON 120A.) Discrete Math or Combinatorics: MATH 184 or 188 Design and Analysis of Algorithms: CSE 101 Applied Mathematics Electives: Eight units from MATH 170A-B-C, 171A-B, 173A-B, 174, 175, 179, 180B-C, 181A-B-C-E Computational Electives: Eight units from MATH 152, 154, 155A-B, 157, 158, 160A-B, 168A, 182, 184, 185, 187A-B, 134B, 140-140L, 141-141L, 142, 150A-B, 151A, 152A-B, 158, 160, 165, 167, 168, 169, 176A, COGS 108, 118A-B, 120, 185, 188 General Math-CS Electives: Eight additional units from any course in list #8 or #9 above or MATH 100C, 102, 104A-B, 144, 150A-B, 144, 150A for the major. Students wishing to add CSE courses are subject to enrollment restrictions. Refer to the CSE department website for further information. Majors in mathematics and the natural sciences often feel the need for a more formal introduction to issues involving business applications. economics provides this application and can provide a bridge to successful careers or advanced study. Majors in economics generally recognize the importance of mathematics training prescribed in this major This major is considered to be excellent preparation for PhD study in economics and business administration, as well as for graduate studies for provides a formal framework making it easier to combine study in the two fields. Course requirements of the Joint Major in Mathematics and Economics consist principally of the required courses of the pure mathematics major and the economics: ECON 1 and 3 A total of fifteen upper-division courses (totaling sixty units) are required (with a minimum of seven courses from each department—mathematics and economics) Mathematical Reasoning: MATH 109 (Note: Students completing MATH 31AH-BH-CH may substitute a four-unit upper-division mathematics) are required (with a minimum of seven courses from each department—mathematics) and economics) Mathematical Reasoning: MATH 109 (Note: Students completing MATH 31AH-BH-CH may substitute a four-unit upper-division mathematics) are required (with a minimum of seven courses from each department). Algebra: MATH 102, Numerical Linear Algebra: MATH 140A, Introduction to Analysis: MATH 140A, Introduction to Analysis Microeconomics: ECON 100A-B-C Econometrics/Statistics: One of the following sequences: ECON 120A-B-C MATH 180A, 181A-B and ECON 120B-C MATH 180A, 181A-B and 180A-A Decisions Under Uncertainty: ECON 171 Introduction to Operations Research: ECON 172A-B, (Note: 172A-B, (Note: 172A-B, and 194 and ECON 109, 113, 175, and 178. Students in the joint major in mathematics and economics (MA33 in the mathematics department and EN28 in the economics department) cannot double major in the mathematics department or with any other major in the mathematics or minor in mathematics or minor in economics. This major is designed to provide a sound grounding in a core set of mathematical, statistical, and computational subjects relevant in solving bioscience and bioengineering problems. One of the following sequences: Linear Algebra and Calculus: MATH 18 and 20A-B-C-D-E Honors Calculus: MATH 31AH-BH, MATH 20D Calculus-Based Introductory Probability and Statistics: MATH 11 Programming (one of the following): CSE 5A (Introduction to Computer Science: Java I) CSE 11 (Int (General Chemistry I) CHEM 6B (General Chemistry I) CHEM 12 (Molecules and Reactions) CHEM 13 (Chemistry of Life) PHYS 2A (Physics-Fluids, Waves, Thermodynamics, and Optics) Biological foundations: BILD 1 (The Cell), BILD 2 (Multicellular Life), and BILD 4 (Introductory Biology Lab) Upper Division A total of thirteen upper-division courses (totaling fifty-two units) are required: MATH 109 (Note: Students completing MATH 110 Ordinary Differential Equations: MATH 110 Ordinary Differential Equations: MATH 110 Ordinary Differential Equations: MATH 109.) Equations: MATH 130 Numerical Methods for Physical Modeling: MATH 174 Introduction to Probability: MATH 180A Exploratory Data Analysis and Inference: MATH 112A-B (or 212A-B) Introduction to Computational Stochastics : MATH 114 (or 214) Upper-division electives to complete thirteen fourunit courses, chosen from the following courses in biology, physics, and mathematics (at least two electives must be biology focused, non-mathematics (at least two electives must be biology focused, non-mathematics courses): BICD 100, BICB 126, BIEB 126, B PHYS 178, MATH 100A-B, MATH 102, MATH 103A-B, MATH 120A, MATH 120A, MATH 140A-B-C, MATH 140A-B, MATH 154, MATH 154, MATH 158, MATH 158, MATH 158, MATH 170A-B, MATH 175, MATH 17 mathematics in secondary schools. Students interested in earning a California teaching prerequisites and requirements. It is recommended you contact EDS as early as possible. One of the following sequences: Linear Algebra and Calculus: MATH 18 and 20A-B-C-D-E. Honors Calculus: MATH 31AH-BH-CH, MATH 20D Recommended: One of the following programming courses/sequences: Introduction to Computer Science: Java: CSE 8A-B or CSE 11 Engineering Computation: ECE 15 A total of thirteen upper-division courses (totaling fifty-two units) are required: Mathematical Reasoning: MATH 109 (Note: Students completing 31AH-BH-CH may substitute a four-unit upper-division mathematics: MATH 103.) Number Theory: MATH 104A or 105 History of Mathematics teaching or EDS 136-140-141 for K-12 mathematics research One of the following: Computer Graphics: MATH 155A, Numerical Linear Algebra: MATH 180A, Statistical Methods: MATH 180A, Statistical Methods: MATH 180A, Intro. to Probability: MATH 180A, Geometry: MATH 180A, Geometry for Secondary Teachers: MATH 153, Foundations of Topology I: MATH 190A One of the following: Abstract Algebra: MATH 100A, Applied Linear Algebra: MATH 100A, Applied Linear Algebra: MATH 102, Modern Applied Linear Algebra: MATH 103A One of the following: Foundations of Real Analysis: MATH 140A, Introduction to Analysis: MATH 140A, Introduction to Analysis: MATH 103A One of the following: Foundations of Real Analysis: MATH 100A, Applied Linear Algebra: MATH 100A, Applied Linear Algebra: MATH 100A, Applied Linear Algebra: MATH 103A One of the following: Foundations of Real Analysis: MATH 100A, Applied Linear Algebra: MATH 100A, Applied Linear Al four-unit courses (totaling fifty-two units). Upper-division courses must include at least one two-quarter sequence from the following list: 100A-B; 120A-B; 1 179; 171A-B; 173A-B; 180A-B; 180A-B; 180A-B; 180A-B; 180A-B; 180A-B; 180A-B; 180A-B; 180A-B; 193A-B The minor in mathematics consists of seven or more courses are MATH 18 (or 31AH), 20D, and 20E (or 31CH). MATH 195, 196, 197, 198, 199, and 199H are not acceptable courses for the mathematics minor. A grade of C- or better (or P if the Pass/Not Pass option is used) is required for all courses may overlap between major and minor programs. The mathematics education minor offered through the Education Studies program is intended for students interested in understanding how people learn mathematics, including: students interested in understanding how people learn mathematics education minor offered through the Education Studies program is intended for students interested in understanding how people learn mathematics. becoming better, more reflective learners. All majors are welcome, but the Calculus 10 or 20 sequence is a prerequisite for two of the upper-division courses required for the minor. For more information contact Education Studies: . The Department of Mathematics offers an honors program for those students who have demonstrated excellence in the major. Successful completion of the honors program entitles the student to graduate with departmental honors (see Department Honors in the Academic Regulations section). Junior standing An overall GPA of 3.0 or higher A GPA in the major of 3.5 or higher A GPA in the major of 3.5 or higher A GPA in the major of 3.5 or higher A GPA in the major of 3.0 or higher A GPA in the major of 3.5 or Calculus) and at least one of MATH 100A, 103A, 140A, or 142A. (Completion of additional major courses is strongly recommended.) Applications to the program should be made the spring quarter of the student colloquium, MATH 196 (Note: MATH 196 is only offered in the fall quarter.) The minimum 3.5 GPA in the major must be maintained An Honors Thesis. The research and writing of the thesis will be credited as eight to twelve units of MATH 199H. The completed thesis must be approved by the department's Honors Committee, and presented orally at the Undergraduate Research Conference or another appropriate occasion. The department's Honors Committee will determine the level of honors to be awarded, if any, based on the student's GPA in the major and the quality of the honors work. Applications for the mathematics department's Honors Program can be obtained at the mathematics department website: . Completed applications can be returned to the Mathematics department of the Student Colloquium, MATH 196 is only offered in the fall quarter.) At least one Economics honors course: ECON 100AH, 100BH, 110AH, 110BH, 120AH, 120BH, 120CH. Note: Enrollment in these honors classes is by special permission; check with the undergraduate advisers in the Economics Student Services Office (SH 245). An Honors Thesis. The research and writing of the thesis will be conducted over two quarters of the senior year under the supervision of a faculty adviser. The completed thesis must be approved by the Joint Mathematics and Economics Honors Committee, and presented orally at the Undergraduate Research Conference or another appropriate occasion. If the student is a declared major in the mathematics department (MA33), this thesis will be credited as eight units of MATH 199H. Enrollment in MATH 199H. Enrollment in MATH 199H. economics department (EN28), the student must enroll in ECON 191A-B. Enrollment in Econ 191 is by special permission; check with the undergraduate advisers in the Economics Student Services Office (SH 245). A minimum GPA of 3.0 overall, 3.5 in the upper-division courses required for the major and a 3.5 in the following four classes: MATH 196, Economics Honors class and either ECON 191A-B or two quarters of MATH 199H. The Joint Mathematics and Economics Honors to be awarded, if any, based on the student's GPA in the major and the quality of the honors work. Information on duplication of credit (both full and partial) can be found in the course descriptions. It is the student's responsibility to be aware of the credit restrictions listed. Advisers change yearly. Refer to the department website for current information