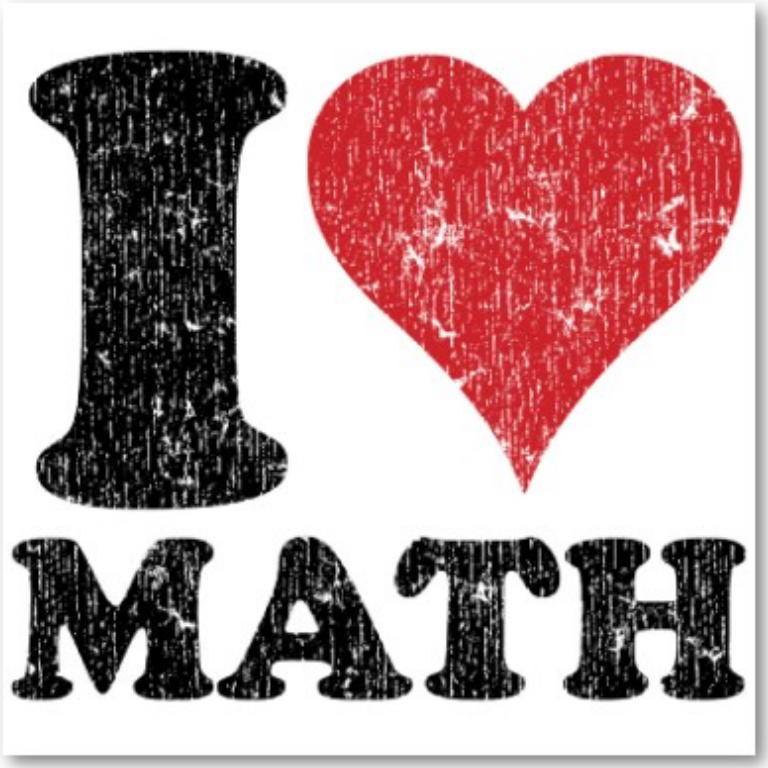
University of California Los Angeles

Department of Mathematics

2011-2012



Undergraduate Handbook

STUDENT SERVICES

Student Services Office
6356 Math Science Building
(310) 206-1826

Undergraduate Math Advisor:
Connie Jung

Hours of Operation:
Monday - Friday
8:00a.m.—12:00 p.m.
1:00p.m.—5:00 p.m.

Website:
http://www.math.ucla.edu/ugrad/index.shtml

Email:
ugrad@math.ucla.edu

Mailing Address:
UCLA Department of Mathematics
520 Portola Plaza
Box 951555
Los Angeles, CA 90095-1555

The Student Services Office is open to answer your questions regarding:

- Academic Difficulty
- Course Planning
- Career Planning
- Course Transfers
- Departmental Programs
- Enrollment Concerns
- Majors and Specializations
- Student Organizations

Academic Advising Schedule:

Week 0-2
Drop-in Advising*
M-F 9:00-11:30 a.m. &
1:00-4:00 p.m.
(priority given to enrollment issues)

Weeks 3-10
Drop-in Advising*
M-F 9:00-11:00 a.m. &
1:00-4:00 p.m.

Finals Week
Drop-in Advising*

*Drop-in times vary. Please contact the office at (310) 206-1286 or stop by MS 6356 for actual hours.

FREQUENTLY ASKED QUESTIONS

1. If I took an AP Calculus exam, what math course should I enroll in at UCLA?

Only students that receive a score of 3, 4 or 5 on the AP Calculus AB or BC Exams will receive college credit as indicated in the following chart:

UCLA Course Credit for AP Calculus Test:		
Score	**AB Exam**	**BC Exam**
5	Credit for Math 31A **(Enroll in Math 31B/3B)**	Credit for Math 31A, 31B **(Enroll in Math 32A/3C)**
4	Credit for 4 units of calculus	Credit for Math 31A and 4 units of calculus **(Enroll in Math 31B/3B)**
3	Credit for 4 units of calculus	Credit for 8 units of calculus
2	No college credit	No college credit
1	No college credit	No college credit

2. Do I need to take the Math Diagnostic Test?

All students wishing to enroll in Math 1, Math 3A or Math 31A are required to take the Math Diagnostic Test. Please contact the Student Services Office if you are not sure whether you need to take the exam.

3. Can I retake the Math Diagnostic Test? How often is the test offered?

Yes. Students can retake the exam as many times as they would like. The most recent score will be counted, even if it is higher or lower than the previous score. The test is offered at every Freshman Orientation Session during the summer and twice during the beginning of fall. Please refer to our website at http://www.math.ucla.edu/ugrad/diagnostic.shtml for specific exam times and locations.

4. What if a math course I planned to take is full during my enrollment appointment time?

If there are any open sections of that course offered at a different time, it is best to try to rearrange your schedule and enroll in the open section. Otherwise, you should add yourself to the waitlist. If both the course and waitlist are full, you can continue to check the enrollment numbers and try to add yourself to the waitlist if a space becomes available. If you are not enrolled in the class by the first day of instruction, you can stop by MS 6356 or email ugrad@math.ucla.edu for more information. It is always a good idea to have a back-up plan, as enrollment in any course is not guaranteed and you may have to take the course the next time it is offered.

5. Can I take a "Prep for the Major" or "Major" course pass/no pass?

No. All courses that are required for the Major, Minor, or Specialization in Computing must be taken for a letter grade.

6. Will I receive credit for both a math course and the honors version of that course (e.g., Math 115A and Math 115AH)?

No. Students will only receive credit for either the regular course or the honors version of that course. Taking both courses will result in a credit deduction.

FREQUENTLY ASKED QUESTIONS

7. How and when may I drop a course?

College of Letters and Science Drop Period	Type	Method	Fee	Transcript Notation
Weeks 1-2 (all courses)	Drop	URSA	No fee	No transcript notation
Weeks 3-4 (non-impacted courses)	Drop	URSA	$5	No transcript notation
Weeks 3-10 (impacted courses)	Late Drop	Petition*	$20	Transcript notation
Weeks 5-7 (non-impacted courses)	Late Drop	URSA	$20	Transcript notation
Weeks 8-10 (non-impacted courses)	Restricted Drop (maximum 3 drops)	Petition*	$35	Transcript notation
After week 10	Retroactive Drop	Petition*	$50	Transcript notation

* Petitions are available in Murphy Hall A-316.

Warning: If you are on financial aid and plan to drop a course, it is important that you first go to the Financial Aid Office to find out the consequences of your actions.

8. Can I take courses for my major at another school?

Yes. If you would like to complete some "Preparation for the Major" or "Major" courses during the summer at a community college, four-year university, or at another UC campus, you may do so. However, you must verify course equivalencies with a undergraduate math advisor prior to completing the course. Also, please check with a Letters and Science Counselor in Murphy Hall A-316 regarding residency requirements and other regulations/rules for taking courses at another school.

Upon completion of the course, have an official transcript sent to UCLA Undergraduate Admissions and Relations with Schools, 1147 Murphy Hall, Box 951436, Los Angeles, CA 90095-1436. You must also fill out a Transfer Credit Evaluation Request form in order to have the course evaluated and credited to your record.

9. Who should I go to regarding my GE or university requirements?

Questions regarding university or college requirements should be directed to your designated college counseling office (College of Letters and Science, Honors, AAP or Athletics). You can also refer to the College of Letters and Science website at http://www.college.ucla.edu/up/counseling/artagree.htm.

10. How may I find out my grade in a course?

Please check online at: http://www.ursa.ucla.edu or on your personal My.UCLA page.

11. Will the grade for a course taken at another institution transfer to UCLA?

Only grades from other UC campuses (not a UC Extension program) will be computed into your UCLA GPA. UCLA Extension courses with XLC (Concurrent Enrollment) count as UC courses and the grades do transfer.

12. How do I add the Specialization in Computing?

If you are in any of the math majors (except Math of Computation), you can submit a petition to MS 6356 upon completion of PIC 10B with a grade of "C-" or better. If at any time you wish to drop the specialization, you must submit a petition requesting that it be removed in MS 6356.

FREQUENTLY ASKED QUESTIONS

13. If I received a "C–" or lower in my math class may I repeat it?

If the course you are planning to repeat is a prerequisite of a more advanced course, then you must repeat the prerequisite course prior to enrolling in the next course. For example, a student wishing to retake 31A should do so prior to enrolling in 31B. In addition, please refer to the College of Letters and Science website at http://www.ugeducation.ucla.edu/counseling/handouts/Repeat%20Policy.pdf for more information about regulations/rules for repeating courses.

14. If I want to study abroad, how can I find out if the math courses I plan on taking will count towards my major?

Students should consult with the undergraduate math advisor only after they have met with EAP and know which math courses they are considering. Be sure to bring any program information and course descriptions/ outlines when you meet with the undergraduate math advisor.

15. Where may I petition to change or declare my major?

After you have completed 12.0 units of math at UCLA, received a "C" or better in Math 115A, and have a GPA of 2.0 or better, you may go to MS 6356 to request to change or declare one of the math majors. Additional requirements apply for the Math/Econ major and the Math/Applied Science Actuary Plan. Please refer to the Math websites for further details on such requirements at http://www.math.ucla.edu/ugrad/majorsprograms.shtml. For double majors, please start by meeting with the undergraduate math advisor in MS 6356. If you are looking to switch to a different major outside of the Mathematics Department, please consult with the advisor for that specific department.

16. How can I find a tutor?

The following are some of the most frequently used tutoring services on campus:

The Student Math Center offers individual and group homework assistance for lower division math courses. The center is located in MS 3974. Hours of operation are available at http://www.math.ucla.edu/ugrad/smc.shtml.

The Academic Advancement Program (AAP) is located in Campbell Hall 1230 and offers free tutoring to lower division math and sciences courses to students whose academic profiles and personal backgrounds may impact their university experience, their retention and graduation from UCLA. To determine your eligibility, visit their office in Campbell Hall 1230 or for more information, refer to their website at http://www.aap.ucla.edu/index.html.

Engineering and Mathematical Sciences Library (EMS) is located in Boelter Hall 8270 and offers various academic resources to current UCLA students. For more information, visit their website at http://www.library.ucla.edu/libraries/sel/.

Private (Fee Based) Tutoring is available from current graduate students in the Mathematics Department. Please refer to our website at www.math.ucla.edu/people/tutors/ for a list of available tutors. For price rates, please contact each individual tutor.

17.Where can I obtain information about courses offered through other departments (non Math/PIC courses)?

For questions in regards to course syllabus, prerequisites, enrollment restrictions, transferability, etc., students should check with the department that offers the course. The Mathematics Department does not have control over enrollment in courses outside of math and PIC and it cannot advise students on such courses either. Contact information for various departments are available at http://www.directory.ucla.edu/pdf/campus.pdf.

CREDIT LIMITATIONS

Credit is given for only one course in each of the following groups:

- Mathematics 3A, 31A
- Mathematics 3B, 31B
- Mathematics #, #H,
- Mathematics 110A, 117

You may not take a mathematics course for credit if you have credit for a more advanced course that has the first course as a prerequisite. This applies in particular to the repetition of courses. For example, if you wish to repeat 31B, you must do so before completing Math 32B. However, you are allowed to repeat 31B after completing 32A, since 31B is not a prerequisite for 32A.

You may not receive credit for both a course and for the honors version of the course (e.g., you may not receive credit for both Math 131A and Math 131AH). Math 110A, Math 110B and Math 110AH, Math 110BH (Honors) are a special case. Please see an undergraduate advisor in the mathematics department if you find that you have stopped in the middle of one of the algebra sequences and want to finish with the other the following year.

You may not receive credit for:	If you have already taken:
Mathematics 2	ANY Mathematics # 106-199
Mathematics 132	Physics 132
Mathematics 151A	Electrical Engineering 103
Mathematics 164	Economics 146
Mathematics 167	Economics 106G
Mathematics 170A or Statistics 100A	Electrical Engineering 131A
Mathematics 174	Statistics C183
Mathematics 182	Computer Science 180

MAJORS IN UCLA MATHEMATICS

Mathematics (Pure Math)	This theoretical major is a good choice for students who are interested in pursuing graduate level mathematics. These students are interested in working as professors or researchers at the university level.
Applied Mathematics	Many different companies are interested in hiring applied mathematics graduates, including aerospace, financial companies, computer companies, and other technology-based industries. Students majoring in applied mathematics may also pursue graduate studies.
Mathematics of Computation	Students following this major take computer related mathematics courses and three upper division Computer Science courses, which are generally reserved for CS majors only. They are often hired into positions for CS engineers, but have the flexibility to pursue other computer-related fields. Mathematics of Computation majors have also succeeded in pursuing graduate degrees in Computer Science and Applied Mathematics.
Mathematics for Teaching	Mathematics for Teaching is a major geared toward individuals interested in teaching mathematics at the high school or middle school level. The program aligns with the guidelines established by the state to produce more qualified teachers.
Mathematics/Applied Science (Four plans available)	a) **Individual**—Allows students to combine upper division math with upper division course from other science areas (i.e., statistics, physics, chemistry, physiology, etc.).* b) **Actuarial**—Provides students with a foundation in mathematics, economics, and finances to prepare for the actuarial field. c) **Medical and Life Sciences**—Prepares students for a career in the medical field while pursuing their interest in mathematics. Several courses overlap with the pre-med requirements. d) **History of Science**—For students intending to go to professional school, law or business, while pursuing their interest in mathematics.
Mathematics/ Economics	This interdepartmental major is great preparation for graduate level Economics and MBA programs. In addition, many business and finance companies find these students very desirable prospective employees.

*Note—This major requires departmental approval and is rarely granted because the Department already offers a wide range of majors.

MATHEMATICS

Preparation for the major (10 courses):

	Quarter	Grade
Math 31A	_____	_____
Math 31B	_____	_____
Math 32A	_____	_____
Math 32B	_____	_____
Math 33A	_____	_____
Math 33B	_____	_____
PIC 10A	_____	_____
Physics 1A	_____	_____

	Quarter	Grade
Two courses from the following:		
Econ 11	_____	_____
Chem 20A	_____	_____
Chem 20B	_____	_____
Physics 1B **or** 6B	_____	_____
Physics 1C **or** 6C	_____	_____
Philos 31	_____	_____
Philos 137	_____	_____
LifeSci 1	_____	_____

The Major (12 courses):

Math 115A	_____	_____
Math 110A	_____	_____
Math 110B	_____	_____
Math 120A	_____	_____
Math 131A	_____	_____
Math 131B	_____	_____
Math 132	_____	_____

Five upper division mathematics courses chosen from: Math 106 - 199, Stats 100A - 102C

1.	_____	_____	_____	_____
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____

APPLIED MATHEMATICS

Preparation for the major (10 courses):

	Quarter	Grade		Quarter	Grade
Math 31A	_____	_____	Physics 1A	_____	_____
Math 31B	_____	_____	Physics 1B	_____	_____
Math 32A	_____	_____			
Math 32B	_____	_____	**One** course from the following:		
Math 33A	_____	_____	Physics 1C	_____	_____
Math 33B	_____	_____	Chem 20A	_____	_____
PIC 10A	_____	_____	Chem 20B	_____	_____

The Major (12 courses):

Math 115A	_____	_____
Math 131A	_____	_____
Math 131B or 132	_____	_____
Math 142	_____	_____

Two 2-quarter sequences chosen from three different categories:

A. Applied Numerical Methods:

Math 151A	_____	_____
Math 151B	_____	_____

B. Probability and Statistics:

Math 170A **and** Math 170B		
or		
Stats 100A **and** Stats 100B	_____	_____

C. Differential Equations:

Math 134	_____	_____
Math 135	_____	_____

Four upper division mathematics courses chosen from: Math 106 - 199, Stats 100A - 102C

1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____

MATHEMATICS OF COMPUTATION

Preparation for the major (13 courses):

	Quarter	Grade		Quarter	Grade
Math 31A	_____	_____	PIC 10A*	_____	_____
Math 31B	_____	_____	PIC10B*	_____	_____
Math 32A	_____	_____	PIC10C or 30	_____	_____
Math 32B	_____	_____			
Math 33A	_____	_____			
Math 33B	_____	_____	**One** course from the following:		
Math 61	_____	_____	Physics 1C	_____	_____
Physics 1A	_____	_____	Chem 20A	_____	_____
Physics 1B	_____	_____	Chem 20B	_____	_____

The Major (14 courses):

Math 115A	_____	_____
Math 131A	_____	_____
Math 131B or 132	_____	_____
Math 151A	_____	_____
Math 151B	_____	_____

Six upper division mathematics courses chosen from: Math 106 - 199, Stats 100A - 101C

1.	_____	_____	_____	_____
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____
6.	_____	_____	_____	_____

Three upper division Computer Science** courses:

1.	_____	_____	_____	_____
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____

*We accept CS 31 and CS 32 courses taken at UCLA as equivalent to PIC 10A and PIC 10B courses taken at UCLA.

*All Computer Science courses are restricted to HSSEAS students. For help with enrollment in or information on CS courses, contact HSSEAS. Be sure you meet all prerequisites pertaining to CS courses prior to enrolling.

06/2011

MATHEMATICS FOR TEACHING

Preparation for the major (11 courses):

	Quarter	Grade		Quarter	Grade
Math 31A	_____	_____	Physics 1A **or** 6A	_____	_____
Math 31B	_____	_____	**Two** courses from the following:		
Math 32A	_____	_____	Chem 20A	_____	_____
Math 32B	_____	_____	Chem 20B	_____	_____
Math 33A	_____	_____	Physic 1B **or** 6B	_____	_____
Math 33B	_____	_____	Physic 1C **or** 6C	_____	_____
Math 61	_____	_____	PIC 10BC - 97:		
PIC 10A	_____	_____	_____	_____	_____

The Major (13 courses):

	Quarter	Grade
Math 115A	_____	_____
Math 105A	_____	_____
Math 105B	_____	_____
Math 105C	_____	_____
Math 106	_____	_____
Math 110A **or** 117	_____	_____
Math 120A or 123	_____	_____
Math 131A	_____	_____
Math 170A **or** Stats 100A	_____	_____
Stats 100B	_____	_____

One course chosen from Math 131B - 136: Mathematics Analysis

1. _____ _____ _____ _____

One course chosen from Math 142 - 167: Applied Mathematics

1. _____ _____ _____ _____

One course chosen from Math 110B – 191H or Stats100C: Upper Division Mathematics

1. _____ _____ _____ _____

INDIVIDUAL PLAN

Under the Mathematics/Applied Science major

Preparation for the major (7 courses):

	Quarter	Grade		Quarter	Grade
Math 31A	_____	_____	Math 33A	_____	_____
Math 31B	_____	_____	Math 33B	_____	_____
Math 32A	_____	_____	PIC 10A	_____	_____
Math 32B	_____	_____			

You are also responsible for any prerequisites for the seven upper division courses from the 1-2 related fields.

The Major (14 courses):

a) All seven upper division mathematics courses must be passed with an overall GPA of 2.0.

Seven upper division Mathematics courses from: Math 106 – 199:

Math 115A			_____	_____
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____

One 2-quarter sequences chosen:

6.	_____	_____	_____	_____
7.	_____	_____	_____	_____

Seven upper division courses from 1 - 2 related fields:

a) At least 3 of the 7 courses must be mathematics oriented.
b) At least 5 of the 7 courses from the 1-2 related fields must be taken after the program has been approved.
c) All seven courses from the 1-2 related fields must be passed with an overall GPA of 2.0.

Department: _____				Department: _____			
Course	Title	Quarter	Grade	Course	Title	Quarter	Grade
1._____	_____	_____	_____	1._____	_____	_____	_____
2._____	_____	_____	_____	2._____	_____	_____	_____
3._____	_____	_____	_____	3._____	_____	_____	_____
4._____	_____	_____	_____	4._____	_____	_____	_____
5._____	_____	_____	_____	5._____	_____	_____	_____
6._____	_____	_____	_____	6._____	_____	_____	_____
7._____	_____	_____	_____	7._____	_____	_____	_____

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ACTUARIAL PLAN

Under the Mathematics/Applied Science major

Preparation for the major (10 courses):

	Quarter	Grade		Quarter	Grade
Math 31A*	_____	_____	PIC 10A	_____	_____
Math 31B*	_____	_____	Econ 1*	_____	_____
Math 32A	_____	_____	Econ 2*	_____	_____
Math 32B	_____	_____	Econ 11*	_____	_____
Math 33A	_____	_____			
Math 33B	_____	_____			

The Major (11 courses):

	Quarter	Grade
Math 115A	_____	_____
Math 131A	_____	_____
Math 170A **or** Stats 100A	_____	_____
Math 170B	_____	_____
Math 172A	_____	_____
Math 172B	_____	_____
Math 172C	_____	_____
Math 174	_____	_____

Three upper division Economics and Statistics courses:

One upper division economics courses chosen from: Econ 101 – 199B

1. _____ _____ _____ _____

Stats 100B _____ _____

Stats 100C _____ _____

* These pre-major courses will be calculated separately where you must complete them with a minimum of a 2.5 GPA and "C" or better in each course. Repetition of more than one of these courses results in an automatic denial of degree in this major.

The remainder of the pre major courses must be completed with a minimum of a 2.0 GPA.

Note: This plan is for students starting in Fall 2010 and beyond.

03/2010

Preparation for the Major Requirements

Math 31A, Math 31B, Econ 1, Econ 2 and Econ 11 (known as the econ preparation for the major) will be calculated separately from the other preparation for the major course requirements (known as the math preparation for the major). The econ preparation for the major courses must be completed with a minimum 2.5 grade point average and a "C" or better in each course. If you are a transfer student, to determine your eligibility for the degree, your grades taken prior to entering UCLA will be calculated into your preparation for the major GPA (each course will be calculated as four quarter units). Applications to enter the major are accepted year-round.

All courses for the preparation for the major and the major must be taken for a letter grade.

You are allowed a maximum of one course repeat in the econ preparation for the major and you can repeat that one course one time only.

You must be in good standing at UCLA at the time you apply in order to be considered for admission. This means that you cannot be on Probation or Subject to Dismissal status.

You are permitted to enroll in upper division Economics courses prior to being admitted to the major (except for courses restricted to Business-Economics majors (Economics 106's)) provided that you have fulfilled the prerequisites for the courses. Most upper division Economics courses require completion of at least Economics 11 and many also require completion of Economics 101 and/or 102. Prerequisites will be enforced by URSA and no exceptions will be granted.

Please note that you are subject to any requirement changes in both the preparation for the major and the major until you are officially admitted to the major. You are not "protected" for the major requirements under the catalog in which you were admitted to UCLA. Your "protection" applies only to General Education and other University and College requirements. The courses in the Economics 106 series vary in their fields.

Major Requirements

You must complete the courses in the major with a minimum of 2.0 grade point average.

If you decide to take Economics 101 and 102, it is advised that you take Economics 102 soon after Economics 101 (Economics 11, 101, and 102 must be taken in sequence).

* These pre-major courses will be calculated separately where you must complete them with a minimum of a 2.5 GPA and “C” or better in each course. Repetition of more than one of these courses results in an automatic denial of degree in this major.

The remainder of the pre major courses must be completed with a minimum of a 2.0 GPA.

Note: This plan is for students starting in Fall 2010 and beyond.

03/2010

MEDICAL & LIFE SCIENCES PLAN

Under the Mathematics/Applied Science major

Preparation for the major (18 courses):

	Quarter	Grade		Quarter	Grade
Math 31A	_____	_____	LifeSci 1	_____	_____
Math 31B	_____	_____	LifeSci 2	_____	_____
Math 32A	_____	_____	LifeSci 3	_____	_____
Math 32B	_____	_____	LifeSci 4	_____	_____
Math 33A	_____	_____	Chem 20A	_____	_____
Math 33B	_____	_____	Chem 20B	_____	_____
PIC 10A	_____	_____	Chem 20L	_____	_____
Physics 1A	_____	_____	Chem 30A	_____	_____
Physics 1B	_____	_____	Chem 30AL	_____	_____

The Major (13courses):

Math 115A	_____	_____
Math 134	_____	_____
Math 151A	_____	_____
Math 170A	_____	_____
Math 170B	_____	_____

Two upper division mathematics courses chosen from: Math 110A - 199, Stats 100B - 101C

1. _____ _____ _____ _____
2. _____ _____ _____ _____

Six upper division outside science courses:

Phy Sci M180A	_____	_____
Phy Sci M180B	_____	_____
Phy Sci M180C	_____	_____

Three course from the following:

Biomath 110	_____	_____	EEB C119	_____	_____
Biomath 160	_____	_____	EEB 133	_____	_____
Biostat 100A	_____	_____	EEB 135	_____	_____
Chem CM160A	_____	_____	Phy Sci 100	_____	_____
ComSci M186B	_____	_____	Phy Sci C135	_____	_____

HISTORY OF SCIENCE PLAN

Under the Mathematics/Applied Science major

Preparation for the major (10 courses):

		Quarter	Grade
Math 31A	Differential and Integral Calculus	_____	_____
Math 31B	Integration and Infinite Series	_____	_____
Math 32A	Calculus of Several Variables	_____	_____
Math 32B	Calculus of Several Variables	_____	_____
Math 33A	Linear Algebra and Applications	_____	_____
Math 33B	Differential Equations	_____	_____
PIC 10A	Introduction to Programming	_____	_____

Three courses from the following:

Hist 2B	Social Knowledge and Social Power	_____	_____
Hist 2D	Science, Magic and Religion	_____	_____
Hist 3A	Scientific Revolution	_____	_____
Hist 3B	History of Science from Newton to Darwin	_____	_____
Hist 3C	History of Modern Science, Relativity to DNA	_____	_____
Hist 3D	Themes in History of Medicine	_____	_____

The Major (14 courses):

Math 106	History of Mathematics	_____	_____
Math 115A	Linear Algebra	_____	_____
Math 131A	Analysis	_____	_____
Math 135A	Ordinary Differential Equations	_____	_____
Math 170A	Probability Theory	_____	_____

Three upper division mathematics courses chosen from: Math 110A - 199

1.	_____	_____	_____	_____
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____

Six upper division History, Philosophy or Physical Science/Neurobiology courses:

Five upper division history, philosophy or physical science/neurobiology courses from the following:

Hist 179A	History of Medicine: Historic roots of Healing Arts	_____	_____
Hist 179B	History of Medicine: Foundations of Modern Medicine	_____	_____
Hist M180B	Historic Perspectives on Gender and Science	_____	_____
Hist 180A	Topics in History of Science	_____	_____
Hist 180C	Science and Technology in the 20th Century	_____	_____
Philos 124	Philosophy of Science: Historical	_____	_____
PhySci/Nuerbio M168	Ideas and Experiments in History of Physiology	_____	_____

Any Honors Collegium with "history of science" or "history of medicine content:

1.	_____	_____	_____	_____

MATHEMATICS/ECONOMICS

Preparation for the major (11 courses):

	Quarter	Grade		Quarter	Grade
Math 31A*	_____	_____	Math 61	_____	_____
Math 31B*	_____	_____	PIC 10A	_____	_____
Math 32A	_____	_____	Econ 1*	_____	_____
Math 32B	_____	_____	Econ 2*	_____	_____
Math 33A	_____	_____	Econ 11*	_____	_____
Math 33B	_____	_____			

The Major (11 courses):

	Quarter	Grade
Math 115A	_____	_____
Math 131A	_____	_____
Math 170A **or** Stats 100A	_____	_____
Math 170B **or** Stats 100B	_____	_____

Two upper division mathematics courses chosen from: Math 131B, Math 164, Math 174

1. _____ _____ _____ _____
2. _____ _____ _____ _____

Five upper division Economics courses:

Econ 101**	_____	_____
Econ 102**	_____	_____
Econ 103	_____	_____

Two additional upper division economics course chosen from: Econ 104 - 199B

1. _____ _____ _____ _____
2. _____ _____ _____ _____

* These pre-major courses will be calculated separately where you must complete them with a minimum of a 2.5 GPA and "C" or better in each course. Repetition of more than one of these courses results in an automatic denial of degree in this major.

The remainder of the pre major courses must be completed with a minimum of a 2.0 GPA.

** Econ 101 and Econ 102 must each be a "C-" minimum.
*** Students are also required to take a Writing II course or English Composition 129B.

Note: This plan is for students starting in Fall 2010 and beyond. 03/2010

Preparation for the Major Requirements

Math 31A, Math 31B, Econ 1, Econ 2 and Econ 11 (known as the econ preparation for the major) will be calculated separately from the other preparation for the major course requirements (known as the math preparation for the major). The econ preparation for the major courses must be completed with a minimum 2.5 grade point average and a "C" or better in each course. Note that students are also required to take one Writing II course or English Composition 129B; though the grade is not calculated into the pre-major GPA, you must earn a minimum grade of "C." If you are a transfer student, to determine your eligibility for the degree, your grades taken prior to entering UCLA will be calculated into your preparation for the major GPA (each course will be calculated as four quarter units). Applications to enter the major are accepted year-round. You must apply for the major between 72.0 and 137.0 units. (AP units will not be included if they bring your total over 137.0.)

All courses for the preparation for the major and the major must be taken for a letter grade.

You are allowed a maximum of one course repeat in the econ preparation for the major and you can repeat that one course one time only.

You must be in good standing at UCLA at the time you apply in order to be considered for admission. This means that you cannot be on Probation or Subject to Dismissal status.

You are permitted to enroll in upper division Economics courses prior to being admitted to the major (except for courses restricted to Business-Economics majors (Economics 106's)) provided you have fulfilled the prerequisites for the courses. Most upper division Economics courses require completion of at least Economics 11 and many also require completion of Economics 101 and/or 102. Prerequisites will be enforced by URSA and no exceptions will be granted.

Please note that you are subject to any requirement changes in both the preparation for the major and the major until you are officially admitted to the major. You are not "protected" for the major requirements under the catalog in which you were admitted to UCLA. Your "protection" applies only to General Education and other University and College requirements (such as English Composition and Quantitative Reasoning). The courses in the Economics 106 series vary in their fields.

Major Requirements

You must complete the courses in the major with a minimum 2.0 grade point average, except for Economics 101 and 102, in which you need a minimum grade of "C-" in each course.

Economics 102 should be taken soon after Economics 101 (Economics 11, 101, and 102 must be taken in sequence).

* These pre-major courses will be calculated separately where you must complete them with a minimum of a 2.5 GPA and “C” or better in each course. Repetition of more than one of these courses results in an automatic denial of degree in this major.

The remainder of the pre major courses must be completed with a minimum of a 2.0 GPA.

** Econ 101 and Econ 102 must each be a “C-" minimum.
*** Students are also required to take a Writing II course or English Composition 129B.

Note: This plan is for students starting in Fall 2010 and beyond. 03/2010

SPECIALIZATION IN COMPUTING

The Specialization in Computing is not a major, but a supplement to the Mathematics, Applied Mathematics, Mathematics for Teaching, Mathematics/Economics and Mathematics/Applied Science majors. It provides an extensive education in elementary computer science and an introduction to its applications in mathematics. Students who complete the specialization will receive a notation on their diploma. Mathematics/Economics majors interested in a Specialization in Computing must follow the Specialization offered through the Mathematics Department.

- Each PIC course, Math 61 or 180, and at least two courses from Math 149-159 must be passed with a minimum grade of "C-" and an overall combined GPA of 2.0.
- Students planning to complete the Specialization in Computing must petition to add this program to their major after completing PIC 10B. Petitions should be filed in the Student Services Office, MS 6356.
- Students who have added the Specialization in Computing to their major and choose to graduate before completing the specialization must officially drop the program by filing a petition in MS 6356.

Required for the specialization (7 courses):

	Quarter	Grade
PIC 10A	_____	_____
PIC 10B	_____	_____

Two PIC course from the following:

PIC 10C	_____	_____
PIC 15	_____	_____
PIC 20A	_____	_____
PIC 20B	_____	_____
PIC 30	_____	_____
PIC 40A	_____	_____
PIC 40B	_____	_____
PIC 60	_____	_____

One mathematics course from the following:

Math 61	_____	_____
Math 180	_____	_____

Two upper division mathematics courses chosen from: Math 149 - 159

			Quarter	Grade
1.	_____	_____	_____	_____
2.	_____	_____	_____	_____

03/2009

MINOR IN MATHEMATICS

The minor in mathematics is designed to provide students with the opportunity to widen their background and general comprehension of the role of mathematics in various disciplines.

- Math 32B is not required for the minor. Please be aware of any upper division mathematics courses for which Math 32B is a prerequisite.
- All courses must be completed with a letter grade and passed with an overall GPA of at least 2.0.

Required for the minor (8 courses):

	Quarter	Grade
Math 32A	_____	_____
Math 33A	_____	_____
Math 33B	_____	_____

Five upper division mathematics courses chosen from: Math 106 – 199

			Quarter	Grade
1.	_____	_____	_____	_____
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____

CAREER OPPORTUNITIES

Graduating with a major in Mathematics from UCLA will give you the critical thinking skills that employers are looking for. Mathematics opens the door to unlimited opportunities, if you are willing to make the effort to invest the time necessary to perform well. Our students have been employed by a diverse selection of companies in varying capacities.

In today's competitive world, a good education is essential. With a strong background in mathematics and logic, you give yourself the best advantage for **ANY** career you choose.

Some of the careers our students have enjoyed:

- Computer Programmer
- Financial Analyst
- Actuary
- Buyer
- Programmer Analyst
- High School Teacher
- Navy Pilot
- Management Consultant
- Cost Analyst
- Financial Planner
- Auditor
- Technical Advisor
- Accountant
- And many, many more

For more information about career opportunities please visit the Career Center online at:

http://career.ucla.edu

GRADUATE SCHOOL OPPORTUNITIES

Successful graduate work in mathematics requires skills in formal reasoning and in constructing rigorous mathematical proofs. These skills are more essential for success at the graduate level than is the knowledge of any particular topic. The honors sequences will provide training in these skills to a far greater degree than the regular sequences. In fact, our graduate admissions committee looks more favorably upon an "A-" earned in an honors sequence than an "A" in the regular sequence. It is likely that other graduate programs follow similar policies.

Most applications for graduate programs in mathematics must be submitted between December and February, so it is best to contact colleges during the summer or access their websites for online applications and additional information.

Recommended courses to prepare for graduate school:

For Pure Mathematics:

- Math 115AH + 115B
- Math 131AB (Honors) + 131C
- Math 110AB (Honors) + 110C
- Math 132
- Math 120A, 121
- Math 134, 135 and 136

For Applied Mathematics:

- Math 115AH
- Math 131AB (Honors)
- Math 110AB (Honors) + 110C
- Math 134, 135 and 136
- Math 151AB, 153
- Math 132

Most universities will require the following materials with their applications:

1.) Three letters of recommendation

2.) GRE general and mathematics subject exams

3.) Personal statement

Please research on the graduate or professional schools you are interested in before meeting with the undergraduate math advisor for information on applying to graduate school and timelines.

For information about applying to medical school or other professional schools you may also visit the UCLA Career Center online at:

http://www.career.ucla.edu

RESEARCH OPPORTUNITIES

IPAM Research in Industrial Projects for Students ("RIPS")

http://www.ipam.ucla.edu/programs/rips2010/

Research in Industrial Projects for Students (RIPS) is based on the successful Math Clinic concept that originated at Harvey Mudd College in 1973 as well as the Research Experience for Undergraduates (REU) program sponsored by the National Science Foundation. In the RIPS program, teams of students, directed by faculty advisors, work to solve industry-related problems. RIPS brings together highly qualified undergraduates in mathematics or related majors with sponsoring industry, government, and nonprofit organizations to collaborate on projects. Each team of three to four advanced students spends two summer months working on a problem posed by the sponsoring organization under the leadership of a faculty advisor. Projects focus on problems of serious interest to the sponsor and stimulating challenges to the students. Participation in RIPS provides valuable real-world technical and managerial experience for students and valuable R&D for the sponsor.

NSF REU Program

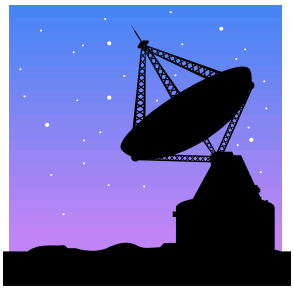
http://www.nsf.gov/crssprgm/reu/list_result.cfm?unitid=5044
http://www.mathprograms.org/db/programs/56

The REU program includes both individual research and group activities. Each student is assisted by a faculty advisor and some also by a graduate-student advisor. Group activities include seminars and other social and professional events. Students are encouraged to continue their research during the following academic year, under the direction of their summer mentor or another faculty member. Eligible students will receive a stipend and on-campus housing (possibly) for their work. Visit the website above for important details.

URC CARE

http://college.ucla.edu/urc-care/

The Undergraduate Research Center for Sciences, Engineering and Mathematics and the Center for Academic and Research Excellence work collaboratively to serve UCLA's undergraduate science population. Through various programs, the URC/CARE recruits, develops and celebrates students involved in research. Our mission is to support and increase the retention of science majors in all disciplines, with some programs focused on students who face economic, familial, educational, social or other challenges. Their office is located in 2121 Life Science Building.



NASA Undergraduate Student Research Program

http://www.epo.usra.edu/usrp/

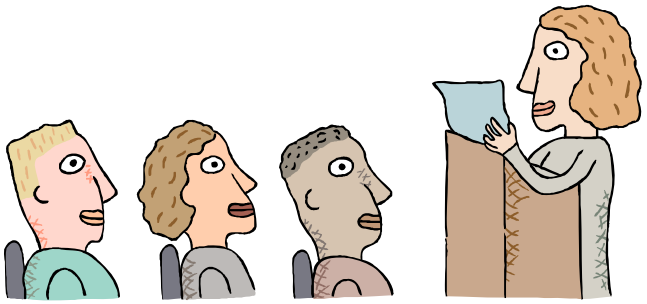
The NASA USRP offers undergraduates across the United States mentored research experiences at the NASA centers. Two sessions are typically offered. They consist of a 10-week session in the summer and a 15-week session in the fall. The project seeks applications from undergraduates who are U.S. citizens enrolled full-time in accredited U.S. colleges or universities Applicants must be rising juniors or seniors at the completion of the current year's spring semester or quarter. Eligible applicants must have academic majors or course concentration in engineering, mathematics, computer science, or physical and life sciences.

STUDENT ORGANIZATIONS

UCLA BRUIN ACTUARIAL SOCIETY

The UCLA Bruin Actuarial Society is designed for those students interested in the actuarial profession. They serve as a support group for motivated students who plan on taking Actuarial exams and want to find internships/jobs in the field. Find out why actuaries are consistently considered one of the best jobs in the U.S. according to the Job Rated Almanac. They are also dedicated to informing fellow Bruins who are interested in the actuarial field. During the last year, weekly e-mails were sent out to club members regarding company information sessions, internships, jobs, and scholarships.

To join please email the Bruin Actuarial Society at: BruinActuaries@gmail.com or check out the website at www.math.ucla.edu/~actuary/.



UCLA PI MU EPSILON

Pi Mu Epsilon, Inc (PME), is the Honorary National Mathematics Society. Their purpose is "to promote scholarly activities in the mathematics among students, awareness of higher educational programs and career opportunities in mathematics, as well as social activities among its members." Our current and future chapter projects include arranging popular talks on mathematical topics, a weekly problem-solving group, on-campus and off-campus community involvement (i.e., setting up high school competitions), and social activities.

For information please email PMEinLA@gmail.com or go to http://www.pme-math.org/.

UNDERGRADUATE MATHEMATICS STUDENT'S ASSOCIATION

The UCLA Undergraduate Mathematics Students' Association (UMSA) is an officially recognized university club for mathematics majors and students of the other majors who are interested in mathematics. UMSA was established in response to students' desire to have a "connection" to the Mathematics Department. The purpose of UMSA is to:

- Promote the academic awareness of the mathematics major.
- Promotes better student-faculty relations.
- Provide information on career opportunities in mathematics.
- Provide a peer network in which students can discuss and further develop ideas and concepts that are presented in mathematics courses.

http://www.math.ucla.edu/~umsa/ email: umsa@math.ucla.edu

Teaching Preparation Programs

Do you love mathematics? Do you like to explain mathematics concepts to others?

Imagine getting to develop a deep understanding of the mathematics you've learned and help young students every day of the work week! Teaching is a fun, creative, rewarding and challenging career. It is well paid with salaries starting at ~$45K and peaking at ~$94K for ten months work. Further, because a significant portion of secondary mathematics teachers do not have strong mathematics backgrounds, mathematics majors who want to teach mathematics are in high demand. Recent data shows that even if every CA mathematics major graduating next June chose to teach, more than half the state's open secondary mathematics teaching positions would not be filled.

UCLA is one of the top three California universities in the number of graduates who go on to earn a CA mathematics teaching credential. Research shows that over 80% of UCLA mathematics graduates who go on to complete their teaching credential in the UCLA Teacher Education Program remain in teaching after 5 years. This is a stark contrast to the Los Angeles Unified School District average of 62%! In addition, evidence demonstrates that a significant fraction of UCLA Mathematics Department teacher preparation program graduates become mathematics teacher-leaders, increasing their impact on the mathematics education of local communities.

We encourage you to participate in our programs. We offer solid preparation for a career in teaching, a strong foundation for future leadership in the field, a cohort of colleagues to support you in the classroom, and dependent on funding, financial support toward your goals.

For general questions about UCLA Teaching Preparation Programs, please contact the undergraduate math advisor.

For additional questions or general inquiries about a career in teaching mathematics, please feel free to contact the Curtis Center Executive Director, Heather Calahan (calahan@math.ucla.edu).

TEACHING PREPARATION PROGRAMS

UCLA CalTeach - Math

UCLA California Teach - Math offers up to four years of courses, field experiences, credential preparation, and professional networking opportunities for undergraduates interested in teaching mathematics . In the program, mathematics professors, mathematics educators, and current mathematics teachers will work with you to provide you with the content and pedagogical content knowledge necessary to be a high quality mathematics teacher. Each year of the program includes mathematics courses, mathematics education courses, observation and participation in local schools, and credential preparation. Students may enroll in anywhere from one to all four years of the program, and those who complete all four years are thoroughly prepared for admission to a California (CA) credential program. For more information and to apply, go to the UCLA Curtis Center website at http://www.curtiscenter.math.ucla.edu/undergraduate.html.

The Joint Mathematics Education Program

The Joint Math/Ed Program (JMEP) is a collaborative effort of the UCLA Mathematics Department and the Graduate School of Education's Teacher Education Program. In this program, students begin work toward a California Preliminary Single Subject Teaching Credential in Mathematics and a Master of Education degree during their senior year, and complete this coursework by the end of the academic year immediately following completion of their bachelor's degree. The program enables students to earn a full time salary (about $40,000) while teaching full time in Los Angeles urban schools during the academic year immediately following their bachelor's degree. Students accepted to the Joint Mathematics Education Program are automatically enrolled in the CalTeach - Math Senior Year. For more information and to apply, see the UCLA Curtis Center website http://www.curtiscenter.math.ucla.edu/undergraduate.html.

Subject Matter Preparation for the CA Teaching Credential

Applicants for a California Preliminary Single Subject Teaching Credential in Mathematics must verify their “subject matter competence” to teach mathematics in one of two ways: 1.) complete a CA-approved “subject matter program” and obtain verification of completion from the university with the approved program or 2.) achieve a passing score on the three part California Subject Matter Examination for Teachers (CSET).

The UCLA Mathematics Department is one of three UC campuses with a CA-approved “subject matter program” in mathematics. The program is comprised of mathematics courses, most of which are common to most mathematics majors, and the Math 105ABC sequence. Students who complete the department’s Mathematics for Teaching major will automatically complete the department’s CA-approved subject matter program. At the end of their senior year, students may request a letter form the Curtis Center Executive Director’s office verifying their completion of these course and thus their subject matter competence for the CA Single Subject Teaching Credential in Mathematics. For more information go to http://www.curtiscenter.math.ucla.edu/handbook/11-12_Handbook_p10.pdf

DEPARTMENTAL HONORS & SCHOLAR

The Mathematics Departmental Honors and Scholar Programs are two of the most rigorous programs that are designed to further prepare students for graduate study. While the Departmental Honors Program grants eligible students the opportunity to work closer with faculty and apply their learning to an original project, the Departmental Scholar Program allows students with exceptional academic records to simultaneously pursue a Bachelors and Masters degree.

If you are interested in applying or have any questions about either of these programs, please consult with the undergraduate math advisor.

Admission to the Honors Program:

To be considered for admission to the **Departmental Honors Program in Mathematics**, **Applied Mathematics, or Mathematics of Computation**, a student must:

- be officially enrolled in his respective Mathematics major;
- have completed at least four courses at UCLA in the Mathematics Department from those required in the "Preparation for the Major" or "Major"; and
- have at least a 3.6 GPA in such mathematics courses taken at UCLA.

To be considered for admission to the **Honors Program in Mathematics/Economics**, a student must:

- be officially enrolled in the Mathematics/Economics major;
- have completed all of the "Preparation for the Major" courses; and
- have at least a 3.5 GPA in the "Preparation for the Major".

* In addition to the requirements listed above, students must complete specific courses within the department. Please refer to our website at http://www.math.ucla.edu/ugrad/honors.shtml for more detailed information and consult with the undergraduate math advisor.

Eligibility & Timeline for the Scholar Program:

- Completion of at least 96 units;
- Completion of all Preparation for the Major courses;
- Completion of the entire Math 30-series courses (31AB, 32AB, 33AB); and
- Completion of Math 115AH, 115B, 131AH and 131BH.

First year at UCLA: Complete or have credit from another institution/standardized test (AP or IB Exams) all lower-division Calculus-based courses (Math 31A, 31B, 32A, 32B, 33A, 33B). If possible take 115AH in spring.

Second year at UCLA: Complete Math 115AH (Honors Linear Algebra), Math 115B (Linear Algebra), Math 131AH (Honors Analysis) and 131BH (Honors Analysis). Completion of these courses will provide a strong foundation for the Basic Qualifying Exam, which is a crucial component of completing the Scholar program. Students are encouraged to apply to the Departmental Scholar program upon completion of 115B and 131BH.

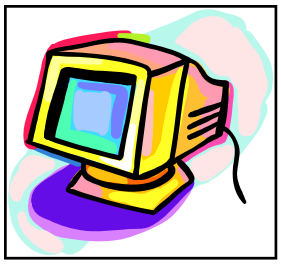
Third Year at UCLA: Pass the Basic Qualifying Exam. Complete other major courses, these particular courses will depend on whether the student is pure or applied. Students can also begin their graduate courses as well.

Fourth year at UCLA: Complete the remaining graduate level courses for the Masters Degree.

*http://www.math.ucla.edu/ugrad/scholpr.shtml

PROGRAM IN COMPUTING (PIC) LAB

The PIC Lab supports both PIC students learning programming and Math students who wish to use analytical software. The lab is reserved for PIC and Math students ONLY. Accounts should be automatically created for all eligible students each quarter or can be requested at the Student Services Office in MS 6356. Student accounts have 25 MB of disk space on the network drive and may print 200 pages per class per quarter at no charge.



LOCATION: Boelter Hall 2817 (Main PIC Lab)

HOURS*:

Fall, Winter and Spring Quarters:

Mon & Wed	9am - 6pm
Tue & Thu	9am - 9pm
Fri	9am - 5pm
Sun	1pm - 5pm

Summer Sessions:

Mon - Thurs	9am - 5pm
Fri, Sat, Sun	Closed

***Hours may vary each quarter. See webpage for actual hours each quarter.**
Reduced hours during finals week.

WEBSITE: http://www.pic.ucla.edu/piclab/
CONTACT: (310) 825—7267

ACADEMIC PLANNER

Fall	Winter	Spring	Summer

Fall	Winter	Spring	Summer

Fall	Winter	Spring	Summer

Fall	Winter	Spring	Summer

QUARTER COURSE PLANNER

	Monday	Tuesday	Wednesday	Thursday	Friday
8:00					
9:00					
10:00					
11:00					
12:00					
1:00					
2:00					
3:00					
4:00					
5:00					
6:00					