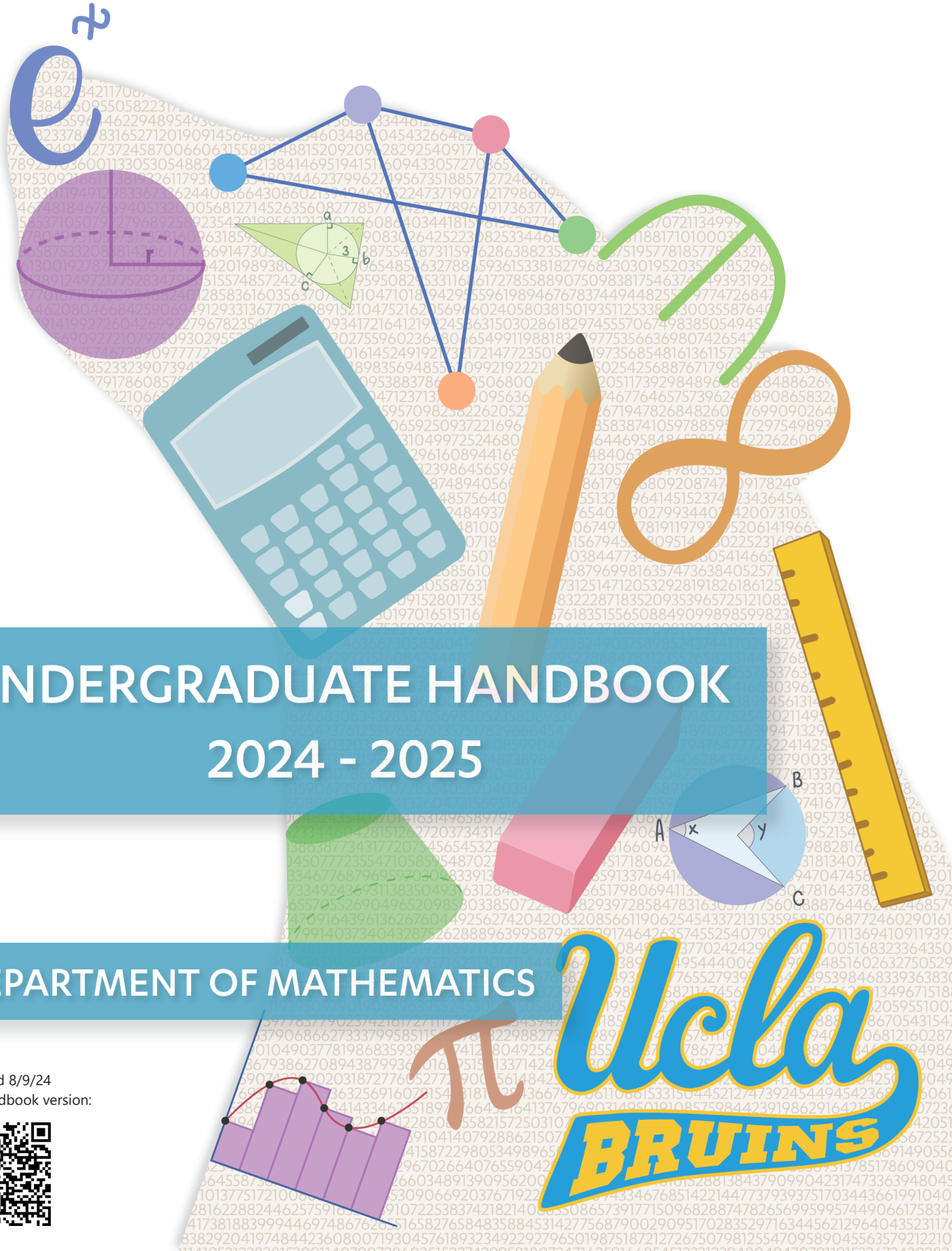
UCLA College | Physical Sciences
Mathematics

6356 MATH SCIENCES
UGRAD@MATH.UCLA.EDU



UNDERGRADUATE HANDBOOK
2024 - 2025

DEPARTMENT OF MATHEMATICS

Updated 8/9/24
See latest handbook version:

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UCLA College | Physical Sciences Mathematics

The Department of Mathematics is the home for Mathematics and Programming in Computing

UNDERGRADUATE STUDENT SERVICES

LOCATION
Student Services Office
Math Sciences 6356

EMAIL
ugrad@math.ucla.edu

PHONE
(310) 206-1286

MAILING ADDRESS
UCLA Department of Mathematics
520 Portola Plaza
Box #951555
Los Angeles, CA 90095-1555

ZOOM ADVISING HOURS*
No Appointment Needed
Tues, Wed, Thurs
9 am - 11 am

IN-PERSON ADVISING HOURS*
No Appointment Needed
9 am – 11 am & 1 pm – 3 pm

* Hours may change depending on the cycle of the quarter/year. See website for the most up-to-date hours.

Advisors can answer questions regarding:

- Academic Difficulty
- Course Planning
- Career Planning
- Transferring Course Credit
- Departmental Programs
- Enrollment Concerns
- Majors, Minors, & Specialization
- Student Organizations

ACADEMIC ADVISING WEBSITE
ww3.math.ucla.edu/academic-advising/#advising-hours

ACADEMIC ADVISORS
Carla Ramos
Sabrina Ku
Trisha Tran

PROGRAMMING IN COMPUTING: PIC LAB

LOCATION
Math Sciences 2000

PHONE
(310) 825-7276

WEBSITE
pic.ucla.edu

HOURS: FALL, WINTER, SPRING
Monday – Friday: 9 am – 5 pm
Saturday: CLOSED
Sunday: 1 pm – 5 pm

HOURS: SUMMER SESSIONS
Monday – Friday: 9 am – 5 pm
Saturday & Sunday: CLOSED

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.

Student accounts have 1 GB of disk space on the network drive and may print 200 pages per class per quarter at no charge. No additional printing is allowed.

Accounts are automatically created for all eligible students each quarter or can be requested at the Student Services Office.

Hours may vary each quarter. Visit the PIC Lab website for the current schedule. Reduced hours during finals week.

RESOURCES

Visual Studio Community: visualstudio.microsoft.com/vs/community

Matlab (available to UCLA students): softwarecentral.ucla.edu/matlab-getmatlab

Python: python.org/downloads

Adobe Creative Cloud: ucla.service-now.com/support?id=kb_article&sys_id=KB0013458

MATH DIAGNOSTIC TEST

1. What is the Math Diagnostic Test?

The Mathematics Department uses ALEKS PPL as our Math Diagnostic Test. ALEKS PPL is a web-based learning system that uses adaptive technology assess readiness for certain mathematics courses. Each student will be charged a $20 non-refundable fee upon registering for a cohort on ALEKS PPL. Once registered, students have 6 months of access to the Math Diagnostic Test.

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

You will need to take the MDT if you plan to enroll into MATH 1, 3A, 31AL or 31A to fulfill a major or minor requirement AND you do not have credits for any of these courses yet.

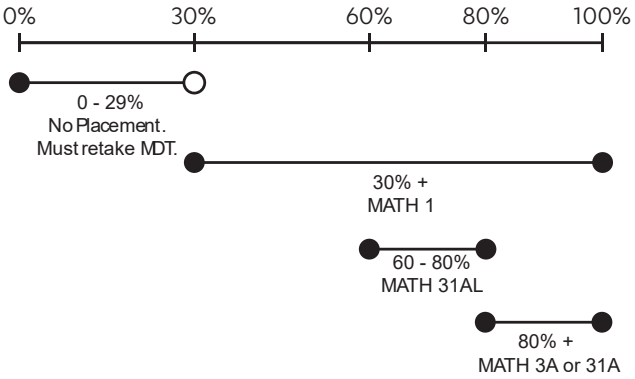
3. What if I already have credit for MATH 1, 3A, 31AL or 31A?

Check the Degree Audit Report System (DARS) under the "TRANSFER COURSES BY UPPER OR LOWER DIVISION DISTRIBUTION" section. If you were already granted credit for MATH 1, 3A, or 31A, you do not have to take the MDT and should move forward with the next course in the sequence, MATH 31B.

If you think there is something wrong with how your credits transferred in and that you should receive credit for one of the four courses above, email our office.

4. Based on my MDT score, what class should I enroll into?

The MDT score indicates which course(s) you can enroll INTO: MATH 1, 3A, 31AL, or 31A.



Example 1: A score of 68% means that a student can enroll INTO MATH 31AL. It is not indicating that the student can SKIP MATH 31AL or get the class waived.

Example 2: Based on the diagram, students who score 60% or higher are allowed to take MATH 1 if they want to spend a quarter to learn/re-learn precalculus before moving forward with Math 3A, 31AL or 31A.

5. What's the difference between MATH 1, 3A, 31AL, and 31A?

MATH 1: Precalculus

MATH 3A: Calculus for Life Science Students

MATH 31AL: Differential and Integral Calculus

MATH 31A: Differential and Integral Calculus with Laboratory

MATH 31A and 31AL cover the same topics, except Math 31AL has an additional hour each week for students to go over precalculus material. Math 31AL is intended for students who score high on the "Math 1" spectrum but low on the "Math 31A" spectrum. Both courses allow students to move forward with Math 31B if they receive an acceptable grade. Students who need Math 31A for their major are allowed to take Math 31AL instead.

6. Can I retake the Math Diagnostic Test?

Yes. Students are allowed 3 attempts on the diagnostic exam. The most recent score, for better or worse, will be synced with the enrollment system overnight.

If you who are satisfied with your first attempt, you do not need to take the test again. If you are not satisfied with your first attempt, you can retake the test after a 48-hour cooling period and a minimum of 3 hours of self-review in the learning modules.

Even if you are satisfied with your initial score, you are highly encouraged to review the learning modules and achieve up to 80% mastery in each topic to help you prepare for the course.

7. Where can I take the Math Diagnostic Test?

ww3.math.ucla.edu/take-the-diagnostic-test

TRANSFERRED CREDITS FROM EXAMS

ADVANCED PLACEMENT (AP) EXAM FOR CALCULUS

Only students that receive a score of 3, 4 or 5 on the AP Calculus AB or BC exams will receive college credit. Credit may vary depending on your major and the college to which you belong.

Math majors will receive credit as indicated:

Score	AB Exam	BC Exam
5	Credit for MATH 31A **Enroll in MATH 31B**	Credit for MATH 31A and 31B **Enroll in MATH 32A**
4	Credit for 4 units of calculus **Enroll in MATH 31A**	Credit for MATH 31A 4 units of calculus **Enroll in MATH 31B**
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

*Take Math Diagnostic Test to place into Math 1, 31AL, or 31A.

INTERNATIONAL BACCALAUREATE (IB) HIGHER LEVEL EXAM

Math majors will receive credit as indicated:

POSSIBLE UCLA COURSE CREDIT FOR IB EXAMS

IB EXAM	SCORE	CREDIT
Mathematics	5	MATH 1 and 4.0 units **Enroll into MATH 31A**
	5	Math Unassigned and 4.0 units
	6	MATH 31A and 4.0 units **Enroll into MATH 31B**
	6	Math Unassigned and 4.0 units
Mathematics, Analysis & Approaches HL	5	Math Unassigned and 8.0 units
	6 - 7 (Taken Spring 2021)*	Math Unassigned and 4.0 units
	6 - 7 (Taken Spring 2022 and after)	MATH 31A **Enroll into MATH 31B**
Mathematics, Further	5 - 7	Math Further and 8.0 units

UC does not award credit for Mathematics: Applications & Interpretations HL or SL

*Students can contact ugrad@math.ucla.edu to waive Math 31A.

IB examinations, AP examinations, and college courses taken prior to or after enrolling at UCLA may be duplicative. In these cases, students will only be awarded credit for one course.

admission.ucla.edu/admitted-students/ib-credit-the-college

admission.ucla.edu

ibo.org/programmes/diploma-programme/curriculum/mathematics

Disclaimer: Credits awarded for exams are subject to change by UCLA Admissionwithout notice if exam content is changed between years.

ADVANCED PLACEMENT (AP) EXAM FOR NON-CALCULUS

Math majors can be waived for the following courses as indicated:

Score	AP Exam	Course Waived	Contact
4 - 5	Chemistry General	CHEM 20A	Chemistry Advisors ugrad@chem.ucla.edu
4 - 5	Physics C: Mechanics	PHYSICS 1A	Mary Tran mtran@physics.ucla.edu
4 - 5	Statistics	STATS 10	Statistics Advisor via Message Center

As a formality, students will need to contact the respective departments for a note made in their student records approving the substitution. Once the written approval is received, they do not need to do anything else. Math advisors are aware of these substitutions and will update students' DARS to reflect the substitution in their last quarter at UCLA by the end of Week 8.

A-LEVEL EXAMS

In order to receive credit for math courses, A-Level exams must be passed with "C" grades or better. Credit may vary depending on your major and the college to which you belong. Consult with the Undergraduate Admission Office for more information.

Math majors will receive credit as indicated:

POSSIBLE UCLA COURSE CREDIT

CIE A- LEVEL EXAMS	A	B	C
Pure Mathematics 1 (P1) + Pure Mathematics 3 (P3) + Mechanics 1 (M1) + Probability and Statistics 1 (S1)	MATH 1, MATH 31A	MATH 1, MATH 31A	MATH 1
Pure Mathematics 1 (P1) + Pure Mathematics 3 (P3) + Mechanics 1 (M1) + Mechanics 2 (M2)	MATH 1, MATH 31A	MATH 1, MATH 31A	MATH 1
SINGAPORE A-LEVEL EXAMS	**A**	**B**	**C**
Higher 2 Mathematics: (P1) + (P2)	MATH 1, MATH 31A	MATH 1, MATH 31A	MATH 1
EDEXCEL A-LEVEL EXAMS	**A**	**B**	**C**
GCE Mathematics (9371): C1, C2, C3, C4	MATH 1, MATH 31A	MATH 1, MATH 31A	MATH 1
GCE Further Mathematics (9372): FP1 and FP2	12.0 title units	12.0 title units	12.0 title units
GCE Further Mathematics (9372): FP1 and FP3	12.0 title units	12.0 title units	12.0 title units
GCE Pure Mathematics (9373): C1, C2, C3, C4, FP1	MATH 1, MATH 31A	MATH 1, MATH 31A	MATH 1
OXFORD CAMBRIDGE AND RSA EXAM	**A**	**B**	**C**
Mathematics B (MEI) H640	MATH 1, MATH 31A	MATH 1, MATH 31A	MATH 1

CIE A-Level Mathematics (9709) — cambridgeinternational.org/programmes-and-qualifications/cambridge-international-as-and-a-level-mathematics-9709

CIE A-Level Mathematics - Further (9231) — cambridgeinternational.org/programmes-and-qualifications/cambridge-international-as-and-a-level-mathematics-further-9231/

Singapore A-Level — seab.gov.sg/home/examinations/gce-a-level

Edexcel A-Level — qualifications.pearson.com/en/qualifications/edexcel-a-levels/advanced-extension-award-mathematics-2018.html

Oxford A-Level — ocr.org.uk/qualifications/as-and-a-level/mathematics-b-mei-h630-h640-from-2017

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TRANSFERRING CREDITS FROM ANOTHER INSTITUTION

1. One of my transferred courses was processed as Title Credit. How can I receive credit for it as a UCLA Mathematics course?

If your transferred course appears as title credit (Math T##) with a math course number that does not match any class at UCLA, you can submit a Transfer Credit Petition electronically.

2. Can I take courses for my math major at another institution?

You are allowed take courses at other institutions during the summer term. Before enrolling into the course, you should confirm if it is transferable.

- Use ASSIST to check course transferability from a California community college to UCLA.
- Use Transferology to check course transferability from any US institution (community college or four-year institution) to UCLA.

If ASSIST and Transferology do not have information on your course of interest, refer to Transfer Credit Petition.

3. What happens after I complete the course at another institution?

Upon completion of the course, send an official transcript to UCLA Undergraduate Admission. You must also fill out a Transfer Credit Evaluation Request form in order to have the course evaluated and credited to your record.

admission.ucla.edu/apply/transferring-credits

4. If I want to study abroad, how can I find out if any math courses will count toward my major?

You should first meet UC Education Abroad Program (UCEAP) advisors to learn about the process of finding courses and programs. Once you find math courses of interest, follow the Transfer Credit Petition instructions to have the courses to evaluated.

ieo.ucla.edu/uceap

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

While credit for courses taken at other schools may be used to satisfy pre-major and major requirements, the letter grades themselves will not impact your official UCLA GPA unless it is taken at another UC campus or through the UCEAP.

Math courses taken as a registered University Extension (UNEX) student will only transfer in if they are taken with the UCLA Mathematics Department on Main Campus and are transferred in with an "XLC" suffix. XLC signifies that the UNEX math course is a regular UCLA daytime class. Grades from XLC classes, if transferred, are computed into your UCLA GPA.

caac.ucla.edu/policies/ucla-extension

TRANSFER CREDIT PETITION

Submit a Transfer Credit Petition to have courses evaluated as equivalent to the UCLA Mathematics Department's MATH or COMPTNG courses. Courses can be from another department at UCLA or from another institution.

See "Transfer Credit Petitions"
ww3.math.ucla.edu/petitions/#petitions-tcp

Remember that **all pre-major and major math courses MUST be taken for letter grades**, even if taken at another institution! Also, check with your College counselor regarding residency requirements and other regulations for taking courses at another school.

CREDIT LIMITATIONS

Credit limitations are restrictions on how credits are granted. These restrictions may be applied between courses if courses are too similar in content or if certain topics must be taken in a specific order (this is also known as course sequencing).

CREDIT LIMITATIONS AMONG SIMILAR MATH COURSES

Students can only receive credit for one course in each of the following groups:

- MATH 3A, 31A, 31AL
- MATH 3B, 31B
- MATH 110A, 117
- MATH 118, 164
- MATH 170A, MATH 170E, STATS 100A
- MATH 170S, STATS 100B
- MATH #, #H* (E.g., MATH 32A and 32AH)

* MATH 110A, 110B and MATH 110AH, 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.

CREDIT LIMITATIONS WITHIN SEQUENCES

Lower Division

Lower division mathematics courses are sequenced with their prerequisites. Students must complete the prerequisites listed in the course descriptions before moving forward with the succeeding course. Failure to complete courses in order can result in "No Credit" granted toward the prerequisites.

Examples

- MATH 31B has a prerequisite of 31A. Students must complete MATH 31A before MATH 31B in order to receive proper credit in both courses.
- MATH 32B has prerequisites of MATH 31B and 32A. Students must complete MATH 31B and 32A before MATH 32B in order to receive proper credit in all courses.

Upper Division

Some upper division mathematics courses are sequenced and must be taken in a specific order. These sequenced courses are:

- MATH #A, #B, #C (E.g., MATH 131A, 131B, and 131C)
- MATH 170E, 170S

ADDITIONAL CREDIT LIMITATIONS

Students cannot receive credit for Course A if they already have credit for Course B. However, they may be able to receive credit in the reverse order (check with those respective departments to confirm).

You may not receive credit for:	If you have already taken:
MATH 32T: Essential Calculus for Mathematical Biologists	MATH 31A, 31B, 32A, or 32B
MATH 132: Complex Analysis for Applications	PHYSICS 132: Mathematical Methods of Physics
MATH 151A: Applied Numerical Methods	EC ENGR 133A: Applied Numerical Computing
MATH 156: Machine Learning	EC ENGR M146: Introduction to Machine Learning COM SCI M146: Introduction to Machine Learning
MATH 167: Mathematical Game Theory	ECON 106G: Introduction to Game Theory
MATH 170A: Probability Theory or MATH 170E: Introduction to Probability and Statistics 1: Probability	EC ENGR 131A: Probability and Statistics
MATH 170S: Introduction to Probability and Statistics 2: Statistics	STATS 100B: Introduction to Mathematical Statistics
MATH 174E: Mathematics of Finance	ECON 141: Topics in Microeconomics: Mathematical Finance or STATS C183/C283: Statistical Models in Finance
MATH 180: Graph Theory	EC ENGR 134: Graph Theory in Engineering
MATH 182: Algorithms	COM SCI 180: Introduction to Algorithms and Complexity

USING NON-MATH COURSES TO FULFILL MATH MAJOR REQUIREMENTS

Although some departments offer courses of similar topics to MATH courses, these courses are taught with different approaches and through the lens of those departments' disciplines. Students are welcome to take courses of similar content between different departments if there are no credit limitations. However, students can only take one non-MATH alternative for their mathematics major, and students cannot repeat topics to fulfill major requirements.

Examples

- A student can take both EC ENGR M146 and COM SCI 180, but they can only use one of these two non-MATH courses to complete their major requirement.
- A student can take both MATH 167 then ECON 106G for credit, but only one game theory course can be used to complete their major requirement

Credit for non-math courses will not be automatically applied towards the mathematics major requirements. Students must petition with the Mathematics Department to receive credit by sending an email to ugrad@math.ucla.edu.

The Mathematics Department is not endorsing enrollment into non-math courses to fulfill major requirements. If you are interested in taking a course offered by a different department, you may be held to the enrollment restrictions enforced by the department that offers the course.

MATH AND PIC ENROLLMENT

1. What course subjects do the Mathematics Department offer?

The Mathematics Department oversees mathematics (MATH) and programming in computing (COMPTNG) courses.

Programming in Computing courses are also often referred to as "computing" or "PIC" courses.

Any other courses are offered by a different department, even if those courses cover math topics.

Examples

- LIFESCI 30A and 30B: Mathematics for Life Scientists
- EC ENGR M146: Introduction to Machine Learning

Please refer to the UCLA General Catalog to verify the department that oversees a specific course.

catalog.registrar.ucla.edu

2. How big are the MATH and PIC classes?

Most lectures have corresponding discussion sections for students to review the lecture material in a smaller group setting.

MATH	Lower Division	Upper Division
Students per Lecture	210	40
Students per Discussion	35	40

PIC	Lower Division	Upper Division
Students per Lecture	90	N/A
Students per Discussion	30	

3. How does enrollment work for the following quarter?

Every student will be assigned two enrollment appointments: first pass and second pass. A few students may also be assigned a priority pass. Each pass designates when students can enroll for a certain duration of time. Enrollment appointments are assigned based on units completed.

Learn about each enrollment pass: registrar.ucla.edu/registration-classes/enrollment-appointments-and-passes/undergraduate-student-enrollment-passes

See pass assignments based on units: registrar.ucla.edu/registration-classes/enrollment-appointments/enrollment-appointments

4. How do enrollment appointments work in the Mathematics Department?

During each enrollment pass, the Mathematics Department may restrict enrollment to prioritize students of certain majors/minors. Students may be prevented from enrolling into certain courses depending on what program(s) they're declared in.

Example

Upper division math courses are limited to officially declared math majors and minors during Priority Pass and First Pass. Pre-math majors will be allowed to enroll starting Second Pass - Phase 1. Enrollment into most upper division courses is open to all students in Second Pass - Phase 2. Restrictions may still apply to a few specialized courses for niche majors.

For a clearer example of how restrictions may be implemented during each pass, see FALL 2024 Enrollment Period > Fall 2024 Enrollment Restrictions

5. What if a course I planned to take is "Closed" during my enrollment appointment?

The Schedule of Classes sets a lecture or discussion status to "Closed" when the section is full. This status should revert to "Open" when a student drops a section and the enrollment number falls below the maximum set capacity.

If there are other open sections offered, it is best to rearrange your schedule to work around those sections. If you are determined to get into a specific section, you should continuously monitor the enrollment number on Schedule of Classes and add yourself if space becomes available.

The Mathematics Department does not guarantee enrollment into any course. If a course continues to be at full capacity, you may have to take it the next time it is offered. In other words, you won't always be able to get what you want. We cannot accommodate to all requests for an exception to be enrolled ahead of others, so it is always a good idea to have an alternative course plan.

6. How can I get a Permission to Enroll number (PTE)? I really need this class.

The message on Schedule of Classes that recommends students to seek a PTE from the department/instructors is an automated message. Almost all students who take MATH and PIC courses need our classes to complete their degrees. **We cannot accommodate to all requests for an exception to be enrolled ahead of others, which is why we do NOT give PTEs into our courses.** Please refer to the previous question for best practices into a course that is full or "closed."

MATH AND PIC ENROLLMENT

7. How and when can I drop a course?

MATH and PIC courses are considered "non-impacted." Refer to the Registrar's drop deadline chart for deadlines and fees for dropping the course:

UNDERGRADUATE DROP DEADLINES AND FEES
COLLEGE OF LETTERS AND SCIENCE

DROP PERIOD	DROP TYPE	METHOD	APPROVED FEE	TRANSCRIPT NOTATION
Weeks 1-2 All Courses	Drop	MyUCLA	None	No
Weeks 3-4 Non-impacted Courses	Drop	MyUCLA	None	No
Weeks 3-10 Impacted Courses	Late Drop	Petition*	$20.00	Yes
Weeks 5-7 Non-impacted Courses	Late Drop	MyUCLA	None	Yes
Weeks 8-10 Non-impacted Courses	Restricted Drop (maximum 3)	Petition*	$35.00	Yes

UNDERGRADUATE DROP DEADLINES AND FEES
COLLEGE OF LETTERS AND SCIENCE

DROP PERIOD	DROP TYPE	METHOD	APPROVED FEE	TRANSCRIPT NOTATION
After week 10	Retroactive Drop	Petition*	$50.00	Yes

* Petitions are available in Murphy Hall A-316.
Students outside of the College of Letters & Sciences follow different deadlines: registrar.ucla.edu/fees-residence/course-and-study-list-fees/undergraduate-study-list-deadlines-and-fees

Students on financial aid should talk to the Financial Aid Office to see how dropping courses will impacts their financial aid.

financialaid.ucla.edu

International students should visit the Dashew Center before dropping below 12.0 units.

internationalcenter.ucla.edu

8. Are classes online or in-person?

MATH and COMPTNG courses are in-person during the regular academic terms.

We offer a variety of online and in-person courses over the summer. The modality typically finalized by the end of April on the Schedule of Classes.

9. Are lectures recorded?

The department does not require instructors to record lectures. The decision to record lectures is up to each instructor. To find out more information, please contact the instructor to ask them directly.

10. How can I get help with math courses?

The Student Math Center in MS 3974 offers individual open office hours for lower division math courses.

ww3.math.ucla.edu/student-math-center

The Academic Advancement Program (AAP) in Campbell Hall 1232 offers free tutoring for 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.

aap.ucla.edu

Engineering and Mathematical Sciences Library (EMS) in Boelter Hall 8270 offers various academic resources to current UCLA students.

library.ucla.edu/sel

Private, fee-based tutoring is available from graduate students in the Mathematics Department. Please contact tutors directly for individual rates.

ww3.math.ucla.edu/tutoring

More tutoring resources can be viewed on UCLA's website:

caac.ucla.edu/wp-content/uploads/2021/03/Tutoring-Resources-Handout-2020_10-27.pdf

MISCELLANEOUS

1. Who should I go to regarding my General Education (GE) requirements?

Questions regarding university or College requirements should be directed to the student's designated College counseling office:

- College Academic Counseling
- Honors
- Academic Advancement Program (AAP)
- Athletics

registrar.ucla.edu/Academics/Academic-Counseling

2. Where can I learn about courses offered outside the Mathematics Department?

The Mathematics Department only has information on MATH courses and COMPTNG* courses.

For questions regarding non-Math/PIC course information such as syllabi, prerequisites, enrollment restrictions, transferability, etc., students should check with the department that offers the course.

*Also known as Programming in Computing, Computing, and PIC

MATHEMATICS PROGRAMS

1. Can I take a "Preparation for the Major" or "Major" course for Pass/No Pass?

No. All courses for the major, minor, or specialization must be at least 4.0 units and taken for a letter grade.

2. Can I get waived from a math course that's required for my major? I already know the material and I am willing to test out of the course.

Students cannot test out of a course requirement. If you did not receive formal college credit for a course, you will have to take it.

3. What is a typical course load like for math majors?

All math majors should take at least one math class per quarter for the first two years, in addition to one non-math pre-major course. By their junior year, students should be comfortable with two to three major courses per quarter. These are just recommendations. Schedules and course load will vary depending on students' interests and level.

4. If I receive a "C-" or lower in my math class, may I repeat it?

Students may repeat a math course for credit if

- They receive a C- or below AND
- They do not yet have credit for the next course in the sequence (if the course is sequenced)

To understand how courses are sequenced, see "Credit Limitations within Sequences" on Page 5.

Math majors/pre-majors have strict, major-specific, repeat limitations to remain eligible for a math major. See each major sheet for specific details.

5. How many courses can I repeat?

Generally, students are allowed up to 16.0 units of repeats for any No Pass grades or grades of "C-" or below in which the repeat grade will replace the first attempt. Any repeats past 16.0 units will result in the first and repeat attempts **both** counting toward students' GPAs. See the College website for more details.

caac.ucla.edu/policies/grading-repeats

Math majors/pre-majors have stricter, major-specific, repeat limitations to remain eligible for a math major. See each major sheet for specific details.

6. What is the difference between a Mathematics/Economics and an Economics or Business Economics major?

Mathematics/Economics students receive a Bachelor of Science degree and are advised under the Mathematics Department. The ratio of upper division mathematics to economics courses is about 60:40. The program is designed to give students a solid foundation in both mathematics and economics, stressing those areas of mathematics that are most relevant to economics and the parts of economics that emphasize the use of advanced mathematics.

Economics and Business Economics students receive Bachelor of Arts degrees and are advised under the Economics Department. There is no upper division mathematics required for the major. Students in these two majors are only expected to go as far as Math 31B: Single Variable Calculus.

7. What is the difference between a Data Theory and a Statistics & Data Science major?

The Statistics & Data Science major prepares students for the workforce after graduating by teaching students of the methods of data modeling, analysis and engineering.

The Data Theory major is designed to prepare students for graduate programs in data science by teaching students rigorous mathematical and statistical concepts that serve as the foundations of data science. The Data Theory program is more mathematics and proof-heavy than the Statistics & Data Science program.

datatheory.ucla.edu

Curriculum Comparison:

- Statistics & Data Science
- Data Theory

8. Which departmental advisor do I talk to as a Data Theory student?

Students should consult with a math advisor for

- Questions about enrollment into a math course
- Course planning while they are a pre-major
- Declaring from a different major into pre-Data Theory or declaring from Pre-Data Theory into Data Theory

Students should consult with a stats advisor for

- Questions about enrollment into a stats course
- Completing the degree once already declared into Data Theory.

statistics.ucla.edu/index.php/about/contact-us

MATHEMATICS PROGRAMS

9. What's the difference between a Mathematics of Computation, Computer Science, Computer Science and Engineering, and Computer Engineering majors?

Mathematics of Computation is a mathematics major offered by the Mathematics Department and generally housed in the College of Letters & Sciences, whereas the CS, CS&E, and CE are housed by the Henry Samueli School of Engineering and Applied Science. Please see the HSSEAS website on the differences between the latter three majors.

seasoasa.ucla.edu/cs-fequently-asked-questions

Compared to the three HSSEAS majors above, Mathematics of Computation is a mathematics-heavy program that focuses on mathematical concepts that serve as the groundwork for software development. Since this major is part of the College of L&S, students are also required to complete General Education courses that expands students' knowledge about new ideas and themes of human cultures outside of their immediate major curriculum.

Curriculum Comparison:

- Mathematics of Computation + General Education
- Computer Science
- Computer Science & Engineering
- Computer Engineering

10. What's the difference between the Mathematics for Teaching minor and the Mathematics minor?

The Mathematics for Teaching minor requires students to complete a very specific set of 7 courses that introduce students to K-12 pedagogy in mathematics and topics they will be teaching in a K-12 setting, such as alegbra and geometry.

The Mathematics minor is a more general minor in which students have more flexibility to choose what upper division mathematics courses they want to learn

Curriculum Comparison:

- Mathematics for Teaching minor
- Mathematics minor

Also see "Minor in Mathematics" on Page 22 and 23.

11. What other majors or minors are availabile if I want to pursue a different major?

There is one interdepartmental program with the mathematics department that is run by another department:

- **Computational and Systems Biology**
  Life Sciences Division - casb.ucla.edu

There are two minors in the Mathematics Department:

- **Minor in Mathematics**
- **Minor in Mathematics for Teaching**

12. Can I double major or major and minor?

Students can declare more than one program as long as they can finish all courses required of their programs by their Degree Expected Term.

Please see the "Program Declaration Checklist" on Page 11 for requirements to declare a secondary major, minor, or specialization.

Students cannot double up on the following major pairs:

- Data Theory and Statistics & Data Science
- Mathematics/Economics and any major from the Economics Department

Students cannot declare two math majors, two math minors, or a math major with a math minor. The only two math programs that students can declare together are a major and a specialization."

13. Where and when can I petition to change or declare my math program?

See the "Program Declaration Checklist" on Page 11.

14. Who can declare a Specialization in Computing?

All math majors can declare a specialization except for Data Theory and Mathematics of Computation.

See "Specialization in Computing" on Page 24.

15. What courses do I need to take and when? Can you help me plan my coursework to graduate on time?

To make your time with a math advisor efficient and productive, please create a plan on your own first. Then, we will review the plan to make recommendations if needed.

To see what classes you need for the major, see Planning Your Coursework with DARS. Fill out a Degree Plan Contract (DPC) to show how you plan to complete all your GE's and major coursework by your Degree Expected Term. In your DPC, include courses from the CURRENT TERM in which you're enrolled and any remaining terms you have left at UCLA.

Make sure to consider the prerequisites to each course.

- Mathematics Prerequisites
- Statistics Prerequisites
- Economics Prerequisites
- Computer Science Prerequisites
- Mathematics Department Tentative Schedule

16. How can I reach a math advisor?

See "Undergraduate Student Services" on Page 1.

MATHEMATICS MAJORS

UCLA College | Physical Sciences Mathematics

MATHEMATICS Pure Mathematics	Designed for students who are interested in the theory of mathematics. Pure mathematicians often pursue a master and doctorate degree in mathematics in order to prepare for a career in research or university level teaching.
APPLIED MATHEMATICS	Designed for students who are interested in the classical relationships between the physical sciences and engineering. They often seek employment in the industry utilizing their skills to solve engineering and computer related problems.
DATA THEORY	Trains students, through theory and practice, in the mathematical, statistical, and computational principles of data science. Top graduates will be prepared for graduate studies in a field related to data science or an initial technical position in the field with leadership potential. In collaboration with Statistics, it is a capstone major with a data-based project in the senior year.
MATHEMATICS OF COMPUTATION	Designed for individuals who are interested in the mathematical theory and the applications of computing. These students often seek employment in areas similar to the applied mathematicians.
MATHEMATICS/ ECONOMICS	Designed to give students a solid foundation in both mathematics and economics, stressing those areas of mathematics and statistics that are most relevant to economics and the parts of economics that emphasize the use of mathematics and statistics. It is ideal for students who may wish to complete a higher degree in economics.
FINANCIAL ACTUARIAL MATHEMATICS	Designed for students interested in financial mathematics and its applications. Graduates typically go on to MFE/MBA programs, the actuarial field, banking and/or business.
MATHEMATICS FOR TEACHING	Designed for students who have a substantial interest in teaching mathematics at the secondary level. Visit the Curtis Center website for more information about other undergraduate teacher preparation programs such as the Joint Mathematics Education Program and the Subject Matter Preparation Program — curtiscenter.math.ucla.edu.
MATHEMATICS/APPLIED SCIENCE 3 Available Plans	**History of Science** — For students intending to go to professional school, law or business, while pursuing their interest in mathematics. **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. **Individual** — Allows students to combine upper division math with upper division courses from other science areas (i.e., physics, chemistry, physiology, etc.). This major requires departmental approval and is rarely granted because the Department already offers a wide range of majors.

MATHEMATICS MINORS AND SPECIALIZATION

MINOR IN MATHEMATICS	Designed to provide students who are non-math major the opportunity to widen their background and general comprehension of the role of mathematics in various disciplines.
MINOR IN MATHEMATICS FOR TEACHING	Designed for students majoring in fields other than mathematics who plan to teach secondary mathematics after graduation.
SPECIALIZATION IN COMPUTING	A specialization requires a sequence of supplemental courses that enhance work in a specific major. Different from a minor, it provides extensive education in programming and its applications in the field of mathematics. The Department of Mathematics offers a Specialization in Computing, which can be added to all of the math majors with the exception of Data Theory and Mathematics of Computation.

PROGRAM DECLARATION CHECKLIST

Please refer to each specific major page for information on course, letter grade, and GPA requirements. Alternatively, the UCLA General Catalog has more detailed information.

DECLARING PRE-MAJOR

- ☐ I have completed at least one regular quarter (fall, winter, spring) in good academic standing at UCLA with at least 12.0 units.
- ☐ All the courses I've taken thus far for the mathematics major meet the minimum letter grade and GPA requirements.

DECLARING MAJOR

- ☐ I have completed all the starred pre-major courses (marked with * and ** in the major pages) with the minimum required letter grades and pre-major GPA(s).
- ☐ I have completed at least one regular quarter (fall, winter, spring) in good academic standing at UCLA with at least 12.0 units.
- ☐ All the courses I've taken thus far for the mathematics major meet the minimum letter grade and GPA requirements.

DECLARING MATHEMATICS MINOR

- ☐ I have completed at least 12.0 units of mathematics coursework at UCLA.
- ☐ Of the 12.0 units of completed mathematics courses, one of them is upper division.
- ☐ All the courses I've taken thus far for the minor meet the minimum letter grade and GPA requirements.
- ☐ I have completed at least one regular quarter (fall, winter, spring) in good academic standing at UCLA with at least 12.0 units.

DECLARING SPECIALIZATION IN COMPUTING

- ☐ I am declared into a math major (not pre-major) **or** I am declaring a math major at the same time as the specialization.
- ☐ I have completed PIC 10A and 10B or CS 31 and 32.
- ☐ All the courses I've taken thus far for the specialization meet the minimum letter grade and GPA requirements.
- ☐ I have completed at least one regular quarter (fall, winter, spring) in good academic standing at UCLA with at least 12.0 units.

DECLARING DOUBLE MAJOR WITH A MATH MAJOR

- ☐ I have completed ALL the pre-major courses for BOTH majors.
- ☐ I have completed at least one regular quarter (fall, winter, spring) in good academic standing at UCLA with at least 12.0 units.
- ☐ I have completed at least two upper division courses that are exclusive to each major.
  - This means Major A has two courses that are not shared with anything else, and Major B has two courses that are not shared with anything else.
- ☐ All the courses I've taken thus far for the mathematics major meet the minimum letter grade and GPA requirements.

DECLARING MATHEMATICS FOR TEACHING MINOR

- ☐ I have completed Math 115A.
- ☐ All the courses I've taken thus far for the minor meet the minimum letter grade and GPA requirements.
- ☐ I have completed at least one regular quarter (fall, winter, spring) in good academic standing at UCLA with at least 12.0 units.

PROCESS TO DECLARE

If you meet all the requirements on your checklist, please visit our Petitions page for directions on

- Where to send your email and
- What to include in the subject and body of the email

Petitions deviating from our directions may be overlooked. Due to our high volume of emails and petitions, the processing time is up to 3 weeks.

ww3.math.ucla.edu/petitions

MATHEMATICS B.S.

PRE-MAJOR: 10 COURSES

Students can declare the pre-major at any time while in good academic standing.

	Quarter	Grade
MATH 31A **or** 31AL*		
MATH 31B*		
MATH 32A*		
MATH 32B*		
MATH 33A*		
MATH 33B*		

*The mathematics sequenced courses are calculated separately from the other preparation for the major courses and must be completed with a minimum overall 2.5 grade-point average and a grade of "C" or better in each course. Repetition of more than two mathematics sequenced courses, or of any mathematics sequenced course more than once, results in automatic dismissal from the major.

	Quarter	Grade
PIC 10A		
PHYSICS 1A		

Two courses chosen from:

ECON 11		
CHEM 20A		
CHEM 20B		
LIFESCI 7A		
PHYSICS 1B **or** 5B		
PHYSICS 1C **or** 5C		
PHILOS 31		
PHILOS 132		

THE MAJOR: 12 COURSES

Students must declare the major before reaching 160 units (not including AP units).

	Quarter	Grade
MATH 115A+†		
MATH 131A+		
MATH 110A		
MATH 110B		
MATH 120A		
MATH 131B		
MATH 132		

Five upper division mathematics courses chosen from: MATH 106–199, STATS 100A–102C

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

+ Students must pass this course with a "C-" or better. It is strongly recommended that students take MATH 115A as one of their first upper division courses before MATH 131A.

All required courses for the major must be at least 4.0 units and taken for a letter grade, unless the class is a supplement to a larger course (e.g. a required lab).

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APPLIED MATHEMATICS B.S.

PRE-MAJOR: 10 COURSES

Students can declare the pre-major at any time while in good academic standing.

	Quarter	Grade
MATH 31A **or** 31AL*		
MATH 31B*		
MATH 32A*		
MATH 32B*		
MATH 33A*		
MATH 33B*		

*The mathematics sequenced courses are calculated separately from the other preparation for the major courses and must be completed with a minimum overall 2.5 grade-point average and a grade of "C" or better in each course. Repetition of more than two mathematics sequenced courses, or of any mathematics sequenced course more than once, results in automatic dismissal from the major.

	Quarter	Grade
PIC 10A		
PHYSICS 1A		
PHYSICS 1B		

One course chosen from:

CHEM 20A		
CHEM 20B		
PHYSICS 1C		

THE MAJOR: 12 COURSES

Students must declare the major before reaching 160 units (not including AP units).

	Quarter	Grade
MATH 115A+		
MATH 131A+		
MATH 131B **or** 132		
MATH 142		

Four upper division mathematics courses chosen from: MATH 106–199, STATS 100A–102C

1.			
2.			
3.			
4.			

Two 2-quarter sequences chosen from three different categories:

	Quarter	Grade
A. Differential Equations		
MATH 134		
MATH 135		
B. Applied Numerical Methods		
MATH 151A		
MATH 151B		
C. Probability and Statistics		
MATH 170E		
MATH 170S		
or		
STATS 100A		
STATS 100B		
or		
MATH 170A		
MATH 170B		

+ Students must pass this course with a "C-" or better. It is strongly recommended that students take MATH 115A as one of their first upper division courses before MATH 131A.

All required courses for the major must be at least 4.0 units and taken for a letter grade, unless the class is a supplement to a larger course (e.g. a required lab).

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DATA THEORY B.S.

PRE-MAJOR: 11 COURSES

Students can declare the pre-major at any time while in good academic standing.

	Quarter	Grade
MATH 31A **or** 31AL*		
MATH 31B*		
MATH 32A*		
MATH 32B*		
MATH 33A*		
MATH 42*		
MATH 115A*		

	Quarter	Grade
STATS 15*		
STATS 20*		
STATS 21*		
PIC 10A*		

* All preparation courses must be completed with a minimum overall **3.3** grade-point average and a grade of "C" or better in each course. Admitted freshmen must complete pre-major courses by the **end of fall quarter of their third year (7th quarter at UCLA)**. Admitted transfers must complete pre-major courses by the **end of spring quarter (third quarter at UCLA)**. Repetition of more than two courses, or of any course more than once, results in automatic dismissal from the major.

THE MAJOR: 16 COURSES

Students must declare the major before reaching 160 units (not including AP units).

	Quarter	Grade
MATH 131A		
MATH 118		
MATH 156		

	Quarter	Grade
STATS 101A		
STATS 101C		
STATS 102A		
STATS 102B		
STATS 147		
STATS 184		

One 2-quarter sequence of Probability and Statistics

A. Intro to Probability and Statistics

MATH 170E		
MATH 170S		

or

B. Intro to Probability and Mathematical Statistics

STATS 100A		
STATS 100B		

One statistics elective from STATS 100C, 101B, 102C, C151-199:

1. _____ _____ _____

One mathematics elective from MATH 151A, 151B, 164, 168, 171, 174E, 178A, 178B, 178C, 179, 182:

1. _____ _____ _____

Two additional electives from the mathematics and/or statistics electives listed before:

1. MATH 164 _____ _____
2. _____ _____ _____

One capstone course: MATH M148 **or** STATS M148 (to be taken in the final year):

1. _____ _____ _____

All required courses for the major must be at least 4.0 units and taken for a letter grade, unless the class is a supplement to a larger course (e.g. a required lab).

Data Theory students cannot double major with Statistics & Data Science or add a Specialization in Computing.

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MATHEMATICS OF COMPUTATION B.S.

PRE-MAJOR: 13 COURSES

Students can declare the pre-major at any time while in good academic standing.

	Quarter	Grade
MATH 31A or 31AL*		
MATH 31B*		
MATH 32A*		
MATH 32B*		
MATH 33A*		
MATH 33B*		

	Quarter	Grade
MATH 61		
PHYSICS 1A		
PHYSICS 1B		
PIC 10A or CS 31 [1]		
PIC 10B or CS 32 [1]		
PIC 10C, CS 33, or CS 35L [1]		

*The mathematics sequenced courses are calculated separately from the other preparation for the major courses and must be completed with a minimum overall 2.5 grade-point average and a grade of "C" or better in each course. Repetition of more than two mathematics sequenced courses, or of any mathematics sequenced course more than once, results in automatic dismissal from the major.

One course chosen from:

CHEM 20A		
CHEM 20B		
PHYSICS 1C		

[1] PIC 10ABC and CS 31 - 33 are both course sequences that cover C++. Completing CS 31 - 33 is recommended because this sequence covers more material that will prepare Mathematics of Computation students for upper division CS courses. Students may be limiting their upper division CS choices by taking PIC 10ABC. Visit the Registrar's website on course descriptions to see the list of prerequisites for each upper division CS course. For more information and help with enrollment into CS courses, contact School of Engineering's Office of Academic and Student Affairs (OASA).

THE MAJOR: 14 COURSES

Students must declare the major before reaching 160 units (not including AP units).

	Quarter	Grade
MATH 115A[+]		
MATH 131A[+]		
MATH 131B or 132		
MATH 151A		
MATH 151B		

Six upper division mathematics courses chosen from MATH 106–199, STATS 100A–102C:

	Quarter	Grade
1.		
2.		
3.		
4.		
5.		
6.		

Three upper division computer science courses:

	Quarter	Grade
1.		
2.		
3.		

[+] Students must pass this course with a "C-" or better. It is strongly recommended that students take MATH 115A as one of their first upper division courses before MATH 131A.

All required courses for the major must be at least 4.0 units and taken for a letter grade, unless the class is a supplement to a larger course (e.g. a required lab).

Mathematics of Computation students cannot add a Specialization in Computing.

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MATHEMATICS/ECONOMICS B.S.

PRE-MAJOR: 11 COURSES

Students can declare the pre-major at any time while in good academic standing.

	Quarter	Grade		Quarter	Grade
MATH 31A **or** 31AL*			ECON 1**		
MATH 31B*			ECON 2**		
MATH 32A*			ECON 11**		
MATH 32B*					
MATH 33A*					
MATH 33B*					
MATH 61*					
PIC 10A*					

* Mathematics sequenced courses + Math 61 + PIC 10A, ** Economics preparation courses: Each are calculated separately and must be completed with a minimum overall **2.7** grade-point average and a grade of "C" or better in each course. Repetition of more than two mathematics sequenced courses, or of any mathematics sequenced course more than once, results in automatic dismissal from the major. Repetition of more than one economics preparation course, or of any economics preparation course more than once, results in automatic dismissal from the major.

THE MAJOR: 14 COURSES

Students must declare the major before reaching 160 units (not including AP units).

	Quarter	Grade		Quarter	Grade
MATH 115A+			ECON 101+		
MATH 131A+			ECON 102+		
MATH 131B			ECON 103		
MATH 164			ECON 103L		
MATH 174E					

One 2-term probability sequence[1]:

A. Introduction to Probability and Statistics

MATH 170E		
MATH 170S		

or

B. Probability Theory

MATH 170A		
MATH 170B		

One upper division mathematics course chosen from MATH 134, MATH 135, MATH 136, MATH 171:

1. _____ _____ _____

Two additional upper division economics courses chosen from ECON 104–199:

1. _____ _____ _____
2. _____ _____ _____

+ Students must pass this course with a "C-" or better. It is strongly recommended that students take MATH 115A as one of their first upper division courses before MATH 131A.

[1] Students cannot take Stats 100A or 100B.

All required courses for the major must be at least 4.0 units and taken for a letter grade, unless the class is a supplement to a larger course (e.g. a required lab).

Mathematics/Economics students cannot double major with other majors from the Economics Department.

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FINANCIAL ACTUARIAL MATHEMATICS B.S.

PRE-MAJOR: 13 COURSES

Students can declare the pre-major at any time while in good academic standing.

	Quarter	Grade		Quarter	Grade
MATH 31A **or** 31AL*			ECON 1**		
MATH 31B*			ECON 2**		
MATH 32A*			ECON 11**		
MATH 32B*			MGMT 1A**		
MATH 33A*					
MATH 33B*					
PIC 10A*					
PIC 10B **or** PIC 16A*					

One course from the following MATH 11N, 42, 61, or 70*:

1. _____ _____ _____

*Mathematics sequenced courses, ** Economics preparation courses: Each are calculated separately and must be completed with a minimum overall 2.5 grade-point average and a grade of "C" or better in each course. Repetition of more than two mathematics sequenced courses, or of any mathematics sequenced course more than once, results in automatic dismissal from the major. Repetition of more than one economics preparation course, or of any economics preparation course more than once, results in automatic dismissal from the major.

THE MAJOR: 12 COURSES

Students must declare the major before reaching 160 units (not including AP units).

	Quarter	Grade		Quarter	Grade
MATH 115A[+]			MATH 178A		
MATH 131A[+]			MATH 178B		
MATH 177			MATH 178C		
MATH 174E			MATH 179		
MATH 170E[1]					
MATH 170S[1]					

Two upper division economics, mathematics, or statistics course MATH 106-199, ECON 101–199, STATS 100C[+]:

1. _____ _____ _____
2. _____ _____ _____

[+] Students must pass this course with a "C-" or better. It is strongly recommended that students take MATH 115A as one of their first upper division courses before MATH 131A.

[1] Students cannot take Stats 100A or 100B.

All required courses for the major must be at least 4.0 units and taken for a letter grade, unless the class is a supplement to a larger course (e.g. a required lab).

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MATHEMATICS FOR TEACHING B.S.

PRE-MAJOR: 11 COURSES

Students can declare the pre-major at any time while in good academic standing.

	Quarter	Grade
MATH 31A **or** 31AL*		
MATH 31B*		
MATH 32A*		
MATH 32B*		
MATH 33A*		
MATH 33B*		

*The mathematics sequenced courses are calculated separately from the other preparation for the major courses and must be completed with a minimum overall 2.5 grade-point average and a grade of "C" or better in each course. Repetition of more than two mathematics sequenced courses, or of any mathematics sequenced course more than once, results in automatic dismissal from the major.

	Quarter	Grade
MATH 61		
PHYSICS 1A **or** 5A		
PIC 10A		

Two courses from:

CHEM 20A		
CHEM 20B		
PHYSICS 1B **or** 5B		
PHYSICS 1C **or** 5C		
PIC 10B–97		

THE MAJOR: 13 COURSES

Students must declare the major before reaching 160 units (not including AP units).

	Quarter	Grade
MATH 115A+		
MATH 131A+		
MATH 105A		
MATH 105B		
MATH 105C		
MATH 106		
MATH 117 **or** 110A		
MATH 123 **or** 120A		
MATH 170E **or** MATH 170A **or** STATS 100A		
MATH 170S **or** STATS 100B		

Mathematics Analysis
One course chosen from MATH 131B–136

	Quarter	Grade
1.		

Applied Mathematics
One course chosen from MATH 142–168

	Quarter	Grade
1.		

Upper Division Mathematics
One course chosen from MATH 110B–191 or STATS 100C

	Quarter	Grade
1.		

curtiscenter.math.ucla.edu/students/undergraduates

+ Students must pass this course with a "C-" or better. It is strongly recommended that students take MATH 115A as one of their first upper division courses before MATH 131A.

All required courses for the major must be at least 4.0 units and taken for a letter grade, unless the class is a supplement to a larger course (e.g. a required lab).

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MATHEMATICS/APPLIED SCIENCE B.S.
MEDICAL AND LIFE SCIENCE PLAN

PRE-MAJOR: 18 COURSES

Students can declare the pre-major at any time while in good academic standing.

	Quarter	Grade
MATH 31A **or** 31AL*		
MATH 31B*		
MATH 32A*		
MATH 32B*		
MATH 33A*		
MATH 33B*		

*The mathematics sequenced courses are calculated separately from the other preparation for the major courses and must be completed with a minimum overall 2.5 grade-point average and a grade of "C" or better in each course. Repetition of more than two mathematics sequenced courses, or of any mathematics sequenced course more than once, results in automatic dismissal from the major.

	Quarter	Grade
PIC 10A		
PHYSICS 1A		
PHYSICS 1B		
CHEM 20A		
CHEM 20B		
CHEM 20L		
CHEM 30A		
CHEM 30AL		
LIFESCI 7A		
LIFESCI 7B		
LIFESCI 7C		
LIFESCI 23L		

THE MAJOR: 13 COURSES

Students must declare the major before reaching 160 units (not including AP units).

	Quarter	Grade
MATH 115A+		
MATH 131A+		
MATH 134		
MATH 151A		
MATH 170E **or** 170A		
MATH 170S **or** 170B		

One upper division mathematics course chosen from MATH 110A–199, STATS 100B–101C:

	Quarter	Grade
1.		

+ Students must pass this course with a "C-" or better. It is strongly recommended that students take MATH 115A as one of their first upper division courses before MATH 131A.

[1] Students should work closely with math advisors to make plans for non-math courses that have enrollment restrictions at least **one quarter in advance**. Students can also petition with the Mathematics Department for other courses not on this list to fulfill major requirements.

All required courses for the major must be at least 4.0 units and taken for a letter grade, unless the class is a supplement to a larger course (e.g. a required lab).

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	Quarter	Grade
Three upper division science courses from a sequence[1]:		
PHYSCI M180A		
PHYSCI M180B		
PHYSCI M180C		

Same as MCDB M175A-M175B-M175C and
NEURSCI M101A-M101B-M101C and
PSYCH M117A-M117B-M117C

Three upper division courses from:

	Quarter	Grade
BIOMATH 160		
BIOSTAT 100A		
CHEM CM160A		
COM SCI CM186		
EEB C119A		
EEB 133		
EEB C135		
LIFESCI 107		
PHYSCI 100		
PHYSCI 135		

MATHEMATICS/APPLIED SCIENCE B.S.
HISTORY OF SCIENCE PLAN

PRE-MAJOR: 10 COURSES

Students can declare the pre-major at any time while in good academic standing.

	Quarter	Grade
MATH 31A **or** 31AL*		
MATH 31B*		
MATH 32A*		
MATH 32B*		
MATH 33A*		
MATH 33B*		

*The mathematics sequenced courses are calculated separately from the other preparation for the major courses and must be completed with a minimum overall 2.5 grade-point average and a grade of "C" or better in each course. Repetition of more than two mathematics sequenced courses, or of any mathematics sequenced course more than once, results in automatic dismissal from the major.

	Quarter	Grade
PIC 10A		

Three courses from:

HISTORY 2B		
HISTORY 2C		
HISTORY 3A		
HISTORY 3B		
HISTORY 3C		
HISTORY 3D		

THE MAJOR: 14 COURSES

Students must declare the major before reaching 160 units (not including AP units).

	Quarter	Grade
MATH 115A+		
MATH 131A+		
MATH 106		
MATH 134		
MATH 170E		

Three upper division mathematics courses chosen from:

		Quarter	Grade
1.			
2.			
3.			

Six upper division courses from history, philosophy, or physical science from the following[1]:

HISTORY 179A		
HISTORY 179B		
HISTORY 180A		
HISTORY M180B		
HISTORY 180C		
Honors Collegium[2]		

	Quarter	Grade
PHILOS 124		
NEURBIO M169		

+ Students must pass this course with a "C-" or better. It is strongly recommended that students take MATH 115A as one of their first upper division courses before MATH 131A.

[1] Students can petition with the Mathematics Department for other courses not on this list to fulfill the major requirements.

[2] Maximum one Honors Collegium course. Must cover topics related to history of science or medicine.

All required courses for the major must be at least 4.0 units and taken for a letter grade, unless the class is a supplement to a larger course (e.g. a required lab).

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MATHEMATICS/APPLIED SCIENCE B.S.
INDIVIDUAL PLAN

PRE-MAJOR: 7 COURSES

Students can declare the pre-major at any time while in good academic standing.

	Quarter	Grade
MATH 31A **or** 31AL*		
MATH 31B*		
MATH 32A*		
MATH 32B*		
MATH 33A*		
MATH 33B*		
PIC 10A		

*The mathematics sequenced courses are calculated separately from the other preparation for the major courses and must be completed with a minimum overall 2.5 grade-point average and a grade of "C" or better in each course. Repetition of more than two mathematics sequenced courses, or of any mathematics sequenced course more than once, results in automatic dismissal from the major.

THE MAJOR: 14 COURSES

Students must declare the major before reaching 160 units (not including AP units).

Seven upper division mathematics courses chosen from: MATH 106–199:

		Quarter	Grade
1.	MATH 115A+		
2.	MATH 131A+		
3.			
4.			
5.			

One 2-quarter mathematics sequence:

6.			
7.			

Seven upper division courses chosen from 1-2 related fields:

1.			
2.			
3.			
4.			
5.			
6.			
7.			

+ Students must pass this course with a "C-" or better. It is strongly recommended that students take MATH 115A as one of their first upper division courses before MATH 131A.

All required courses for the major must be at least 4.0 units and taken for a letter grade, unless the class is a supplement to a larger course (e.g. a required lab).

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I understand that if I wish to make any changes to my Individual plan, I must first obtain written approval from the Student Services Office in MS 6356.

Student's Signature _____ Date _____

Undergraduate Vice-Chair's Signature _____ Date _____

MINOR IN MATHEMATICS

The Mathematics minor provides students the opportunity to deepen their understanding of the role of mathematics in various disciplines.

To declare the minor, students must complete 12.0 units of mathematics coursework at UCLA. At least one of these courses taken must be upper division.

REQUIRED FOR THE MINOR: 8 COURSES

	Quarter	Grade
MATH 32A*		
MATH 33A*		
MATH 33B*		

* All lower division courses must be complete with grades of "C" or better.

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

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

Upper division courses must have an overall grade-point average of 2.0 or better.

A minimum of 20.0 units must be applied exclusively toward the minor and cannot be shared with any other major or minor.

All required courses for the minor must be at least 4.0 units and taken for a letter grade unless the course is a supplement to a larger course (e.g. a required lab).

Although MATH 31A, 31B, 32B are not required for the minor, some upper division mathematics courses may have these lower division courses as prerequisites.

This minor is not open to students declared in a mathematics major.

catalog.registrar.ucla.edu

MINOR IN MATHEMATICS FOR TEACHING

The Mathematics for Teaching minor is designed for students majoring in fields other than mathematics who plan to teach secondary mathematics after graduation. For non-majors joining the Mathematics Department and School of Education's Joint Mathematics Education Program (JMEP), the minor provides recognition for completion of prerequisite coursework for the program. The minor provides additional upper division course work in mathematics relevant to the secondary school curriculum: algebra, geometry, and analysis. This coursework also prepares students for content on the California Subject Examination for Teachers, which is required to prove competence in the subject matter. In addition, the minor provides the coursework on secondary mathematics from an advanced standpoint which is recommended by the Conference Board of Mathematical Sciences.

To enter the minor, students must have completed Mathematics 115A with a grade of "C" or better. If Mathematics 115A was not completed at UCLA, students must show proof that they completed an equivalent course with a grade of "C" or better.

A minimum of 20.0 units applied toward the Mathematics for Teaching minor requirement must be in addition to units applied toward major or other minor requirements.

REQUIRED FOR THE MINOR: 7 COURSES

	Quarter	Grade
MATH 115A[+]		
MATH 117 **or** MATH 110A		
MATH 123 **or** MATH 120A		
MATH 131A		
MATH 105A		
MATH 105B		
MATH 105C		

[+] Students are highly recommended to take MATH 115A as one of their first upper division courses before MATH 131A.

All upper division mathematics courses must be completed with a minimum 2.0 GPA, with a grade of "C-" or better in each course.

All required courses for the minor must be at least 4.0 units and taken for a letter grade, unless the class is a supplement to a larger course (e.g. a required lab).

Although MATH 31A, 31B, 32A, 32B, 33A, and 33B are not required for the minor, all upper division mathematics course prerequisites are enforced for all students.

This minor is not open to students declared in a mathematics major.

catalog.registrar.ucla.edu

SPECIALIZATION IN COMPUTING

The Specialization in Computing provides an extensive education in elementary computer science and an introduction to its applications in mathematics. This not a major, but a supplement to the following majors:

- Mathematics
- Applied Mathematics
- Financial Actuarial Mathematics
- Mathematics/Applied Science
- Mathematics for Teaching
- Mathematics/Economics

Students who complete the specialization will receive a notation on their diploma.

Students can petition to declare the specialization after completing PIC 10A and 10B.

REQUIRED FOR THE SPECIALIZATION: 7 COURSES

	Quarter	Grade
PIC 10A[1]		
PIC 10B[1]		

Two PIC courses chosen from:

PIC 10C[1]		
PIC 15		
PIC 16A		
PIC 16B		
PIC 20A		
PIC 20B		
PIC 30		
PIC 40A		
PIC 60		

	Quarter	Grade
One mathematics course chosen from MATH 61, 180*, 182* or 184:		
1.		

Two upper division mathematics courses chosen from MATH 149–159, 180*, 182*:

1.		
2.		

* Singular course can only be used in one category, not two.

[1] Acceptable substitutions:

- CS 31 for PIC 10A
- CS 32 for PIC 10B
- CS 33 or 35L for PIC 10C

All PIC and Math courses applied to the specialization must be

- Taught by the Mathematics Department, only
  E.g., COM SCI or EC ENGR courses are not accepted.
- Taken for a letter grade of "C-" or better
- Worth at least 4.0 units
- Completed with a minimum 2.0 GPA , cumulatively

catalog.registrar.ucla.edu

SUGGESTED ACADEMIC SCHEDULE

MINIMUM REQUIREMENTS

- Pass the calculus sequenced courses with a letter grade of "C" or better in each course and with a minimum overall 2.5 grade point average. Repetition of more than two mathematics sequenced courses, or of any mathematics sequenced course more than once, results in automatic dismissal from the major.
- The Mathematics/Economics major requires a minimum overall **2.7** grade point average.
  The Data Theory major requires a minimum overall **3.3** grade point average.
- Pass MATH 115A and 131A with a grade of "C-" or better in each course.

Students must declare a math major before reaching 160.0 units (minus AP units awarded). Pre-major requirements will vary depending on the major.

FIRST YEAR	MATH 31A MATH 31B MATH 32A	**ALL MAJORS** Start the two-year calculus sequence with MATH 31A, MATH 31B, or MATH 32A according to initial placement. Start with one MATH course, then escalate to two MATH courses over time. Begin taking other required pre-major courses.
SECOND YEAR	MATH 32B MATH 33A MATH 33B (MATH 11's)	**ALL MAJORS** Finish the two-year calculus sequence. Take MATH 115A if MATH 33A is completed. Recommended: MATH 11N, 61, or 95 for more practice in abstract math.
THIRD YEAR	MATH 115A MATH 131A + Other Upper Division Major Requirements	**ALL MAJORS** Take MATH 115A, if not taken at the end of 2nd Year. Take MATH 131A. It is strongly recommended to take this course after taking MATH 115A. For everything else, let your interests guide you. You can take the course as long as you meet the prerequisites. **MATHEMATICS** MATH 110A, MATH 110B, MATH 120A, MATH 131B, MATH 132 **APPLIED MATHEMATICS** MATH 132 or MATH 131B, MATH 142, at least one of the required two-quarter sequences and/or math electives **DATA THEORY** MATH 118, [MATH 170E and 170S] or [STATS 100A and 100B], STATS 101A, STATS 101C, STATS 102A, STATS 102B **FINANCIAL-ACTUARIAL MATHEMATICS** MATH 170E, MATH 170S, MATH 177, MATH 178A, MATH 178B **MATHEMATICS OF COMPUTATION** [MATH 131B or MATH 132], MATH 151A, MATH 151B, MATH and/or CS electives **MATHEMATICS/ECONOMICS** MATH 131B, MATH 170E, MATH 170S, ECON 101, ECON 102, ECON 103 + ECON 103L **MATHEMATICS FOR TEACHING** [MATH 117 or MATH 110A], [MATH 123 or MATH 120A], [MATH 170E or STATS 100A or MATH 170A], math electives
FOURTH YEAR	Remaining Upper Division Major Requirements	**ALL MAJORS** Complete the major requirements.

ugeducation.ucla.edu/degreepath/majors
ucla.mymajors.com/quiz/?

DEPARTMENTAL HONORS & SCHOLAR PROGRAMS

The Departmental Honors and Scholar Programs are two of our most rigorous programs, 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 (B.S.) and Masters (M.A.) degree in mathematics.

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

ADMISSION TO THE HONORS PROGRAM

To be considered for admission to the Departmental Honors Program for any math major, a student must:

- Be officially enrolled in his/her respective math 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 3.6 GPA in the "Preparation for the Major"

In addition to the requirements listed above, students must complete specific courses within the major. Please refer to our website at for more information and consult with the undergraduate math advisor.

ww3.math.ucla.edu/majors-minors-specializations

ELIGIBILITY AND TIMELINE FOR THE SCHOLAR PROGRAM

Admission to the Departmental Scholar Program is by application only. Students typically apply immediately after passing the Basic Exam, no later than the end of their junior year. In addition, candidates must fulfill all university level requirements:

- Cumulative UC GPA of 3.5 or higher
- Undergraduate major GPA of 3.5 or higher
- Completion of 24 courses (96.0 *undergraduate* quarter units - AP units, or similar, do not apply)
- Completion of preparation for the major
- Satisfy Writing II requirement with a grade of "C" or better

A successful applicant will have passed the Basic Exam, have a very high GPA in math courses, and have letters of recommendation from at least two (2) ladder faculty that strongly support the applicant. Applications are reviewed and decided by the Undergraduate and Graduate program faculty, in consultation with other faculty.

To apply, students must:

- Be declared in a mathematics major
- Pass the Basic Exam no later than the beginning of spring quarter of their third year

To remain in the program, students must:

- Remain a UCLA mathematics student in good academic standing
- Maintain at least a 3.5 GPA in mathematics courses in each individual quarter

The following timeline is recommended:

FIRST YEAR
Complete or have credit from another institution, all lower-division calculus-based courses (MATH 31A, 31B, 32A, 32B, 33A, 33B). If possible, take MATH 115AH in spring. Complete Writing II requirement.

SECOND YEAR
Complete pre-major courses, take MATH 115AH (Honors Linear Algebra), 115B (Linear Algebra), 131AH (Honors Analysis) and 131BH (Honors Analysis). Begin preparation for Basic Exam (offered in September and March) using online copies of past exams.

THIRD YEAR
Pass the Basic Qualifying Exam, preferably by the start of fall quarter. Apply to the Scholar Program immediately after passing the Basic. Complete remaining undergraduate math major courses. During the quarter of admission to the Scholar Program, it is possible to begin graduate coursework which counts toward the Master's degree. Only graduate courses taken after acceptance into the program can count towards the M.A.

FOURTH YEAR
Complete remaining graduate level courses for the M.A. The M.A. requirements include 11 courses, of which eight (8) must be graduate math courses, in addition to the B.S. requirements. Three courses can be upper division math courses that must be pre-approved by the Mathematics Department.

ww3.math.ucla.edu/majors-minors-specializations

GRADUATE SCHOOL OPPORTUNITIES

Graduate school is an opportunity to examine a field of your choice with more specificity and direction. It gives you the tools you need to succeed in the industry of your choice. Preparation for grad school can begin as early as your first year of college.

Graduate school constitutes an advanced program of study focused on a particular academic discipline or profession. Traditionally, graduate school has been "academic" (centered on generating original research in a particular discipline), but it may be "professional" (centered on developing skills and knowledge for a specific profession), or a combination of both.

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, a typical graduate admissions committee will look more favorably upon an "A-" earned in a honors sequence than a "A", or even "A+", earned in the regular sequence.

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.

Most universities will require the following materials with their applications:

- Three letters of recommendation
- GRE general and mathematics subject exams
- Personal statement

RECOMMENDED COURSES TO PREPARE FOR GRADUATE SCHOOL

For Pure Mathematics

- MATH 115AH + 115B
- MATH 131AB (Honors) + 131C
- MATH 110AB (Honors) + 110C
- MATH 120A, 121
- MATH 132H
- MATH 133, 134, 135 and 136

For Applied Mathematics

- MATH 115AH + 115B
- MATH 131AB (Honors) + 131C
- MATH 110AB (Honors) + 110C
- MATH 132H
- MATH 133, 134, 135 and 136
- MATH 151AB (Honors), 155, 156
- MATH 170AB, 171

Do research on the graduate or professional schools you are interested in before meeting with an undergraduate math advisors.

Visit the Career Center for information about applying to medical or professional schools.

career.ucla.edu

TIMELINE

One of the initial steps in applying to a graduate or professional school is to research the application deadlines so that you can develop a timeline of when to submit test scores, letters of recommendation, personal essays, etc. Below is a general timeline to help you in planning your application process.

Junior Year

- Begin researching available programs
  - Review grad school guides/directories
  - Request promotional materials
  - Visit schools' websites
  - Talk to faculty/alumni/current students in the program
- Start exploring financial aid resources
- Sign up for required standardized test and take a practice test
- Identify potential letter writers
- Order an unofficial transcript and check for and correct any discrepancies
- Take the required standardized test

Senior Year, Fall

- Write the first draft of your statement of purpose
- Request your letters of recommendation from faculty
- Order official transcripts
- Write final draft of statement of purpose
- Complete and submit your applications
- Apply for aid available through program, assistantships, fellowships, scholarships, etc.

Senior Year, Spring

- Complete and submit financial aid applications
- Visit prospective campuses if possible and talk to faculty/students to help you make your final decision
- Follow-up with schools to make sure your file is complete
- After receiving acceptance from the school of your choice, send in the required deposit, and contact other schools to decline acceptances
- Write thank you notes to people who helped you

Find More Information Online

- career.ucla.edu
- ets.org/gre
- studentaid.gov
- gradsource.com
- gradschools.com
- kaptest.com
- petersons.com
- princetonreview.com
- usnews.com/best-graduate-schools

RESEARCH OPPORTUNITIES AT UCLA

DIRECTED READING PROGRAM

The Directed Reading Program (DRP) pairs undergraduate students with graduate students for quarter-long independent study projects in mathematics. Projects culminate in a brief presentation given by the undergraduates in a DRP colloquium. Applicants are strongly recommended to have some familiarity with reading and writing mathematical proofs (e.g. MATH 115A, 131A).

math.ucla.edu/~drp

IPAM RESEARCH IN INDUSTRIAL PROJECTS FOR STUDENTS (RIPS)

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 (NSF). 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.

ipam.ucla.edu/programs/student-research-programs

NSF RESEARCH EDUCATION FOR UNDERGRADUATES (REU) PROGRAM

The Applied 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 for their work.

math.ucla.edu/~bertozzi/research

UNDERGRADUATE RESEARCH PORTAL

You can search for research opportunities in all disciplines through the Research Portal in MyUCLA. When you log in, click on “Academics” and then “Undergraduate Research Portal”.

my.ucla.edu

UNDERGRADUATE RESEARCH CENTER (URC)

The URC - Sciences serves students and faculty in all areas of life and physical sciences, engineering and mathematics. The primary mission is to promote, develop and celebrate undergraduate student research with the overall goal of enhancing undergraduate education and preparing students, including those from disadvantaged backgrounds, for academic and research careers. Research takes different forms in different disciplines. However, in all disciplines, research involves creative activities and meaningful research to produce results that are worthy of communication to others. Undergraduate research involves the close collaboration between a student and a faculty mentor, as well as other members of their research group.

Some of the programs that the URC runs through the school year and summer include, but are not limited to:

- Amgen Scholars Summer Program
- Beckman Scholars Program
- Biomedical Sciences Enrichment Program (BISEP)
- CARE Fellows & Scholars Program
- CARE Science, Engineering & Math Summer Research Program
- Clare Boothe Luce Scholars Program
- Sustainable LA Grand Challenge Undergraduate Research Scholars Program
- i²URP (formerly HHURP)
- Maximizing Access to Research Careers (MARC) Program
- Student Research Program (SRP)
- Transfer Research Entry Program
- UC Leadership Excellence through Advanced Degrees (UC LEADS)
- Undergraduate Research Fellows Program (URFP)
- Undergraduate Research Scholars Program (URSP)
- URC Sciences Summer Program

ugresearchsci.ucla.edu

RESEARCH OPPORTUNITIES OFF CAMPUS

While UCLA has many opportunities for undergraduate research, we also highly encourage students to take advantage of research opportunities from other institutions. Below are some examples of research opportunities outside of UCLA.

NATIONAL SCIENCE FOUNDATION (NSF) REU PROGRAMS

NSF funds research and education in most fields of science and engineering. It does this through grants, and cooperative agreements to more than 2,000 colleges, universities, K-12 school systems, businesses, informal science organizations and other research organizations throughout the United States. The Foundation accounts for about one-fourth of federal support to academic institutions for basic research. The agency operates no laboratories itself but does support National Research Centers. The Foundation also supports cooperative research between universities and industry, US participation in international scientific and engineering efforts, and educational activities at every academic level.

nsf.gov/crssprgm/reu

SCIENCE UNDERGRADUATE LABORATORY INTERNSHIPS (SULI)

The SULI program encourages undergraduate students to pursue science, technology, engineering, and mathematics (STEM) careers by providing research experiences at the Department of Energy (DOE) laboratories. Selected students participate as interns appointed at one of 17 participating DOE facilities/laboratories. They perform research, under the guidance of laboratory staff scientists or engineers, on projects supporting the DOE mission. The SULI program is sponsored and managed by the DOE Office of Science's and Office of Workforce Development for Teachers and Scientists (WDTS) in collaboration with the DOE facilities/laboratories.

science.osti.gov/wdts/suli

DIMACS REU: RESEARCH EXPERIENCE FOR UNDERGRADUATES AT RUTGERS UNIVERSITY

The Center for Discrete Mathematics & Theoretical Computer Science (DIMACS) was founded as one of 24 Science and Technology Centers funded by the NSF. It is located at Rutgers University, and is a joint project of Rutgers, Princeton, AT&T Laboratories, Applied Communication Sciences, NEC Laboratories America, and Nokia Bell Labs. Applicants should be undergraduates with a major in computer science, mathematics, or a closely related STEM field. They should be current juniors (graduating in the fall or spring immediately following the program), although sophomores with exceptionally strong backgrounds will be considered. Freshmen who have completed advanced course work in CS or math may apply, but they are very rarely accepted.

reu.dimacs.rutgers.edu

MATHPROGRAMS.ORG

The MathPrograms service hosts a database of undergraduate summer research programs, small travel grant programs, and various other opportunities in mathematics at institutions across the nation.

mathprograms.org/db

SUMMER RESEARCH PROGRAMS OUTSIDE UCLA

Summer is a great time to try research. There are hundreds of summer programs across the US. The Undergraduate Research Center maintains a list of clearinghouses for summer programs.

sciences.ugresearch.ucla.edu/

sciences.ugresearch.ucla.edu/research-programs-outside-of-ucla/

sciences.ugresearch.ucla.edu/resources/research-programs-by-our-campus-partners/

CAREER OPPORTUNITIES

Math can be found in almost every sector of the world of work. Students majoring in math should consider if they want to use math skills directly or indirectly in the workplace. This may determine the types of work experiences and further education necessary to prepare for an area of interest.

People with a math background may work in jobs with titles such as: analyst, research associate, technical consultant, computer scientist, or systems engineer.

Math majors develop many transferable skills, including critical thinking, problem diagnosis and solving, computer skills, and quantitative skills. Other important skills to develop include good reasoning, persistence, and written and verbal communication.

career.ucla.edu

The UCLA Career Center offers services and resources to help UCLA students, UC graduates and employers reach their goals. As a UCLA student, from the first day you arrive, the Career Center can introduce you to an array of career possibilities and internships that can help you explore the link between your major and career choices.

Handshake is a platform that the Career Center provides to connect students with internships, jobs and career opportunities. Handshake utilizes a user-friendly interface to help students find skill-specific jobs and internships, schedule appointments with undergraduate career educators or graduate career advisors, register for professional development events, career fairs and employer events.

career.ucla.edu/handshake

STUDENT ORGANIZATIONS

UCLA BRUIN ACTUARIAL SOCIETY (BAS)

The UCLA Bruin Actuarial Society is designated 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 and jobs in the field. 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, workshops, and scholarships.

math.ucla.edu/~actuary
bruinactuaries@gmail.com

UNDERGRADUATE MATHEMATICS STUDENTS ASSOCIATION (UMSA)

The UCLA Undergraduate Mathematics Students Association is an officially recognized student group for all 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

math.ucla.edu/~umsa
umsaatucla@gmail.com

UNDERGRADUATE MATH COUNCIL (UMC)

The Undergraduate Math Council is a council made up of undergraduate students, directly affiliated with the UCLA Math Department. Mathematics, and STEM at large, often carries an air of exclusivity, particularly for students from underrepresented communities. The council aims to address these issues by

1. fostering more effective and streamlined communication between students and the Math Department and
2. promoting an inclusive, equitable, and diverse environment for UCLA Math students

For more details on the workings of the council, please refer to our proposal here: tinyurl.com/mathcouncilproposal

mathcouncil@ucla.edu

TEACHING PREPARATION PROGRAMS

Do you love mathematics? Do you care about helping others do math?

You can leverage these interests into a rewarding, well paid career in K-12 mathematics education. Mathematics and STEM majors are in high demand in K-12 education. The work is intellectually challenging, personally rewarding, and salaries range from $56k to $150k for 10 months' work.

More UCLA graduates go on to earn a CA Teaching Credential from almost any other university in CA. A significant number of our Math for LA graduates go on to become teacher-leaders, increasing local community access to high quality K-12 mathematics.

We encourage you to participate in our programs! We offer outstanding preparation for a career in K-12 mathematics education, a strong foundation for future leadership in the field, a cohort of colleagues to support you in the classroom, and financial support toward your goals.

For general questions about our programs, contact an undergraduate math advisor - ugrad@math.ucla.edu.

For additional questions or general inquiries about a career in K-12 mathematics education, contact the Curtis Center - curtiscenter@math.ucla.edu.

PEDAGOGICAL CONTENT COURSEWORK

Math for LA offers six courses for undergraduates interested in careers in K-12 mathematics education. In the courses, university and K-12 mathematics instructors will help you develop the mathematics content and pedagogical content knowledge necessary to be a high-quality mathematics teacher. The courses also include clinical practice, credential preparation and professional networking opportunities. Students may enroll in anywhere from one to all six courses, and those who complete all six are thoroughly prepared for admission to a CA credential program.

For more information about these courses, see the Undergraduate pages on The Curtis Center website.

curtiscenter.math.ucla.edu

Field work experiences for Math 73XP, Math 74XP, and Math 75XP are offered in collaboration with CaTeach. To apply for a PTE number for these courses, email cateach@chem.ucla.edu.

cateach.ucla.edu

THE INTEGRATED PATHWAY

This pathway is a collaboration between the UCLA School of Education's Teacher Education Program and Math for LA. It is an accelerated pathway to a CA Preliminary Single Subject Teaching Credential in Mathematics. In this pathway, students complete a Preliminary Credential during their junior and senior years. This pathway enables students to earn a full-time salary (around $56k) while teaching full time in Los Angeles public schools during the academic year following their bachelor's degree.

For more information about the Integrated Pathway, visit Teaching Credential Pathways under the Undergraduate pages on The UCLA Curtis Center website.

curtiscenter.math.ucla.edu

THE JOINT MATHEMATICS EDUCATION PROGRAM (JMEP)

This program, also a collaboration of the UCLA School of Education's Teacher Education Program and Math for LA is an accelerated pathway to both a CA Preliminary Single Subject Teaching Credential in Mathematics and a Masters of Education.

In the program, students begin work towards a Preliminary Credential during their senior year and complete their credential coursework by the following summer. The program enables students to earn a full-time salary (around $56k) while teaching full-time in Los Angeles public schools during the academic year following their bachelor's degree. Students then complete a Master's in Education by the following June.

curtiscenter.math.ucla.edu/undergraduates/credential-pathways

SUBJECT MATTER PREPARATION PROGRAM (SMPP) FOR THE CA TEACHING CREDENTIAL

Applicants for a CA 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 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 qualify for the department's CA-approved subject matter program. At the end of their senior year, students may request a letter from the Curtis Center's Executive Director's office verifying their completion of these courses and their subject matter competence for the CA Single Subject Teaching Credential in mathematics.

For more information and to apply, see the UCLA Curtis Center website.

curtiscenter.math.ucla.edu/undergraduates/credential-requirements

WEEKLY COURSE PLANNER

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
8:00 AM					
9:00 AM					
10:00 AM					
11:00 AM					
12:00 PM					
1:00 PM					
2:00 PM					
3:00 PM					
4:00 PM					
5:00 PM					
6:00 PM					
7:00 PM					

Degree Plan Contract

UCLA College of Letters & Science

College Academic Counseling	A316 Murphy Hall
Honors Programs	A311 Murphy Hall
Academic Advancement Program	1205 Campbell Hall
Athletics	127 Morgan Center

INSTRUCTIONS
1. Starting with the current term, list all courses that you plan to complete every quarter and summer session until graduation. **Please note, the grey box area is for departmental use only**.

2. Submit this degree plan with appropriate departmental signatures and all required documentation **electronically** to your College Counseling unit. Paper forms will not be accepted.

Signature of the department is only intended to indicate that the student is potentially eligible for the major/minor and that the courses would satisfy requirements if admitted.

Please note that petitions take a minimum of 10-15 business days to process and may take longer if incomplete or inaccurate.

IMPORTANT NOTICE TO STUDENTS: Substantive changes to your degree plan may be considered a violation of your contract.

Name	
Student ID No.	
Major(s)	
Minor(s)	
Admit Term	
Degree Expected Term	

Type of Contract:

- ☐ Time to Degree Petition
- ☐ ECP Exemption or Exit Plan
- ☐ Double Major Petition
- ☐ Change of College Request

Fall ______	Units		Winter ______	Units		Spring ______	Units		Summer ______	Units	
Total Quarter Units:			Total Quarter Units:			Total Quarter Units:			Total Summer Units:		

Fall ______	Units		Winter ______	Units		Spring ______	Units		Summer ______	Units	
Total Quarter Units:			Total Quarter Units:			Total Quarter Units:			Total Summer Units:		

Fall ______	Units		Winter ______	Units		Spring ______	Units		Summer ______	Units	
Total Quarter Units:			Total Quarter Units:			Total Quarter Units:			Total Summer Units:		

By signing, you agree that you will follow the general plan and graduate in the term indicated. Substantive changes to your degree plan may be considered a violation of your contract.

Student Signature ______ Date ______

Department counselors: Sign below and initial the grey box next to courses that will count toward the student's program.

Department Counselor -- Primary Major ______ Date ______

Department Counselor -- Second Major/Minor/Specialization ______ Date ______

Department Counselor -- Third Major/Minor/Specialization ______ Date ______

Additional Requirements for Consideration

All students in the College are required to complete the University, College and General Education requirements. Please be sure that you have accounted for all requirements on your Degree Plan Contract.

In addition, students in the College must complete a minimum of 60 upper division units (courses numbered 100-199), and a total of 180 units to graduate.

To see a detailed checklist of the required College degree requirements, visit the Center for Academic Advising in the College's website.

- ☐ I have accounted for the **University, College, and General Education** requirements, including the **Foreign Language** requirement.
- ☐ I have confirmed that I will graduate with **a minimum of 60 upper division units.**
- ☐ I have confirmed that I will graduate with **a minimum of 180 units.**

Updated October 19, 2023