Main Campus at TUCSON Location

If you want to prepare for medical school or graduate studies in biology or health-related fields, consider this degree. A strong foundation in mathematics is integral to all scientific fields. Students earning this Bachelor of Science or Bachelor of Arts in Mathematics with a Life Sciences emphasis choose a minor or an additional major in a life science field. This dual immersion enables students to apply mathematical concepts to their studies in biological sciences. Undergraduates develop diversified knowledge and skills required for environmental fieldwork, scientific research or graduate/professional studies in medicine. They go on to find solutions and effect change in disease management and prevention and ecosystem and planetary health.

LEARNING OUTCOMES
- Apply computational methods; Math majors should be able to apply computational methods and mathematical concepts to analyze scientific problems
- Apply mathematical models to current problems; Math majors should be able to critically evaluate and extend selected mathematical models in the current scientific literature.
- Create valid proofs; Students should be able to identify an appropriate proof strategy and almost always able to create a correct proof using multiple strategies as appropriate.
- Define Terms Precisely; Precision is essential in mathematics, and a crucial skill for math majors is to learn to define mathematical terms precisely.
- Effective communication of results; Math majors should be able to effectively communicate results to non-specialized audiences in written and verbal form.
- Recognize valid arguments; Logical rigor is a critical component of mathematical argumentation. We expect math majors to develop the ability to recognize when arguments are valid, and identify logical gaps and flaws.

Undergraduate Graduation Requirements

All course work and requirements for this degree must be completed prior to the date the degree is awarded. The University of Arizona requirements to follow in this audit are required for graduation and awarding of the degree.

Curriculum:
1. The University of Arizona and the Arizona Board of Regents have sole discretion over all curricula changes.
2. Courses, programs & requirements may be suspended, deleted, restricted, or changed in any manner, at any time.
3. Students must remain currently informed about all policies & other info that bears on completing a degree.

Required Units:
Additional units will be required to complete this degree if a student:
A) is admitted to the UA with deficiencies;
B) changes their academic plan(s);
C) fails to meet minimum course/plan requirements;
D) ineffectively plans or fails to execute a course of study that leads directly to degree completion; or
E) Candidates for a second bachelor’s degree at The University of Arizona with a different award date than the first must earn no fewer than 30 units of University Credit in addition to the units required for the first degree, and must meet all requirements for the second degree.

The following requirements must be met for graduation.

Units Required and Cumulative GPA
120 units are required at a 2.0 GPA. View the pdf report grid for units earned toward this degree and cumulative GPA.

Completing a second bachelor's degree at The University of Arizona requires no fewer than 30 units in addition to the units required for the first degree, and all requirements for the second degree must be met.

Upper Division Units
Not Satisfied: A minimum of 42 units of upper-division credit are required for this degree.

- Units: 42.00 required, 0.00 completed, 42.00 needed
Units in Residence  
**Not Satisfied:** A minimum of 30 units in residence at The University of Arizona (excluding correspondence credit and credit by exam) is required.

- **Units:** 30.00 required, 0.00 completed, 30.00 needed

Upper Division Units in Residence  
**Not Satisfied:** A minimum of 18 units of upper division credit in residence at the University of Arizona (excluding correspondence credit and credit by exam) is required.

- **Units:** 18.00 required, 0.00 completed, 18.00 needed

Correspondence and/or Exam Credit Limit  
**Satisfied:** A maximum of 60 units of Correspondence Credit and/or Exam Credit may apply toward graduation.

- **Units:** 0.00 completed

Non Degree Seeking Limit  
A maximum of 15 units completed as a non-degree seeking student may be used for fulfilling undergraduate degree requirements. Units exceeding this limit (shown below) must be subtracted from the units required towards the degree and graduation requirements.

Non-Community College Units  
**Not Satisfied:** Non-Community College Units: While there is no limit to the total number of units of course work that may be transferred from an accredited community college to The University of Arizona, no more than 64 units from a 2-year institution may be applied toward the requirements for a bachelor's degree. Therefore, to reach the required 120 units for a bachelor's degree, a minimum of 56 units must be completed from 1) coursework at a 4-year institution, 2) approved credit by examination (refer to UA Catalog for approved examinations and scores), or 3) any combination thereof.

- **Units:** 56.00 required, 0.00 completed, 56.00 needed

Success Course Limit  
**Satisfied:** No more than 3 units will apply toward a student's graduation requirements. All Success courses taken can be seen below. Success Course units exceeding the 3 unit maximum must be subtracted from the total units, residency requirements and cumulative grade point average.

PE Activity Course Limit  
**Satisfied:** No more than 3 units will apply toward a student's graduation requirements. All PE activity courses taken can be seen below. PE Activity units exceeding the 3 unit maximum must be subtracted from the total units, residency requirements and cumulative grade point average.
General Education Entry Course
Not Satisfied: General Education Entry Course

Introduction to General Education course
Not Satisfied: Introduces students admitted to the university as First-Year students to General Education, reflecting on learning, and developing an ePortfolio. (1 unit)

· Units: 1.00 required, 0.00 completed, 1.00 needed

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Courses Available
UNIV 101

General Education Foundation Mathematics
Not Satisfied: General Education Foundation Mathematics

GE Substantial Math Strand
Not Satisfied: Complete 1 course.

GE Substantial Math Strand
Not Satisfied: Complete 1 course.

· Units: 2.67 required, 0.00 completed, 2.67 needed

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Courses Available
MATH 122B, MATH 125, MATH 129, MATH 215, MATH 223, MATH 254, MATH 313

General Education Foundation Composition & Second Language
Overall Requirement Not Satisfied: Undergraduate General Education Foundation Composition & Second Language

Foundation Composition
Not Satisfied: Complete 1 of the following 4 Foundation Composition options:
1. 3 Course Foundation Composition Sequence
2. 2 Course Foundation Composition Sequence
3. Honors Composition with grade of C or higher
4. Honors Composition with a grade of D and Second Semester Composition.

Please note: Students who earn a grade of D in Honors Composition may choose to repeat the course in order to earn a higher grade to satisfy the requirement. Please consult with your major advisor.

Mid-Career Writing Assessment - Complete 2nd semester English Composition with a B grade or higher. Students who do not earn a grade of B or better in 2nd semester English Composition must also satisfy a college or department writing requirement. Consult your major advisor if you do not earn a grade of B in 2nd semester English Composition.

Option 1: Foundation Composition - 3 Course Sequence
- **Courses**: 3.00 required, 0.00 completed, 3.00 needed

<table>
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<tr>
<th>Course Available</th>
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<tbody>
<tr>
<td>ENGL 1EIB, ENGL 101, ENGL 101A, ENGL 107, ENGL 107A, (***) (###), ENGL 102, ENGL 108, ENGL 106</td>
</tr>
</tbody>
</table>

**OR Option 2: Foundation Composition - 2 Course Sequence**

**Not Satisfied**: Complete 2 courses. Complete ENGL 101/107 AND ENGL 102/108

- **Courses**: 2.00 required, 0.00 completed, 2.00 needed

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<th>Course Available</th>
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<tr>
<td>ENGL 1EIB, ENGL 101, ENGL 101A, ENGL 107, ENGL 107A, (***) (###), ENGL 102, ENGL 108</td>
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**OR Option 3: Honors Composition**

**Not Satisfied**: Complete 1 course with a C or better.

- **Courses**: 1.00 required, 0.00 completed, 1.00 needed

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<th>Course Available</th>
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<tr>
<td>ENGL 109H</td>
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**Foundation Second Language - Fourth Semester Proficiency**

**Not Satisfied**: Credit will not be given for a course at an equivalent or lower level than prior language credit earned. Credit must be taken for a grade, not for pass/fail.
Demonstrate fourth semester proficiency in a second language by completing one of the following:
1. Complete a Fourth Semester Language Course with a grade of C or higher.
2. Complete Arabic 401 and 1 course with a grade of C of higher from Arabic 424B, 427B or 430B.
3. Pass a language proficiency examination at the fourth semester level

**Option 1: Fourth Semester Language Course**

**Not Satisfied**: Complete 1 course with a grade of C or better.

Courses used to fulfill this requirement may also be used to fulfill other requirements.

- **Courses**: 1.00 required, 0.00 completed, 1.00 needed
Courses Available


OR Option 2: Arabic Language
Not Satisfied: Complete ARB 401, Intermediate Arabic, plus one additional course from ARB 424B, 427B, 439B, 484B.

- Courses: 1.00 required, 0.00 completed, 1.00 needed

Courses Available

ARB 401

AND Option 2: Additional Arabic Courses
Not Satisfied: Complete one additional course with a grade of C or better from ARB 424B, 427B, 439B, 484B.

- Courses: 1.00 required, 0.00 completed, 1.00 needed

Courses Available

ARB 424B, ARB 427B, ARB 439B, ARB 484B

General Education Core Requirements

Overall Requirement Not Satisfied: General Education Core Requirements

GE Exploring Perspectives

Overall Requirement Not Satisfied: Choose one course from each category.

Artist Courses
Not Satisfied: Complete 1 course, 3 units total. Transfer students with quarter system credits may satisfy requirement with 1 course and 2.67 units.

- Units: 2.67 required, 0.00 completed, 2.67 needed
- Courses: 1.00 required, 0.00 completed, 1.00 needed
### Humanist Courses

**Not Satisfied:** Complete 1 course, 3 units total. Transfer students with quarter system credits may satisfy requirement with 1 course and 2.67 units.

- **Units:** 2.67 required, 0.00 completed, 2.67 needed
- **Courses:** 1.00 required, 0.00 completed, 1.00 needed

### Natural Scientist Courses

**Not Satisfied:** Complete 1 course, 3 units total. Transfer students with quarter system credits may satisfy requirement with 1 course and 2.67 units.

- **Units:** 2.67 required, 0.00 completed, 2.67 needed
- **Courses:** 1.00 required, 0.00 completed, 1.00 needed

### Social Scientist Courses

**Not Satisfied:** Complete 1 course, 3 units total. Transfer students with quarter system credits may satisfy requirement with 1 course and 2.67 units.

- **Units:** 2.67 required, 0.00 completed, 2.67 needed
· Courses: 1.00 required, 0.00 completed, 1.00 needed

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Courses Available

AED 150A1, AED 408, AFAS 260, AFAS 280, AFAS 376, ANTH 150A1, ANTH 150B1, ANTH 280, ANTH 317, ANTH 339, AREC 210, AREC 217, CLAS 160D3, ECON 200, EDP 150B1, EDP 200, ENGL 160D1, ENGL 322, FIN 150C1, FITS 204, FREN 150B1, FREN 150C1, GEOG 150B2, GEOG 222, GEOS 250, GEOS 367, GER 150A1, GER 244, GWS 252, GWS 448, GWS 459, HDFS 200, HED 350, HIST 150A1, HIST 150C2, HIST 252, HIST 307, HNRS 219, HPS 178, HPS 200, HUMS 376, ITAL 160B1, ITAL 160C1, ITAL 160D1, ITAL 160B1, LAS 150B1, LAS 150B2, LAS 204, LAS 230, LAS 280, LAS 312, LAS 317, LAW 389, LING 320, LING 322, MAS 150B2, MAS 150C1, MAS 317, MAS 365, PA 241, PA 312, PHP 150C, PHP 308, POL 202, POL 204, POL 312, PORT 280, PPEL 210, PSY 101, PSY 150A1, PSY 200, SERP 200, SERP 416, SOC 150B1, SOC 150C2, SOC 222, SOC 241, SOC 260, SOC 324, SOC 325, SOC 367, SOC 448, SOC 459, SPAN 280, TLS 150B1, TLS 150C1, TLS 310, TLS 331

GE Building Connections

Not Satisfied: Building Connections brings together knowledge and modes of thinking from two or more disciplines and/or perspectives. Choose three courses (9 units minimum).

Building Connections Courses

Not Satisfied: Complete 3 courses, 9 units total. Transfer students with quarter system credits may satisfy requirements with 3 courses and 8.01 units.

· Units: 8.01 required, 0.00 completed, 8.01 needed
· Courses: 3.00 required, 0.00 completed, 3.00 needed

GE 32 unit check

Not Satisfied: Students must complete 32 units in General Education coursework while satisfying the requirements.
Check for 32 units of GE

**Not Satisfied:** Students must complete 32 units in General Education coursework while satisfying the requirements.

- **Units:** 32.00 required, 0.00 completed, 32.00 needed

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**General Education Portfolio**

**Not Satisfied:** General Education Portfolio (Exit Course)

**General Education Portfolio - Exit Course**

**Not Satisfied:** Students admitted to the university as First-Year students reflect on their General Education experience and complete their ePortfolio in the GE Capstone course. (1 unit)

- **Units:** 1.00 required, 0.00 completed, 1.00 needed

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**Courses Available**

UNIV 301

**Additional Coursework**

Courses listed in this section may include general elective credits, UA courses and transferable courses from other institutions. Consult with your advisor to determine if courses listed in this section may be used to fulfill a requirement or sub-requirement in your degree program.

Courses taken for Pass/Fail option can only count as elective credit. They cannot fulfill any General Education, Major, or Minor requirements.

**BA in Mathematics**

**Overall Requirement Not Satisfied:** Will appear fully satisfied when student satisfies Mathematics Supporting Computer Science, Math Major Core Requirements, and selects an emphasis. All emphases require a minimum of 15 units of 400-level coursework in the major.

Equivalent MATV courses may be available through UA South. For approved courses consult with your advisor.
Mathematics Supporting Computer Science
Not Satisfied: Will appear fully satisfied when student satisfies Computer Science requirements.

Computer Science
Not Satisfied: Complete 1 course. One of the following courses is recommended for most students: CSC 110, ISTA 130, ECE 175, or CHEE 205; other options may require additional prerequisites and/or a major or minor declared in another subject.

Courses used to fulfill this requirement may be used to fulfill other requirements.

- Courses: 1.00 required, 0.00 completed, 1.00 needed

Courses Available

BME 225, CHEE 205, CSC 110, CSC 120, CSC 250, ECE 175, GEOS 280, ISTA 130, MIS 301, NROS 311, PHYS 305

Math Major Core Requirements

Overall Requirement Not Satisfied: Will appear fully satisfied when student satisfies Calculus I and Core Courses.

Calculus I
Not Satisfied: Complete 1 course

- Courses: 1.00 required, 0.00 completed, 1.00 needed

Core Courses

Not Satisfied: Complete 5 courses. Credit allowed for only one course in each pair: MATH 313 or MATV 313, MATH 323 or MATV 323, MATH 355 or MATV 355. MATV courses are only available to UA South students.

- Courses: 5.00 required, 0.00 completed, 5.00 needed

Courses Available

MATH 129, MATH 223, MATH 313, MATH 323, MATH 355, MATV 313, MATV 323, MATV 355
Emphasis in Life Sciences Mathematics

Overall Requirement Not Satisfied: Will appear fully satisfied when student satisfies Life Science Emphasis course requirements, Graduation Requirements, and declares an appropriate minor.

Equivalent MATV courses may be available through UA South. For approved courses consult with your advisor.

Life Sciences Emphasis Requirements

Overall Requirement Not Satisfied: Will appear fully satisfied when student satisfies the five 400-level courses below.

Life Sciences Required Courses

Not Satisfied: Complete 2 courses. Students should plan to take MATH 485 in their final Spring semester; MATH 422 should be taken earlier, when possible.

- Courses: 2.00 required, 0.00 completed, 2.00 needed

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<td>MATH</td>
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Courses Available

MATH 422, MATH 464

Elective 1

Not Satisfied: Complete 1 course

- Courses: 1.00 required, 0.00 completed, 1.00 needed

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Courses Available

MATH 454, MATH 456

Elective 2

Not Satisfied: Complete 1 course

- Courses: 1.00 required, 0.00 completed, 1.00 needed

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Courses Available

DATA 468, MATH 466, MATH 468

Elective 3

Not Satisfied: Complete 1 course

- Courses: 1.00 required, 0.00 completed, 1.00 needed

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</table>
### Courses Available

**MATH 481, MATH 485**

**Major 400-level Upper Division**

**Not Satisfied:** A minimum of 15 units of 400-level upper-division major coursework must be completed.

- **Units:** 15.00 required, 0.00 completed, 15.00 needed

### Life Sciences Emphasis Graduation Requirements

**Overall Requirement Not Satisfied:** Will appear fully satisfied when student satisfies Mid Career Writing Assessment, Major GPA, Residency requirement, and Major Upper Division unit requirement.

**Mid Career Writing Assessment**

**Not Satisfied:** Complete 2nd semester English Composition with a B grade or higher. Students who do not earn a grade of B or higher in 2nd semester English Composition must also satisfy a college or department writing requirement. Consult your major advisor if you do not earn a grade of B or higher in 2nd semester English Composition.

- **Courses:** 1.00 required, 0.00 completed, 1.00 needed

**Major GPA**

**Satisfied:** A minimum 2.0 GPA is required in the major coursework.

- **GPA:** 2.000 required, 0.000 completed

**Major Units**

**Not Satisfied:** A minimum of 34 units must be completed in the major.

- **Units:** 34.00 required, 0.00 completed, 34.00 needed
### Major Residency

**Not Satisfied:** A minimum of 18 units in the major must be taken at the University of Arizona.

- **Units:** 18.00 required, 0.00 completed, 18.00 needed

### Minor Required

**Not Satisfied:** A minor is required for this major.

You must complete 1 of the following:
- Astrobiology Minor
- Biochemistry Minor
- Biology Minor
- Biosystems Engineering Minor
- Ecology & Evolutionary Biology Minor
- Environmental Sciences Minor
- Medicine Thematic Minor
- Molecular & Cellular Biology Minor
- Pharmaceutical Sciences Minor
- Physiological Sciences Minor
Physiology Minor
PreHealth Thematic Minor
Thematic Minor
Biochemistry Major
Biochemistry 2 Major (Secondary)
Ecology & Evolutionary Biology Major
Ecology & Evolutionary Biol 2 Major (Secondary)