Introduction

In 1913, the curriculum of the Texas State School of Mines and Metallurgy included physics and mining, engineering, mathematics, chemistry, geology, mineralogy, shop work, and drawing. From these roots, The University of Texas at El Paso's College of Science has grown to more than 117 faculty in five academic departments; Biological Sciences, Chemistry, Geological Sciences, Mathematical Sciences, and Physics.

The College of Science seeks to educate scientists and mathematicians who want to participate in the discovery, creation, application, and dissemination of knowledge, and who desire professional preparation as scientists, teachers, leaders, and informed citizens in a multicultural and global society. This is the primary mission of the College of Science.

The College of Science offers degree programs at the undergraduate and graduate levels in Bioinformatics (MS), Biological Sciences (BA, BS, MS, PhD), Chemistry (BA, BS, MS, PhD), Environmental Science (BS, MS), Forensic Science (BS), Geological Sciences (BA, BS, MS, PhD), Mathematical Sciences (BS, MS), and Physics (BS, MS). In addition, the College offers a Master of Arts in Teaching (MAT) in Mathematics or Science, Master of Professional Science, and doctoral (PhD) degrees in Environmental Science and Engineering, and in Materials Science and Engineering. Several academic departments also offer a Bachelor of Arts degree program. The College of Science offer Fast Track Programs in Bioinformatics, Biological Sciences, Chemistry, Geology, Mathematics, Physics, Medical Physics, and Statistics. The College of Science also offers a Certificate in Pre-Health Professions. This allows students who major in a non-STEM field to prepare for health related graduate school and allows students who have graduated to do the same. The College of Science also offers graduate certificates Applied and Computational Mathematics, Applied Statistics, Big Data Analytics, Bio-Informatics, Biology, Chemistry, Geospatial Information Science and Technology, and Physics. Each of our academic departments offer a variety of opportunities for undergraduate students to engage in research experiences with faculty working on cutting-edge research with state-of-the-art instrumentation and techniques. Faculty of the College shares a commitment to the idea that teaching and research are critically important in the education of students in science. The College is proud of the large number of undergraduates who participate in research laboratories.

The College of Science is committed to the success of our students and to increasing the diversity of the community of scientists and mathematicians. To that end, we strive to develop a civil and respectful atmosphere that allows all to feel welcomed in our common pursuit of discovery, innovation and integration and to participate in the free exchange of ideas necessary to advance knowledge. The Minority Access to Research Careers (MARC), the Research Initiative for Scientific Enhancement (RISE), and the Pre-Health Professions Program Medical Professions Institute (MPI) focus on providing undergraduate research experiences and career opportunities for students interested in pursuing medical and health professions and biomedical science research careers.

The College of Science recognizes the importance of educating future mathematics and science teachers and of serving the STEM educational needs of our community. Students interested in teaching high school mathematics or science enroll in a Secondary Education minor, and are supported by dedicated College of Science advising and grant-funded scholarship programs.

Office of the Dean, College of Science, Chemistry and Computer Science Building
CCSB 3.0206

The Dean's Office for the College of Science is committed to promoting student success in the context of quality academic programs. It plays an important role in facilitating and certifying students' progress toward their degrees, and directly interacts with undergraduate students in such areas as changes of majors, formulation and adjustment of personalized degree plans, confirmation of graduating senior status, special advising for pre-professional and secondary education curricula, counseling for academic probation/suspension and re-instatement issues, and resolution of a variety of academic problems. A major navigation resource for students is the College of Science Web site, accessed through the campus utep.edu address.

Generalized degree plans, samples of petition forms, a calendar of events, and information about departments and faculty can be found here.

Undergraduate Programs

Each department of the College of Science offers the Bachelor of Science (BS) degree, subject to the general requirements listed below. Several departments also offer Bachelor of Arts (BA) degrees.

A student planning a technical career or graduate work is advised to follow the BS degree route. Either the BS or the BA degree is suitable for admission to health professional schools (Student seeking admission should refer to the Pre-professional Programs section).

BS programs that include course work leading to Secondary Teacher Certification are offered by each department.
Departmental Honors Programs
The Departments of Biological Sciences, Chemistry, Geological Sciences, and Physics have departmental honors programs for qualified undergraduates. Information about these programs is found in each department's section of this catalog.

Undergraduate Research
Students wishing to receive research training and gain valuable experience in their field(s) of interest may do so for credit or as volunteers. There are also several competitive paid opportunities through various federal and state funded research programs to which enrolled undergraduate students can apply. Interested students should contact the Campus Office of Undergraduate Research Initiatives (COURI) for advice and detailed information. COURI also offers professional training workshops on a regular basis. These workshops prepare students for careers and advance degrees in science.

Bachelor of Science Degree Requirements
Requirements for the BS and BA degrees in all Science departments and programs require completion of the University Core Curriculum components for Communication; Mathematics; Life and Physical Sciences; Language, Philosophy and Culture; Creative Arts; American History; Social and Behavioral Sciences, Component Area Option, as described elsewhere in this catalog. In addition to these, the College of Science has specific requirements associated with Core Curriculum components (see degree plans for requirements).

The BS degree in all science disciplines requires a minimum of 120 semester hours of credit including a minimum of 37 upper-division (junior and senior) semester hours. A GPA of 2.0 must be achieved in all course work at UTEP and in all course work in the major department. In addition, a grade of C or better must be achieved in the following courses: all courses used to fulfill the University Core Curriculum requirements, all lower-division courses in the major and minor; and all lower-division MATH and STAT courses. Additionally, some departments require a grade of C or better in required upper-division courses that are prerequisites for later courses in a sequence. Receipt of a grade of "D" in an elective course in the major, or in a required terminal course in the major that is not a pre-requisite for another course, may delay award of the degree if its receipt causes the overall or major GPA to drop below 2.0

Major Fields
The College of Science offers BS degrees in the following disciplines: Biochemistry, Biological Sciences, Cellular and Molecular Biochemistry, Chemistry, Environmental Science, Forensic Science, Geological Sciences, Mathematics, Microbiology, and Physics. The specific requirements for these disciplines and various options can be found in the academic department sections of this catalog.

Students planning to obtain a degree in the College of Science must major in one of the above fields. Students planning to enter medical or dental schools normally obtain a BS or BA degree in science and, for this reason, should declare a subject-major field (Pre-Medical and Pre-Dental are not major fields).

Double Majors
Double majors are not permitted in the College of Science without the permission of the Dean. Dual Degrees in different colleges do not require the permission of the Dean.

Second Baccalaureate Degrees
Students who have earned a baccalaureate degree at an accredited institution can be eligible to enroll as candidates for a second baccalaureate degree in the College of Science. This degree will be awarded upon satisfactory completion of all Bachelor of Science degree requirements in the College of Science. Students seeking a second baccalaureate degree must complete at least 24 semester hours, specified by the department, following the award of the first baccalaureate degree. Students can petition the Dean of Science to reserve up to nine (9) semester hours taken during the last semester of the initial degree work for credit toward the second BS degree. Students cannot obtain a second baccalaureate degree in the same academic department as the first degree.

Fast-Track to Graduate School Programs (http://catalog.utep.edu/undergrad/college-of-science/cosfastracks/)
The College of Science offers fast-track to graduate school programs in bioinformatics, biology, chemistry, geology, mathematics, and physics. This allows students to take graduate courses that count toward both an undergraduate degree and a graduate degree. Details are located at the web site http://www.science.utep.edu (http://www.science.utep.edu/index.php?option=com_wrapper&view=wrapper&view=wrapper&Itemid=676/) and in the catalog (http://catalog.utep.edu/undergrad/college-of-science/cosfastracks/).

Advising in the College of Science
All students enrolled in the College of Science must be advised prior to registration. Students who are on academic probation, suspension, or have a GPA below 2.30 are advised by the College of Science Associate Dean. Those students with Excess Hours (over 130) are also advised by the Associate Dean.

CAPP Degree Evaluation is an advising tool used by both students and advisors to evaluate course work against degree requirements. CAPP produces a report reflecting academic progress toward completion of an undergraduate or graduate degree in a student's declared or proposed major. The
CAPP degree evaluation report shows how the University of Texas at El Paso courses, transfer courses, and courses in progress apply toward degree requirements. You can initiate a degree evaluation, view results, and print evaluation reports via Goldmine.

Students planning a career in Clinical Laboratory Science, Nursing, Physical Therapy, Pharmacy, or other allied health fields are referred to the College of Health Sciences section of this catalog and should be advised in that College.

Pre-Health Professional Advising

Many College of Science students seek pre-professional advising for the medial professions from the Medical Professions Institute (MPI) (https://www.utep.edu/science/mpi/), which houses the Pre-Health Professions (PHP) Advisor. Students should seek advice from the PHP Advisor as early as possible in their academic career. While health professions school (e.g. Medical School, Dental School, Veterinary School, etc.) truly do not care what degree a student has pursued as an undergraduate, it is essential to make sure that coursework required by the professional school (often referred to pre-requisite coursework) is completed in a timely manner and that the student also acquire all the experiential and community engagement hours that is expected in a competitive applicant. Most of the undergraduate degrees offered by the College of Science include in the degree plan, the pre-requisite coursework expected by medical, dental, and veterinary schools. Pharmacy Schools, Physician Assistant Programs, and other health professional schools will have similar, but perhaps, more or less requirements depending on the specific programs. For more information about pre-health professions advising, contact the Director of the Medical Professions Institute, Dr. Gail L Arnold, glarnold@utep.edu, or schedule an appointment by calling or visiting the CORE offices (915-747-8027, 100 Bell Hall).

Forensic Science Program

The BS in forensic science is a multidisciplinary program with two tracks: biology (DNA) and chemistry. It consists of 86 semester hours in mathematics and science courses. Students must have a GPA of at least 2.5 to declare this major.

Educator Preparation Program (Secondary Teacher Preparation Program)

Degree plans leading to certification for teaching in secondary schools (grades 7-12) are available in the following content areas: Mathematics, Mathematics/Physics (majors in Math or Physics), Science 7-12 majors in Biology, Chemistry, Environmental Science, or Geology, Life Science 7-12 (majors in Biology), Physical Science 7-12 (major in Chemistry or Physics). All majors leading to a high school teacher certification require a minor in secondary education. Before a student receives permission to minor in Secondary Education, they must have passed the UTEP Content Qualifying Exam with a score of at least 80% within two tries. Permission to take the Content Qualifying Exam is granted if students meet several criteria: overall GPA must be at least 2.75, majors GPA must be at least 2.75 and all low-division science and mathematics courses must be completed with a grade of C or better. In addition, six hours of content review must be completed prior to each attempt of the content qualifying exam. For those seeking to take the math content qualifying exam, they must also have completed MATH 1411, 1312, 3325, 3329, and STAT 3330 or STAT 3325 with a grade of C or better. Below are credit hour requirements to each of the teacher education degree plans offered by the College of Science. To declare a minor in Secondary Education, students must have satisfied the above requirements.

<table>
<thead>
<tr>
<th>Type of Teacher Certification</th>
<th>Major</th>
<th>Hours required in Major</th>
<th>Hours required in Secondary Education Minor</th>
<th>Other Course Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Science 7-12 Biology</td>
<td>38</td>
<td>21</td>
<td>20 additional science credit hours.</td>
<td></td>
</tr>
<tr>
<td>Science 7-12 Chemistry</td>
<td>37</td>
<td>21</td>
<td>22 additional science credit hours.</td>
<td></td>
</tr>
<tr>
<td>Science 7-12 Geology</td>
<td>34</td>
<td>21</td>
<td>21 additional science credit hours.</td>
<td></td>
</tr>
<tr>
<td>Science 7-12 Environmental Science</td>
<td>32</td>
<td>21</td>
<td>23 additional science credit hours.</td>
<td></td>
</tr>
<tr>
<td>Life Science 7-12 Biology</td>
<td>38</td>
<td>21</td>
<td>20 additional science credit hours.</td>
<td></td>
</tr>
<tr>
<td>Mathematics 7-12 Mathematics</td>
<td>46</td>
<td>21</td>
<td>8 additional science credit hours.</td>
<td></td>
</tr>
<tr>
<td>Math/Physics 7-12 Mathematics</td>
<td>46</td>
<td>21</td>
<td>14 physics credit hours.</td>
<td></td>
</tr>
<tr>
<td>Math/Physics 7-12 Physics</td>
<td>31</td>
<td>21</td>
<td>19 math &amp; 7 astronomy credit hours.</td>
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</tr>
<tr>
<td>Physical Science 7-12 Chemistry</td>
<td>44</td>
<td>21</td>
<td>17 additional science credit hours.</td>
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</tr>
</tbody>
</table>

Minor in Secondary Education

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tr>
<td>SCED 3311</td>
<td>Curriculum Plan-Secondary Schl</td>
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<tr>
<td>RED 3342</td>
<td>Content Area Literacy</td>
<td>3</td>
</tr>
<tr>
<td>EDPC 3300</td>
<td>Developmental Variations</td>
<td>3</td>
</tr>
</tbody>
</table>
Admission to the Teacher Education

Students may apply for admission into the Educator Preparation Program (EPP) upon successful completion of the completion of the above mentioned conditions as well as other requirements set by the College of Education. See the College of Education for admission details.

Student Teaching

Please see the College of Education for admission details.

Degree Plans

Degree plans are the major tools by which students, their advisor, their departments, and the College of Science track academic progress. Generalized degree plans are available on-line at CAPP Degree Evaluation and at the College of Science Website.

Lower-Division Courses

The prerequisite structure in science programs require careful attention to course sequences. These courses should be completed before the student reaches junior standing (60 semester credit hours). These and all freshman courses specified as required for the degree must be completed before senior standing (90 semester credit hours) in order to count toward the minimum hours required for the degree.

Enrollment in MATH 1508 or equivalent is required in order to declare a major. It is to the student's advantage to continue enrolling in the other required mathematics courses since success in these courses depends largely upon what was learned in the previous course, and delaying enrollment in higher-level courses often requires considerable review.

Required Lower-Division Courses in the major and minor should be completed with a grade of C or better before enrollment in upper-division courses. These lower-division courses are listed below. Other lower-division College of Science courses required for the various degree plans are included in brackets. These courses should also be completed with a C or better before enrolling in upper-division courses if the discipline is the minor.

Upper-Division Courses

A minimum of 37 semester hours of upper-division course work is required. The various majors have different requirements for upper-division course work in the major and minor. Students should consult those respective sections. Upper-division courses are often not offered each semester or during summer sessions. Students are cautioned to plan ahead in terms of when these courses are generally offered and what prerequisites are needed.

Professors

Robert Kirken
Contact Information: rkirken@utep.edu; 915-747-6886
Education: BA, Olivet College; Ph D, Wright State University; Postdoctoral Research Fellowship, National Institutes of Health/National Cancer Institute

Nancy Marcus
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Education: BS, Texas Western College; MS, University of Texas at El Paso; Ph D, New Mexico State University (NMSU)

Michael Kenney
Contact Information: mjkenney@utep.edu; 915-747-5000
PhD, Michigan State University

Departments and Programs

Programs

Bachelor of Science
• BS in Forensic Science (http://catalog.utep.edu/undergrad/college-of-science/forensic-science-bs/)

College of Sciences (Dean's Office)

Biological Sciences
Go to information for this department. (http://catalog.utep.edu/undergrad/college-of-science/biological-sciences/)

Programs
Bachelor of Arts
• BA in Biological Sciences (http://catalog.utep.edu/undergrad/college-of-science/biological-sciences/biological-sciences-ba/)

 Bachelor of Science
• BS in Biological Sciences (http://catalog.utep.edu/undergrad/college-of-science/biological-sciences/biological-sciences-bs/)
• BS in Cellular and Molecular Biochemistry (http://catalog.utep.edu/undergrad/college-of-science/biological-sciences/cellular-molecular-biochemistry-bs/)
• BS in Microbiology (http://catalog.utep.edu/undergrad/college-of-science/biological-sciences/microbiology-bs/)

Minor
• Minor in Biological Sciences (http://catalog.utep.edu/undergrad/college-of-science/biological-sciences/biological-sciences-minor/)

Chemistry
Go to information for this department. (http://catalog.utep.edu/undergrad/college-of-science/chemistry/)

Programs
Bachelor of Science
• BS in Biochemistry (http://catalog.utep.edu/undergrad/college-of-science/chemistry/biochemistry-bs/)
• BS in Chemistry (http://catalog.utep.edu/undergrad/college-of-science/chemistry/chemistry-bs/)

Minor
• Minor in Chemistry (http://catalog.utep.edu/undergrad/college-of-science/chemistry/chemistry-minor/)

Geological Sciences
Go to information for this department. (http://catalog.utep.edu/undergrad/college-of-science/geological-sciences/)

Programs
Bachelor of Arts
• BA in Geological Sciences (http://catalog.utep.edu/undergrad/college-of-science/geological-sciences/geological-sciences-ba/)

 Bachelor of Science
• BS in Environmental Science (http://catalog.utep.edu/undergrad/college-of-science/geological-sciences/environmental-science-bs/)
• BS in Geological Sciences (http://catalog.utep.edu/undergrad/college-of-science/geological-sciences/geological-sciences-bs/)
• BS in Geophysics (http://catalog.utep.edu/undergrad/college-of-science/geological-sciences/geophysicsbs/)

Minor
• Minor in Environmental Science (http://catalog.utep.edu/undergrad/college-of-science/geological-sciences/environmental-science-minor/)
• Minor in Geography (http://catalog.utep.edu/undergrad/college-of-science/geological-sciences/geography-minor/)
• Minor in Geological Sciences (http://catalog.utep.edu/undergrad/college-of-science/geological-sciences/geological-sciences-minor/)
• Minor in Geological Sciences Distributed (http://catalog.utep.edu/undergrad/college-of-science/geological-sciences/geological-sciences-distributed-minor/)
• Minor in Geology (http://catalog.utep.edu/undergrad/college-of-science/geological-sciences/geology-minor/)

Mathematical Sciences
Go to information for this department. (http://catalog.utep.edu/undergrad/college-of-science/mathematical-sciences/)
Programs

Bachelor of Science

- BS in Mathematics (http://catalog.utep.edu/undergrad/college-of-science/mathematical-sciences/mathematics-bs/)

Minor

- Minor in Mathematics (http://catalog.utep.edu/undergrad/college-of-science/mathematical-sciences/mathematics-minor/)
- Minor in Statistics (http://catalog.utep.edu/undergrad/college-of-science/mathematical-sciences/statistics-minor/)

Physics

Go to information for this department. (http://catalog.utep.edu/undergrad/college-of-science/physics/)

Programs

Bachelor of Science

- BS in Physics (http://catalog.utep.edu/undergrad/college-of-science/physics/physics-bs/)

Minor

- Minor in Physics (http://catalog.utep.edu/undergrad/college-of-science/physics/physics-minor/)

Fast Track to Graduate Programs

Biological Sciences

- BS Biology to MS Biology (http://catalog.utep.edu/undergrad/college-of-science/biological-sciences/fast-track/bs-biology-to-ms-biology/)
- BS in Biological Sciences to MS in Bioinformatics (http://catalog.utep.edu/undergrad/college-of-science/biological-sciences/fast-track/bs-biological-sciences-to-ms-bioinformatics/)
- BS in Microbiology Sciences to MS in Bioinformatics (http://catalog.utep.edu/undergrad/college-of-science/biological-sciences/fast-track/bs-microbiology-sciences-to-ms-bioinformatics/)
- BS in Biological Science With Biomedical Science Concentration to MBA (http://catalog.utep.edu/undergrad/college-of-science/biological-sciences/fast-track/bs-biological-sciences-biomedical-conc-mba/)
- BS in Biological Sciences with Ecology in Evolutionary Biology Concentration to MBA (http://catalog.utep.edu/undergrad/college-of-science/biological-sciences/fast-track/bs-biological-sciences-ecology-evolutionary-biology-conc-mba/)
- BS in Microbiology to MBA (http://catalog.utep.edu/undergrad/college-of-science/biological-sciences/fast-track/bs-microbiology-mba/)

Chemistry

- BS in Chemistry to MS in Chemistry (http://catalog.utep.edu/undergrad/college-of-science/chemistry/fast-tracks/bs-chemistry-ms-chemistry/)
- BS in Chemistry to MS in Bioinformatics (http://catalog.utep.edu/undergrad/college-of-science/chemistry/fast-tracks/bs-chemistry-ms-bioinformatics/)

Geology

- BS in Geological Science to MS in Geological Science (http://catalog.utep.edu/undergrad/college-of-science/geological-sciences/fast-track/bs-geology-ms-geological-science/)
- BS in Geological Sciences to MBA (http://catalog.utep.edu/undergrad/college-of-science/geological-sciences/fast-track/bs-geological-sciences-mba/)
- BS in Environmental Sciences to MS in Environmental Sciences (http://catalog.utep.edu/undergrad/college-of-science/geological-sciences/fast-track/bs-environmental-sci-ms-environmental-sci/)

Physics

- BS in Physics to MS in Physics (http://catalog.utep.edu/undergrad/college-of-science/physics/fast-track/bs-physics-ms-physics/)
- BS in Physics with Applied Physics Concentration to MBA (http://catalog.utep.edu/undergrad/college-of-science/physics/fast-track/bs-physics-applied-physics-conc-to-mba/)

Mathematics

- BS in Mathematics to MS in Mathematics (http://catalog.utep.edu/undergrad/college-of-science/mathematical-sciences/fast-track/bs-math-ms-math/)
- BS in Mathematics to MS in Statistics (http://catalog.utep.edu/undergrad/college-of-science/mathematical-sciences/fast-track/bs-math-ms-statistics/)
- BS in Mathematical Sciences to MBA (http://catalog.utep.edu/undergrad/college-of-science/mathematical-sciences/fast-track/bs-math-mba/)
• BS in Mathematical Sciences with Applied Mathematics Concentration to MBA (http://catalog.utep.edu/undergrad/college-of-science/mathematical-sciences/fast-track/bs-math-applied-conc-mba/)
• BS in Mathematical Sciences with Actuarial Concentration to MBA (http://catalog.utep.edu/undergrad/college-of-science/mathematical-sciences/fast-track/bs-math-actuarial-conc-mba/)
• BS in Mathematical Sciences with Statistics Concentration to MBA (http://catalog.utep.edu/undergrad/college-of-science/mathematical-sciences/fast-track/bs-math-stat-conc-mba/)
• BS in Mathematical Sciences to MS in Bioinformatics (http://catalog.utep.edu/undergrad/college-of-science/mathematical-sciences/fast-track/bs-math-ms-bioinformatics/)