

# BS in Civil Engineering

Graduates in Civil Engineering are likely to pursue career paths as: construction managers, engineering consultants (structural, environmental, transportation and others) or government policy developers.

## Marketable Skills

1. Critical thinking: Analyze and evaluate issues in order to solve problems and develop informed opinions
2. Entrepreneurship: Develop, organize, and manage ideas and opportunities turning them into new products, services, firms, or industries
3. Leadership: Step up, think, and act critically and creatively to bring others together to accomplish a common task
4. Problem-solving: Find solutions to difficult or complex issues
5. Social responsibility: Act ethically and responsibly for the benefit of society and the public good
6. Teamwork: Participate as an effective, efficient member of a group in order to meet a common goal

The Civil Engineering program at the undergraduate level is broadly based and provides courses in the major divisions of Civil Engineering.

## Educational Objectives

- Will be successful contributors and leaders in their profession and communities.
- Will be effective at communicating as professionals to a diverse technical and non-technical population.
- Will have the ability to use their education to be lifelong learners and adapt to changes in technology and society.
- Will be able to solve engineering problems in the context of society's dynamic environmental, social, political, and economic realities.

## Fast Track

The Fast-Track Program (<http://catalog.utep.edu/admissions/undergraduate/fast-track/#text>) enables outstanding undergraduate UTEP students to receive both undergraduate and graduate credit for up to 15 hours of UTEP course work as determined by participating Master's and Doctoral programs.

Not all undergraduate programs have elected to participate in the Fast Track option, so students should see their departmental graduate advisor for information about requirements and guidelines. A list of courses that have been approved for possible use at the graduate level is found here (<http://catalog.utep.edu/admissions/undergraduate/fast-track/#fasttrackcoursestext>).

## Degree Plan

Required Credits: 128

Students are expected to satisfy all prerequisites and co-requisites for all required and elective courses at the time of registration.

Code	Title	Hours
<b>University Core Curriculum(All courses require a grade of C or better.)</b>		
Complete the University Core Curriculum requirements. (p. 2)		42
<b>Civil Engineering Designated Core (All courses require a grade of C or better.)</b>		
Required courses:		
CE 2326	Econ for Engrs & Scientists	
CHEM 1105	Laboratory for CHEM 1305	
CHEM 1305	General Chemistry	
CS 1320	Computer Programming Sci/Engr	
MATH 1508	Precalculus ((Listed if completed, but not required))	
or MATH 1310	Trigonometry and Conics	
or MATH 1411	Calculus I	
PHYS 2320	Introductory Mechanics	
PHYS 2120	Laboratory for PHYS 2320	
<b>Civil Engineering Core (All courses require a grade of C or better.)</b>		
Required Courses:		
CE 1301	Civil Engineering Fundamentals	3
CE 1313	Engineering Measurements	3
CE 2315	Statics	3
CE 2334	Mechanics of Materials	3
CE 2335	Geological Engineering	3

CE 2338	Mechanics II (Dynamics)	3
or MECH 2340	Mechanics II -Dynamics	
or PHYS 3331	Thermal Physics	
CE 2343	Structural Analysis	3
CE 2373	Engr Probability & Statistics	3
CE 2375	Intro to Fluid Mechanics	3
CE 2385	Environmental Engr Fundamental	3
MATH 1411	Calculus I	4
MATH 1312	Calculus II	3
MATH 2313	Calculus III	3
MATH 2326	Differential Equations	3
<b>Civil Engineering Major</b>		
Required Courses:		
CE 3334	Construction Management	3
CE 3336	Civil Engineering Materials	3
CE 3342	Water & Waste Water Engr	3
CE 3345	Design of Concrete Structures	3
CE 3348	Geotechnical Engineering	3
CE 3361	Design of Steel Structures	3
CE 3456	Hydrology & Hydraulic Engr	4
CE 4188	Senior Design I	1
CE 4195	Jr. Professional Orientation	1
CE 4288	Senior Design II	2
CE 4339	Geostructural Design	3
CE 4340	Transportation Engineering	3
CE 4375	Adv. Topics in Civil Engr.	3
CE 4376	Adv Topics in Civ Engr II	3
<b>Lower Division Technical Elective:</b>		
Select one course from the following (Only 3 hours apply towards the requirement):		3
BIOL 1305	General Biology	
CHEM 1306	General Chemistry	
MATH 3323	Matrix Algebra	
PHYS 2321 & PHYS 2121	Introductory Electromagnetism and Laboratory for PHYS 2321	
<b>Upper Division Technical Elective:</b>		
Select one course from the following or any other upper division course from the College of Engineering (excluding CE) or College of Science (Only 3 hours apply towards the requirement).		3
ACCT 2301	Principles of Accounting I	
CE 4377	Adv Topics in Civil Engr III	
CHEM 1306	General Chemistry	
MATH 3323	Matrix Algebra	
POLS 3350	Intro to Public Administration	
POLS 3351	The Public Policy Process	
POLS 4359	Urban Planning	
RWS 3359	Technical Writing	

**Total Hours****129**

## University Core Curriculum

The department may make specific suggestions for courses which are most applicable towards your major.

All courses require a C or better

**I. Communication (six hours)**

Code	Title	Hours
The objective of the communication component is to enable the student to communicate effectively in clear and correct prose or orally in a style appropriate to the subject, occasion, and audience.		
Select six hours of the following:		6
For students whose secondary education was in English:		
COMM 1611	Written and Oral Communication	
ENGL 1313	Writing About Literature	
RWS 1301	Rhetoric & Composition I	
RWS 1302	Rhetoric & Composition 2	
RWS 1601	Rhetoric, Composition & Comm	
For students whose secondary education was not in English:		
ESOL 1311	Expos Engl Compos-Spkr Esl	
ESOL 1312	Res & Crit Writng Spkr Esl	
<b>Total Hours</b>		<b>6</b>

**II. American History (six hours)**

Code	Title	Hours
The objectives of the history component are to expand students' knowledge of the origin and history of the U.S., their comprehension of the past and current role of the U.S. in the world, and their ability to critically evaluate and analyze historical evidence. U.S. history courses (three hours must be Texas history) include:		
HIST 1301	History of U.S. to 1865	3
HIST 1302	History of U.S. Since 1865	3
<b>Total Hours</b>		<b>6</b>

**III. Language, Philosophy & Culture (three hours)**

Code	Title	Hours
The objective of the humanities component is to expand students' knowledge of the human condition and human cultures, especially in relation to behaviors, ideas, and values expressed in works of human imagination and thought. Through study in disciplines such as literature and philosophy, students engage in critical analysis and develop an appreciation of the humanities as fundamental to the health and survival of any society.		
Select one of the following:		3
AFST 2300	Intro-African Amer Studies	
CHIC 2302	Latina/o Presence in the U.S.	
ENGL 2311	English Literature	
ENGL 2312	English Literature	
ENGL 2313	Intro to American Fiction	
ENGL 2314	Intro to American Drama	
ENGL 2318	Intro to American Poetry	
FREN 2322	Making of the "Other" Americas	
HIST 2301	World History to 1500	
HIST 2302	World History Since 1500	
PHIL 1301	Introduction to Philosophy	
PHIL 2306	Ethics	
RS 1301	Introduct to Religious Studies	
SPAN 2340	Seeing & Naming: Conversations	
WS 2300	Introduction to Womens Studies	
WS 2350	Global Feminisms	
<b>Total Hours</b>		<b>3</b>

**IV. Mathematics (three hours)**

Code	Title	Hours	
The objective of the mathematics component is to develop a quantitatively literate college graduate. Every college graduate should be able to apply basic mathematical tools in the solution of real-world problems.			
Select one of the following:			
MATH 1309	College Algebra	3	
MATH 1310	Trigonometry and Conics		
MATH 1319	Math in the Modern World		
MATH 1320	Math for Social Sciences I		
MATH 1411	Calculus I		
MATH 1508	Precalculus <sup>1,2</sup>		
MATH 2301	Math for Social Sciences II		
STAT 1380	Statistical Literacy		
STAT 2480	Elementary Statistical Methods		
1 A higher-level course in the calculus sequence can be substituted.			
2 TCCN MATH 1314 will also satisfy this requirement.			
<b>Total Hours</b>		<b>3</b>	

**V. Life & Physical Sciences (six hours)**

Code	Title	Hours
The objective of the study of the natural sciences is to enable the student to understand, construct, and evaluate relationships in the natural sciences, and to enable the student to understand the bases for building and testing theories. The courses listed are for non-majors; the major courses in the discipline can be substituted for the non-major sequence. A minimum of two semesters of lecture and one semester of laboratory associated with one of the courses, or two semesters of combined (3 credit) lecture-laboratory courses (Only six hours apply toward the required 42.):		
Select one of the following:		
ASTR 1107	Astronomy Lab I	1-4
ASTR 1307	Elem Astronomy-Solar System	
ASTR 1308	Elem Astr Stars & Galaxies	
BIOL 1103	Introductory Biology Lab	
BIOL 1104	Human Biology Laboratory	
BIOL 1107	Topics in Study of Life I	
BIOL 1108	Organismal Biology Laboratory	
BIOL 1203	Introductory Biology	
BIOL 1304	Human Biology	
BIOL 1305	General Biology	
BIOL 1306	Organismal Biology	
BIOL 2111	Human Anat/Physio Lab I	
BIOL 2113	Human Anat/Physio Lab II	
BIOL 2311	Human Anat/Physiology I	
BIOL 2313	Human Anat/Physiology II	
CHEM 1105	Laboratory for CHEM 1305	
CHEM 1106	Laboratory for CHEM 1306	
CHEM 1107	Intro General Chemistry Lab	
CHEM 1108	Intro Organic & Biochem Lab	
CHEM 1305	General Chemistry	
CHEM 1306	General Chemistry	
CHEM 1307	Intro to General Chemistry	
CHEM 1308	Intro Organic & Biochemistry	
ESCI 1101	Environmental Sci. Lab	
ESCI 1102	Non-major Lab for ESCI 1301	
ESCI 1202	Intro to Environment Science 2	
ESCI 1301	Intro to Environmental Sci	

GEOG 1106	Laboratory for GEOG 1306
GEOG 1306	Physical Geography
GEOL 1103	Lab for GEOL 1313
GEOL 1104	Lab for GEOL 1314
GEOL 1111	Principles of Earth Sci - Lab
GEOL 1112	Laboratory for Geology 1212
GEOL 1211	Principles of Earth Sciences
GEOL 1212	Principles of Earth Science
GEOL 1230	The Blue Planet
GEOL 1231	Natural Hazards
GEOL 1313	Intro to Physical Geology
GEOL 1314	Intro to Historical Geol
HSCI 2302	Fundamentals of Nutrition
HSCI 2303	Wellness Dynamics
MICR 2330	Microorganisms and Disease
PHYS 1403	General Physics I
PHYS 1404	General Physics II
PHYS 2120	Laboratory for PHYS 2320
PHYS 2121	Laboratory for PHYS 2321
PHYS 2320	Introductory Mechanics
PHYS 2321	Introductory Electromagnetism

**Total Hours** **6**

## VI. Political Science (six hours)

Code	Title	Hours
The objectives of the political science component are to expand students' knowledge of the origin and evolution of the U.S. and Texas political systems, focusing on the growth of political institutions, and on the constitutions of Texas and the United States; and to enhance their understanding of federalism, states rights, and individual civil liberties, rights, and responsibilities.		
Required Courses:		
POLS 2310	Introduction to Politics	3
POLS 2311	American Gover & Politics	3

**Total Hours** **6**

## VII. Social and Behavioral Sciences (three hours)

Code	Title	Hours
The objective of the social and behavioral science component is to increase students' knowledge of how social and behavioral scientists discover, describe, and explain the behaviors and interactions among individuals, groups, institutions, events, and ideas. Such knowledge will better equip students to understand themselves and the roles they play in addressing the issues facing humanity.		
Select one of the following:		
ANTH 1301	Intro-Phys Anth/Archeolog	3
ANTH 1302	Intro-Cultural Anthropology	
ANTH 1310	Cultural Geography	
ANTH 2320	Intro to Linguistics	
CE 2326	Econ for Engrs & Scientists	
ASIA 2300	Asian American Studies	
COMM 2350	Interpersonal Communication	
COMM 2372	Mass Media and Society	
ECON 2303	Principles of Macroeconomics	
ECON 2304	Principles of Microeconomics	
EDPC 1301	Introduction to Ed Psychology	
EDU 1342	Action Research in Classrooms	
ENGL 2320	Introduction to Linguistics	
GEOG 1310	Cultural Geography	

LEAD 2300	Community Service
LING 2320	An Intro. to Linguistics
LING 2340	Lang. Inside & Out: Sel Topics
PSYC 1301	Introduction to Psychology
SOCI 1301	Introduction to Sociology
SOCI 1310	Cultural Geography

**Total Hours** **3**

### VIII. Creative Arts (three hours)

Code	Title	Hours
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The objective of the visual and performing arts component is to expand students' knowledge and appreciation of the human imagination as expressed through works of visual art, dance, music, theatre and film. Through study in these disciplines, students will form aesthetic judgments and develop an appreciation of the arts as fundamental to the health and survival of any society.

Select one of the following: 3

ART 1300	Art Appreciation
ARTH 1305	History of Art I
ARTH 1306	History of Art II
CHIC 1311	Chicana/o Fine Arts Appreciat
DANC 1304	Dance Appreciation
FILM 1390	Intro-Art of Motion Pict.
MUSL 1324	Music Appreciation
MUSL 1327	Jazz to Rock
MUSL 2321	Music, Culture, and Society
THEA 1313	Introduction to Theatre

**Total Hours** **3**

### IX. Component Area Option (six hours)

Code	Title	Hours
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The objective of the institutionally designated option component is to develop the critical thinking skills and academic tools required to be an effective learner. Special emphasis is placed on the use of technology in problem-solving, communications, and knowledge acquisition.

Select two of the following: 6

BUSN 1301	Intro to Global Business
COMM 1301	Public Speaking
COMM 1302	Business/Profession Comm
CS 1310	Intro-Computational Thinking
CS 1320	Computer Programming Sci/Engr
EL 1301	Eng Innovation and Leadership
LEAD 1300	Introduction to Leadership
SCI 1301	Inquiry in Math & Science
UNIV 1301	Seminar/Critical Inquiry

**Total Hours** **6**

## 4-Year Sample Degree Plan

### BS Civil Engineering (Starting with Pre-Calculus)

Code	Title	Hours
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#### BACHELOR OF SCIENCE IN CIVIL ENGINEERING

##### Summer

(if needed)

MATH 1508 or MATH 1310	Precalculus <sup>7</sup> Trigonometry and Conics	
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##### FRESHMAN

##### Fall

CE 1301	Civil Engineering Fundamentals <sup>1</sup>	3
MATH 1411	Calculus I <sup>1</sup>	4
PHYS 2320	Introductory Mechanics	3
PHYS 2120	Laboratory for PHYS 2320	1
RWS 1301	Rhetoric & Composition I <sup>1</sup>	3
UNIV 1301	Seminar/Critical Inquiry <sup>1</sup>	3
<b>Spring</b>		
CE 1313	Engineering Measurements <sup>1</sup>	3
CE 2315	Statics <sup>1</sup>	3
CHEM 1305 & CHEM 1105	General Chemistry and Laboratory for CHEM 1305 <sup>1</sup>	4
MATH 1312	Calculus II <sup>1</sup>	3
RWS 1302	Rhetoric & Composition 2 <sup>1</sup>	3
<b>SOPHOMORE</b>		
<b>Fall</b>		
CE 2334	Mechanics of Materials <sup>1</sup>	3
CE 2375	Intro to Fluid Mechanics	3
CS 1320	Computer Programming Sci/Engr <sup>1</sup>	3
HIST 1301	History of U.S. to 1865 <sup>1</sup>	3
MATH 2313	Calculus III <sup>1</sup>	3
Lower Division Technical Elective <sup>2</sup>		3
<b>Spring</b>		
CE 2335 or GEO 3321	Geological Engineering	3
CE 2343	Structural Analysis <sup>1</sup>	3
CE 2385	Environmental Engr Fundamental <sup>1</sup>	3
MATH 2326	Differential Equations <sup>1</sup>	3
HIST 1302	History of U.S. Since 1865 <sup>1</sup>	3
Dynamics Elective (3 hrs. towards degree) <sup>3</sup>		3
<b>JUNIOR</b>		
<b>Fall</b>		
CE 2326	Econ for Engrs & Scientists <sup>1</sup>	3
CE 2373	Engr Probability & Statistics	3
CE 3336	Civil Engineering Materials	3
CE 3345	Design of Concrete Structures	3
CE 3456	Hydrology & Hydraulic Engr	4
CE 4195	Jr. Professional Orientation	1
<b>Spring</b>		
CE 3334	Construction Management	3
CE 3342	Water & Waste Water Engr	3
CE 3348	Geotechnical Engineering	3
CE 3361	Design of Steel Structures	3
POLS 2310	Introduction to Politics	3
<b>SENIOR</b>		
<b>Fall</b>		
CE 4188	Senior Design I	1
CE 4339	Geostructural Design	3
CE 4340	Transportation Engineering	3
CE 4375	Adv. Topics in Civil Engr.	3
POLS 2311	American Gover & Politics	3
<b>Spring</b>		
Creative Arts Elective <sup>*,4,1</sup>		3

CE 4288	Senior Design II	2
CE 4376	Adv Topics in Civ Engr II	3
Upper Division Technical Elective <sup>5</sup>		3
Language Phil. & Cult. Elective <sup>*,6,1</sup>		3

**Notes:**

\*Prerequisite Course

\*+Corequisite if scheduled for the same semester.

1 A grade of "C" or better must be achieved for all Lower-Division courses, including the Arts and Humanities electives, as well as CE 2373 (IE 3373) &amp; CE 2335 (GEOL 3321)

2 MATH 3323, PHYS 2421, CHEM 1306 OR BIOL 1305

3 CE 2338 or MECH 2340 or PHYS 3331 (PreRequisite for CE 2338 is CE 2315 and MATH 1312)

4 Select an ART course from ART 1300; ARTH 1305, 1306; DANC 1304; MUSL 1324, 1327, 2321; THEA 1313; FILM 1390

5 CE 4377, POLS 3350, POLS 3351; POL 4359, RWS 3359, ACCT 2301, MATH 3323, CHEM 1306

6 Select a Lang. Philosophy and Culture course from ENGL 2311, 2312, 2313, 2314, 2318; FREN 2322; HIST 2301, 2302; PHIL 1301, 2306; RS 1301; SPAN 2340; WS 2300, 2350

7 Not required for Calculus I ready students

**Total Hours****128****BS Civil Engineering (Starting with Calculus)**

Code	Title	Hours
<b>BACHELOR OF SCIENCE IN CIVIL ENGINEERING</b>		
<b>FRESHMAN</b>		
<b>Fall</b>		
CE 1301	Civil Engineering Fundamentals <sup>1</sup>	3
MATH 1411	Calculus I <sup>1</sup>	4
PHYS 2320	Introductory Mechanics	3
PHYS 2120	Laboratory for PHYS 2320	1
RWS 1301	Rhetoric & Composition I <sup>1</sup>	3
UNIV 1301	Seminar/Critical Inquiry <sup>1</sup>	3
<b>Spring</b>		
CE 1313	Engineering Measurements <sup>1</sup>	3
CE 2315	Statics <sup>1</sup>	3
CHEM 1305 & CHEM 1105	General Chemistry and Laboratory for CHEM 1305 <sup>1</sup>	4
MATH 1312	Calculus II <sup>1</sup>	3
RWS 1302	Rhetoric & Composition 2 <sup>1</sup>	3
<b>SOPHOMORE</b>		
<b>Fall</b>		
CE 2334	Mechanics of Materials <sup>1</sup>	3
CE 2375	Intro to Fluid Mechanics	3
CS 1320	Computer Programming Sci/Engr <sup>1</sup>	3
HIST 1301	History of U.S. to 1865 <sup>1</sup>	3
MATH 2313	Calculus III <sup>1</sup>	3
Lower Division Technical Elective <sup>2</sup>		3
<b>Spring</b>		
CE 2335 or GEO 3321	Geological Engineering	3
CE 2343	Structural Analysis <sup>1</sup>	3
CE 2385	Environmental Engr Fundamental <sup>1</sup>	3
HIST 1302	History of U.S. Since 1865 <sup>1</sup>	3
MATH 2326	Differential Equations <sup>1</sup>	3
Dynamics Elective (3 hrs. towards degree) <sup>3</sup>		3
<b>JUNIOR</b>		



<b>Fall</b>		
CE 2326	Econ for Engrs & Scientists <sup>1</sup>	3
CE 2373	Engr Probability & Statistics	3
CE 3336	Civil Engineering Materials	3
CE 3345	Design of Concrete Structures	3
CE 3456	Hydrology & Hydraulic Engr	4
CE 4195	Jr. Professional Orientation	1

<b>Spring</b>		
CE 3334	Construction Management	3
CE 3342	Water & Waste Water Engr	3
CE 3348	Geotechnical Engineering	3
CE 3361	Design of Steel Structures	3
POLS 2310	Introduction to Politics	3

**SENIOR**

<b>Fall</b>		
CE 4188	Senior Design I	1
CE 4339	Geostructural Design	3
CE 4340	Transportation Engineering	3
CE 4375	Adv. Topics in Civil Engr.	3
POLS 2311	American Gover & Politics	3
Creative Arts Elective <sup>*,4,1</sup>		3

<b>Spring</b>		
CE 4288	Senior Design II	2
CE 4376	Adv Topics in Civ Engr II	3
General Elective (3 hrs. towards degree) <sup>5</sup>		3
Language Phil. & Cult. Elective <sup>*,6,1</sup>		3

**Notes:**

\*Prerequisite Course

\*+Corequisite if scheduled for the same semester.

1 A grade of "C" or better must be achieved for all Lower-Division courses, including the Arts and Humanities electives, as well as CE 2373 (IE 3373) & CE 2335 (GEOL 3321)

2 MATH 3323, PHYS 2421, CHEM 1306 OR BIOL 1305

3 CE 2338 or MECH 2340 or PHYS 3331 (PreRequisite for CE 2338 is CE 2315 and MATH 1312)

4 Select an ART course from ART 1300; ARTH 1305, 1306; DANC 1304; MUSL 1324, 1327, 2321; THEA 1313; FILM 1390

5 CE 4377, POLS 3350, POLS 3351; POL 4359, RWS 3359, ACCT 2301, MATH 3323, CHEM 1306

6 Select a Lang. Philosophy and Culture course from ENGL 2311, 2312, 2313, 2314, 2318; FREN 2322; HIST 2301, 2302; PHIL 1301, 2306; RS 1301; SPAN 2340; WS 2300, 2350

7 Not required for Calculus I ready students

**Total Hours**

**128**