

UNDERGRADUATE STUDENT HANDBOOK

DEPARTMENT OF CIVIL ENGINEERING



KANSAS STATE
UNIVERSITY

Carl R. Ice College of Engineering

2118 Fiedler Hall (Main Office)

Kansas State University

Manhattan, KS 66506-5000

(785) 532-5862

ce@engg.ksu.edu

<http://ce.ksu.edu/>



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INTRODUCTION

This Undergraduate Student Handbook is intended to help Civil Engineering (CE) students understand and make effective use of educational opportunities available within the framework of the CE curriculum. With these available opportunities, come responsibilities to carefully plan, and to effectively use university, college and department resources to support student development of personal, academic, and professional objectives. The CE faculty and staff as well as others are available to assist students in this endeavor.

The primary responsibility for meeting all graduation requirements rests with the individual student. Although this Handbook references many mandatory requirements of Kansas State University, the Carl R. Ice College of Engineering, and the Department of Civil Engineering, it should not be utilized as a sole source of information to the exclusion of other university, college, and department publications and websites.

Students should be aware that the educational process is constantly evolving. This may result in periodic changes in curriculum requirements. Students are advised that these changes may have an impact upon course prerequisites and course offerings that may affect their program of study. The CE Department will make every effort to accommodate students who would be adversely affected by such changes. However, students are responsible for identifying changes and determining the impact of any changes on their course sequencing and, ultimately, their graduation date.

ACCREDITATION

The civil engineering undergraduate program is fully accredited by the Accreditation Board for Engineering and Technology (ABET). For additional information about the accreditation of the Department of Civil Engineering, see <http://ce.ksu.edu/accreditation/>.

DEGREE REQUIREMENTS

Undergraduate students are required to successfully complete **128** credit hours of courses in the approved curriculum that a student is following based upon the date the student entered the CE program. Students are always allowed to switch to a newer curriculum, but must have an acceptable reason to switch to an older curriculum, such as taking a leave of absence from pursuing an academic degree and returning back to campus. Most of the required credit hours are based on required courses specified in the curriculum, but there are some elective courses to allow students to better match their educational and professional objectives.

TRANSFER

The Carl R. Ice College of Engineering Student Services website on Academic Advising provide details on the procedures and standards of credit transfer: <http://engg.ksu.edu/student-services/transfer>. Before a student decides to take a course at another institution, they should first check to be sure the transfer credit is acceptable as a replacement for an existing course in the K-State CE curriculum.

TEST-OUT PROCEDURES

The CE Department allows qualified students to avoid repeating coursework in subject areas they have already mastered through non-academic or non-transfer credit means. Students should enroll in the course for which they seek credit by examination and contact the course instructor or department head during the first week of classes for details of the test-out procedure to be followed for the course.

ACADEMIC ADVISOR

The CE Office Specialist II in the CE Department main office (2118 Fielder Hall) assigns a faculty academic advisor to assist the student during their academic career. Students should consult regularly with their academic advisor for career planning and other academic matters. Every change in course enrollment requires approval by both their academic advisor and the Dean of Engineering or designate. A student can request a change in their academic advisor by submitting a form to the CE Office Specialist II <http://ce.ksu.edu/docs/advising/academic-adviser-change-request.pdf>.

KSIS

K-State Student Information System (KSIS) is a web-based database access program. The URL address is <http://ksis.ksu.edu/> and it also can be accessed directly from the University web page. In addition to students being able to access their Student Information System records, and update biographical information such as addresses, name changes, etc., KSIS allows the faculty and staff to release enrollment flags so students can electronically enroll, drop and add courses. Faculty will also be able to electronically issue permission to individual students to enroll in their classes.

GENERAL EDUCATION REQUIREMENTS

Each student must successfully complete credit-bearing courses/experiences to cover all of the K-State 8 areas:

- Aesthetic Interpretation
- Empirical and Quantitative Reasoning
- Ethical Reasoning and Responsibility
- Global Issues and Perspectives
- Historical Perspectives
- Human Diversity within the U.S.
- Natural and Physical Sciences
- Social Sciences

A minimum of four different course prefixes (e.g., AGECE, MATH, FSHS, HIST) must be represented in the fulfillment of the K-State 8 requirements, because the intent of the K-State 8 is for students to explore the perspectives of disciplines that may be quite different from those of their own majors. Transfer students are required to meet all K-State 8 requirements. For more information, go to: <http://ksu.edu/kstate8/index.html>.

The required courses in the CE curriculum automatically provides for the completion of five of the eight requirements. CE students should carefully select their Humanities, Social Science, and CE Track elective courses to also provide exposure to the three uncovered K-State 8 areas: Aesthetic Experience, Ethical Reasoning and Responsibility, and Human Diversity within the U.S. To view the K-State 8 course matrix for engineering students, visit: <https://engg.ksu.edu/docs/student-services/kstate-8-matrix.pdf>.

HUMANITIES AND SOCIAL SCIENCE ELECTIVES

Students must plan their courses carefully to ensure humanities and social science courses are selected from the **General Education** classes. Consult with your academic advisor before enrolling in these classes. To view Carl R. Ice College of Engineering Humanities and Social Science Electives Course List, visit: <https://engg.ksu.edu/docs/student-services/hss.pdf>

CURRICULUM TRACKS

The University publishes an Undergraduate Catalog each year that contains all of the current rules and regulations, current curriculum for those students entering the program during the catalog year, and the current course descriptions. The catalog for the current year and archived catalogs from prior years can be found at: <http://courses.ksu.edu/courses/catalogs/>. Course descriptions and the curriculum for the current or an archived year can be found by selecting the College & Department tab of the right side of the webpage and then navigating to Civil Engineering under the College of Engineering heading. On this webpage are links to the curriculum and a listing of links to all Civil Engineering undergraduate courses. The curriculum link shows the curriculum for all of the available tracks and the organization of the courses for an eight-semester program.

By default, all civil engineering undergraduate students are assigned to the General Track upon entrance to the CE Program. Students should declare a specialty track by the middle of their junior year, so that their graduation date is not delayed. Twelve credit hours of CE Design electives and twelve credit hours of CE Track electives are required in each of the seven tracks: 1) General, 2) Construction Engineering, 3) Environmental Engineering, 4) Geotechnical Engineering, 5) Structural Engineering, 6) Transportation / Materials Engineering, and 7) Water Resources Engineering. The requirements for each track are specified in the University Catalog. To declare a specialty track, go to the **Ike and Letty Evans Academic Success Center** (located in the Fiedler Learning Commons) and submit a **Change of Curriculum** form.

CURRICULUM FLOWCHARTS

Many courses require successful completion of prerequisite courses. The **flowcharts** are intended to assist students in quickly evaluating their ability to take advanced courses requiring such prerequisites. Care should be taken to verify course requirements that may require new prerequisite courses. To view the latest CE curriculum flowchart for each available track, visit: <http://ce.ksu.edu/undergrad/advising>. To complete a flowchart using courses found in your KSIS record, go to: <http://flowcharts.engg.ksu.edu>.

COURSE SUBSTITUTIONS

Occasionally, the CE faculty will consider a reasonable request to substitute another University course for a required course in the Civil Engineering curriculum. Students making such a request should consult their academic advisor and the Civil Engineering department head or designate after downloading and completing the standard **Course Substitution** form:

https://engg.ksu.edu/docs/student-services/transfer_course_sub_form.pdf

Return this form to the **Ike and Letty Evans Academic Success Center**.

UNIVERSITY HONORS PROGRAM

The **University Honors Program** offers interested students an intellectual challenge consistent with their abilities and interests. Participation in the University Honors Program will not add to the time required for graduation for most students and should be a challenging and rewarding experience. Interested civil engineering students should contact the Civil Engineering Honors Program advisor for details about the program. For general details visit: <http://engg.ksu.edu/current-students/honors-program>.

**ACADEMIC
PERFORMANCE**

In addition to completing the all of the courses in the CE curriculum, the University requires a **2.0** overall GPA to graduate. However, there are also requirements related to performance in selected classes that must be met to graduate. Students should review the requirements outlined in the catalog year that is applicable to their degree program.

**DROPPING/ADDING
COURSES**

Students should consider with care the consequences of dropping or adding courses. Students should review their academic plans with their academic advisor to assess the impact changes, especially dropping a course, on future semesters.

Students should not change courses agreed upon by their academic advisor, unless their academic advisor agrees with the change. It is acceptable to change sections without contacting your academic advisor.

Students can add and drop courses through KSIS through the first week of classes. To add after the first week of classes, students must obtain permission from the class instructor (instructors may issue permission online or complete a paper form) and have your academic advisor release your flag. Once permission is granted (flag is released), a student will be able to add the class on KSIS.

Dropping courses after the 25th class day will result in a “W” being recorded on your transcript, and courses cannot be dropped after the 50th class day. Consult the Schedule of Classes for the exact dates applicable to each semester. See: <http://courses.ksu.edu/courses/schedules.html>.

**COURSE RETAKE
POLICY**

The University allows students to **retake** up to five courses to improve the grade and grade point average. Consult the appropriate K-State Undergraduate Catalog for details:

<https://www.k-state.edu/registrar/students/academicpolicy/registration/retake/index.html>

**COURSE
PREREQUISITES**

Faculty carefully consider the need for prerequisite courses for any particular course. As such, all students are required to complete successfully all prerequisite courses including in some cases a letter grade of “C” or better, prior to attempting a course. Students who have not successfully completed prerequisite courses will be dropped from the course.

**INCOMPLETE
GRADES POLICY**

The grade of incomplete is normally given only for verifiable personal emergencies. A student’s simple failure to complete work within the required time is not a sufficient reason to be given an incomplete. *If an “I” grade is assigned, the grade automatically becomes an “F” if work is not completed within the granted extension period.*

**ACADEMIC/
WARNING
DISMISSAL
POLICY**

The University has set specific policies for new and continuing students for academic warning/dismissal policies. See:

<https://engg.ksu.edu/docs/student-services/academic-warning-dismissal-policies.pdf> and <http://engg.ksu.edu/student-services/reinstatement>.

**ENGINEERING
ASSEMBLY
POLICIES AND
REQUIREMENTS**

Engineering Assembly (CE 015) is a required credit/no credit course for 0 (no) credit hours. An undergraduate student graduating in Civil Engineering must have earned credit for all semesters the student was enrolled in the CE program at K-State. The Engineering Assembly is organized by the KSU Student

Chapter of the American Society of Civil Engineers (ASCE) under the supervision of its Faculty Advisor(s). For attendance policy and other CE 015 course requirements, visit: <http://engg.ksu.edu/ASCE>.

The penalty for failure to complete the requirements of Engineering Assembly is the same as that of any other required course—the student cannot graduate until requirements are satisfied. In cases where a student has failed to attend or enroll for a semester, the CE Department Head may require another course or an extensive written report on an appropriate topic to make-up for the deficiency.

**EARLY
ENROLLMENT
FOR CONTINUING
STUDENTS**

Near the middle of each semester, the University starts the process of enrolling students in classes for the next semester. As a means for expediting and coordinating the advising process, the Department schedules times for students to meet with their faculty advisors before University enrollment begins. Students should sign up for an appointment with their faculty advisor, and follow the specific instructions provided. Online enrollment is not possible until students have met with their advisor and the enrollment flag has been released. Failure to meet with your advisor during the early enrollment period may result in difficulties in scheduling and could delay your graduation.

**ACADEMIC
HONOR &
INTEGRITY
SYSTEM**

Beginning Fall semester 1999, K-State initiated an honor system based on personal integrity, which is presumed to be a sufficient assurance that in academic matters one's work is performed honestly and without unauthorized assistance. Plagiarism and cheating are serious offenses and will be dealt with as appropriate. For details, visit: <http://ksu.edu/honor>.

**RETENTION OF
STUDENT WORK**

Student projects, assignments, presentations, and models may need to be retained by the faculty for display, use in teaching, course records, accreditation documentation, etc. Students may request photocopies or otherwise copy any work retained by the faculty.

**GRADUATION
CHECK**

Two semesters before graduation, students should schedule a **graduation check** with the Assistant Dean in the **Ike and Letty Evans Academic Success Center**. This meeting is used to check that all graduation requirements will be properly fulfilled. If there are discrepancies or inadequacies, they may be addressed in the following semesters before it impacts your graduation date. To schedule a graduation check, visit: <http://gradcheck.engg.ksu.edu/student>.

**INTENT TO
GRADUATE**

All students who expect to fulfill their graduation requirements by the end of a given semester must apply for graduation in KSIS. For help, visit: http://kstate.service-now.com/kb_view.do?sysparm_article=KB13358.

**DUAL DEGREE
PROGRAMS**

Students who wish to pursue interdisciplinary interest in-depth may enroll in a dual-degree program. In general, the second undergraduate degree may be earned with an additional two or three semesters of study.

**GRADUATE
PROGRAM**

Major work leading to the Master of Science and Doctor of Philosophy degrees is offered in the areas of specialization in structural analysis and design, geotechnical engineering, water resources and environmental engineering, and transportation and materials engineering.

Students interested in attending graduate school should identify the graduate study area as soon as possible. Undergraduate course selection may be affected by graduate school admission requirements. Students intending to go to graduate school may make very different elective choices than those who are not contemplating advanced degrees. Students considering graduate school should consult with their advisor to explore the possibilities and plan for the future.

**ENGINEERING
LICENSURE**

Students are strongly encouraged to become a licensed engineer. It is highly recommended that students take the FE exam in their senior year prior to graduation. Consult the Carl R. Ice College of Engineering website on current students for information about the Fundamentals of Engineering (FE) Exam: <http://engg.ksu.edu/current-students/fe-exam/>.

**ACADEMIC
SUCCESS CENTER**

For further information and help, visit the **Ike and Letty Evans Academic Success Center** website: <https://engg.ksu.edu/about/departments/academic-success-center/>

Curriculum for Bachelor of Science in Civil Engineering**Number of hours required for graduation = 128**

Approved by CE Faculty in Spring 2019

Fall Semester			Spring Semester		
Course		Sem. Hrs.	Course		Sem. Hrs.
<u>FRESHMAN</u>					
CE 015	Engineering Assembly	0	CE 015	Engineering Assembly	0
CE 101	Intro. to Civil Engineering	1	CHM 230	Chemistry II	4
CHM 210	Chemistry I	4	CE 212	Elementary Surveying	3
ECON 110	Prin. Macroeconomics I	3	GEOL 100	Earth in Action	3
ENGL 100	Expository Writing I*	3	MATH 221	Anal. Geom. & Calc. II	4
MATH 220	Anal. Geom. & Calc. I	4	Humanities or Social Science Elective**		3
CE 202	Civil Engineering Graphics	3	TOTAL		17
TOTAL		18			
<u>SOPHOMORE</u>					
CE 015	Engineering Assembly	0	CE 015	Engineering Assembly	0
CIS 209	Programming for Engrs.	3	CE 333	Statics	3
COMM 105	Public Speaking IA	2	MATH 340	Elem. Diff. Equations	4
MATH 222	Anal. Geom. & Calc. III	4	PHYS 214	Engineering Physics II	5
PHYS 213	Engineering Physics I	5	STAT 510	Intro. Prob. & Stat I	3
Humanities or Social Science Elective**		3	TOTAL		15
TOTAL		17			
<u>JUNIOR</u>					
CE 015	Engineering Assembly	0	CE 015	Engineering Assembly	0
CE 533	Mech. of Materials	3	CE 411	Route Design and Location	3
CE 534	Mech. of Materials Lab	1	CE 522	Soil Mechanics I	3
ME 512	Dynamics	3	CE 537	Intro. Structural Analysis	3
ME 513	Thermodynamics I	3	CE 563	Environ. Engg. Fundamentals	3
ENGL 415	Written Comm. for Engrs.*	3	ME 571	Fluid Mechanics	3
Humanities or Social Sci Elective**		3	TOTAL		15
TOTAL		16			
<u>SENIOR</u>					
CE 015	Engineering Assembly	0	CE 015	Engineering Assembly	0
CE 550	Water Resources Engr I	3	CE 585	Civil Engineering Project	3
CE Track electives***		6	CE Track electives***		6
CE Design electives****		6	CE Design electives****		6
TOTAL		15	TOTAL		15

* Students must complete the appropriate prerequisite credits for ENGL 415, but may only apply 3 hours of ENGL 415 prerequisite credits towards their degree requirements.

** Humanities and Social Science electives are to be selected from general education courses / K-State 8 that are also on the engineering humanities and social sciences elective list and need not be taken in the order listed in the curriculum.

*** Track electives are to be selected in consultation with the student's faculty advisor to satisfy the requirements of the Track the student has chosen. One course from either the Engineering Materials or the Circuits, Fields and Electronics Engineering Science group is required in the General Track.

**** CE Design electives are to be selected from the list approved by the department to satisfy Track requirements.

**PROGRAM OF STUDY ORGANIZER FOR A BS IN CIVIL ENGINEERING AT K-STATE
(ALL Tracks)**

Approved by CE Faculty in Spring 2020

<u>Dept.</u>	<u>No.</u>	<u>Course Name</u> <u>[Semester, if not both]</u>	<u>Credit</u> <u>Hours</u>	<u>Prerequisites</u>
<u>Carl R. Ice College of Engineering Requirements</u>				
CHM	210	Chemistry I	4	See University Catalog
CHM	230	Chemistry II	4	CHM 210
ECON	110	Economics I	3	See University Catalog
ENGL	415	Written Communication for Engineers	3	See University Catalog
MATH	220	Analytic Geometry and Calculus I	4	See University Catalog
MATH	221	Analytic Geometry and Calculus II	4	C or better in MATH 220
MATH	222	Analytic Geometry and Calculus III	4	C or better in MATH 221
MATH	340	Elementary Differential Equations	4	C or better in MATH 221
PHYS	213	Engineering Physics I	5	pre or conc MATH 221
PHYS	214	Engineering Physics II	5	PHYS 213 and MATH 221
<u>Civil Engineering Requirements (ALL Tracks)</u>				
CE	015	Engineering Assembly	0	
CE	101	Introduction to Civil Engineering	1	
CE	202	Civil Engineering Graphics	3	Plane Geometry
CE	212	Elementary Surveying Engineering	3	Plane Trigonometry
CE	333	Statics	3	MATH 221 and PHYS 213
CE	411	Route Design and Location	3	C or better in CE 212, MATH 221, and PHYS 213
CE	522	Soil Mechanics I	3	C or better in CE 533, and conc ME 571
CE	533	Mechanics of Materials	3	C or better in CE 333 and pre or conc MATH 222
CE	534	Mechanics of Materials Lab	1	pre or conc CE 533
CE	537	Introduction to Structural Engineering	3	C or better in CE 533
CE	550	Water Resources Engineering I [F]	3	C or better in STAT 510 and PHYS 213
CE	563	Environmental Engineering Fundamentals	3	C or better in CHM 230 and MATH 222
CE	585	Civil Engineering Project	3	ENGL 415, 6 hrs of C or better in CE Design electives, and pre or conc 12 hrs of CE Design electives
CIS	209	C Programming for Engineers	3	MATH 220
COMM	105	Public Speaking	2	None
ENGL	100	Expository Writing I	3	None
GEOL	100	Earth in Action	3	None
ME	512	Dynamics	3	CE 333 and pre or conc MATH 340
ME	513	Thermodynamics I	3	PHYS 213 and MATH 222
ME	571	Fluid Mechanics	3	ME 512 and pre or conc ME 513
STAT	510	Statistics for Engineers	3	MATH 221
		Humanities and Social Science Classes	9	

****A Track should be declared by the time you have completed 75 credit hours toward a CE degree. Tracks are General, Construction, Environmental, Geotechnical, Structural, Transportation / Materials, and Water Resources. Consult the General Catalog, the Student Advising Handbook, or your advisor about these tracks. To declare your track, go to the Engineering Student Services Office in Fielder Learning Commons and have them process a Change of Curriculum form.

****To finish your Program of Study, obtain the lists of the College-approved General Education Classes, Hum. and Social Science Electives and the Track you have chosen and complete them.

**Program of Study for a BS in Civil Engineering at K-State
(General Track)**

Approved by CE Faculty Spring 2020

<u>Dept.</u>	<u>No.</u>	<u>Course Name</u> <u>[Semester, if not both]</u>	<u>Credit</u> <u>Hours</u>	<u>Prerequisites</u>
CE DESIGN ELECTIVES FOR GENERAL TRACK (12 hours required)				
CE	528	Foundation Engineering [F]	3	C or better in CE 522
CE	542	Structural Engineering in Steel [S]	3	C or better in CE 537
or				
CE	544	Structural Engineering in Concrete [F]	3	C or better in CE 537
CE	552	Hydraulic Engineering [S]	3	ME 571 and pre or conc CE 550
CE	565	Water/Waste Engineering [S]	3	CE 550, C or better in CE 563, PHYS 214, and ME 571
CE	572	Highway Engineering/Plan/Mgmt [F]	3	C or better in CE 411 and CE 522

ADDITIONAL GENERAL TRACK ELECTIVES (12 hours required)

Choose **AT LEAST ONE OF THE THREE OPTIONS** listed (CHE 354 & 355 are treated as one)

CE	641	Civil Engineering Materials [F]	3	CE 534 and ENGL 415
CHE	354	Basic Concepts Materials & Engg	1	CHM 210
and				
CHE	355	Fundamentals of Mechanical Properties	1	
ECE	519	Electrical Circuits and Control	4	PHYS 214

Choose additional General Track Electives from CE Electives not selected above and from CE courses listed below:

CE	654	Groundwater Flow Systems [F]	3	ME 571
CE	663	Unit Op & Proc Envir [S alt. even yrs]	2	pre or conc CE 552 and CE 565
CE	680	Economics of Design/Construction [S]	3	Senior standing

One 700-level CE course may be chosen with consent of your advisor (See General Catalog for specific course)

Other General Track Electives may be chosen from courses in Math, Science, Engineering or Business as approved by your advisor. Suggestions include:

ARE	723	Timber Structures	3	CE 537
BIOL	198	Principles of Biology	4	
CHM	531	Organic Chemistry I	3	CHM 230 or CHM 250
MATH	551	Applied Matrix Theory	3	MATH 205 or MATH 220
STAT	703	Stat Methods for Natural Scientists	3	Junior standing and equiv of college algebra

Engineering courses in other departments for which the prerequisites are at least MATH 221 or PHYS 213 or Junior standing.

Geology courses for which GEOL 100 is a prerequisite.

Chemistry courses for which CHM 210 or CHM 230 is a prerequisite.

Physics courses for which PHYS 213 or PHYS 214 is a prerequisite.

Biology courses for which BIOL 198 is a prerequisite.

Statistics courses for which STAT 510 is a prerequisite.

TOTAL CREDIT HOURS REQUIRED FOR BS IN CIVIL ENGINEERING = 128

**Program of Study for a BS in Civil Engineering at K-State
(Construction Engineering Track)**

Approved by CE Faculty Spring 2020

<u>Dept.</u>	<u>No.</u>	<u>Course Name</u> <u>[Semester, if not both]</u>	<u>Credit</u> <u>Hours</u>	<u>Prerequisites</u>
DESIGN ELECTIVES FOR CONSTRUCTION TRACK (12 hours required)				
CE	528	Foundation Engineering [F]	3	C or better in CE 522
CE	544	Structural Engineering in Concrete [F]	3	C or better in CE 537
CE	552	Hydraulic Engineering [S]	3	ME 571 and pre or conc CE 550
or				
CE	565	Water/Waste Engineering [S]	3	CE 550, C or better in CE 563, HYS 214, and ME 571
CE	572	Highway Engineering /Plan/Mgmt [F]	3	C or better in CE 411 and CE 522

REQUIRED CONSTRUCTION TRACK COURSES (9 hours required)

CE	542	Structural Engineering in Steel [S]	3	C or better in CE 537
CE	641	Civil Engineering Materials [F]	3	CE 534 and ENGL 415
CE	680	Economics of Design/Construction [S]	3	Senior standing

ADDITIONAL CONSTRUCTION TRACK ELECTIVES (3 hours required)

ACCTG	231	Acctg for Business Operations	3	Sophomore standing and MATH 100
ACCTG	241	Acctg for Investing and Financing	3	ACCTG 231
MANGT	420	Management Concepts	3	Junior standing

Other Construction Track Electives may be chosen from courses in Math, Science, Engineering or Business as approved by your advisor.

Engineering courses in other departments for which the prerequisites are at least MATH 221 or PHYS 213 or Junior standing.

Geology courses for which GEOL 100 is a prerequisite.

Chemistry courses for which CHM 210 or CHM 230 is a prerequisite.

Physics courses for which PHYS 213 or PHYS 214 is a prerequisite.

Statistics courses for which STAT 510 is a prerequisite.

TOTAL CREDIT HOURS REQUIRED FOR BS IN CIVIL ENGINEERING = 128

**Program of Study for a BS in Civil Engineering at K-State
(Environmental Engineering Track)**

Approved by CE Faculty Spring 2020

<u>Dept.</u>	<u>No.</u>	<u>Course Name</u> <u>[Semester, if not both]</u>	<u>Credit</u> <u>Hours</u>	<u>Prerequisites</u>
DESIGN ELECTIVES FOR ENVIRONMENTAL TRACK (12 hours required)				
CE	528	Foundation Engineering [F]	3	C or better in CE 522
CE	544	Structural Engineering in Concrete [F]	3	C or better in CE 537
CE	552	Hydraulic Engineering [S]	3	ME 571 and pre or conc CE 550
CE	565	Water/Waste Engineering [S]	3	CE 550, C or better in CE 563, PHYS 214, and ME 571

REQUIRED ENVIRONMENTAL TRACK COURSES (7 hours required)

BIOL	198	Principles of Biology	4	
CHM	531	Organic Chemistry I	3	CHM 230 or CHM 250
or				
CHM	350	General Organic Chemistry	3	CHM 230 or CHM 250

ADDITIONAL ENVIRONMENTAL TRACK ELECTIVES (5 hours required)

AGRON	335	Environmental Quality [F]	3	CHM 110 or CHM 210
BIOL	303	Ecology of Envir Problems [S]	3	Two courses in natural science
BIOL	330	Public Health Biology [F]	3	BIOL 198
CHE	320	Chm Process Analysis [F]	3	Either CHM 230 or CHM 250, and MATH 222
CHE	354	Concepts in Materials Sci and Engg	1	CHM 210
CHE	356	Fundamentals of Electrical Properties	1	
CHM	315	Envir Science: Chem Perspective [F]	3	CHM 230 or CHM 250
AGRON	605	Soil/Environment Chemistry [S]	3	Either AGRON 375 or AGRON 305, and CHM 230
AGRON	645	Soil Microbiology [F]	3	AGRON 305 or BIOL 455
BIOCH	521	General Biochemistry	3	CHM 350
BIOL	455	General Microbiology	4	BIOL 198 and one chemistry course
BIOL	529	Fundamentals of Ecology [F]	3	BIOL 198 and CHM 210
BIOL	687	Microbial Ecology [S, odd yrs]	3	BIOL 455
GEOL	506	Environmental Studies	3	GEOL 100
GEOG	508	Geographic Information Systems I [S]	3	GEOG 302 or consent of instructor
BAE	651	Air Pollution Engineering [S]	3	ME 513 and ME 571
BAE	665	Ecological Engineering Design [F]	3	See University Catalog
CE	625	Principles of Geoenvir Engineering [S]	3	CE 522
CE	654	Groundwater Flow Systems [F]	3	ME 571
CE	751	Hydraulics of Open Channels I [F]	3	CE 552
CE	752	Advanced Hydrology [S]	3	CE 550
CE	762	Water Treatment Processes [S]	3	CE 565
CE	766	Wastewater Engineering [F]	3	CE 565
CE	768	Geoenvir Engineering Design [S]	3	See University Catalog
CHE	530	Transport Phenomena I [F]	3	CHE 320 and MATH 340
CHE	650	Hazardous Waste Engineering Sem	1	CHM 230
CHE	750	Air Quality Seminar [F]	1	CHM 230

Other Environmental Track Electives may be chosen from courses in Math, Science, Engineering or Business as approved by your advisor.

TOTAL CREDIT HOURS REQUIRED FOR BS IN CIVIL ENGINEERING = 128

**Program of Study for a BS in Civil Engineering at K-State
(Geotechnical Engineering Track)**

Approved by CE Faculty Spring 2020

<u>Dept.</u>	<u>No.</u>	<u>Course Name</u> <u>[Semester, if not both]</u>	<u>Credit</u> <u>Hours</u>	<u>Prerequisites</u>
DESIGN ELECTIVES FOR GEOTECHNICAL TRACK (12 hours required)				
CE	528	Foundation Engineering [F]	3	C or better in CE 522
CE	544	Structural Engineering in Concrete [F]	3	C or better in CE 537
CE	552	Hydraulic Engineering [S]	3	ME 571 and pre or conc CE 550
CE	572	Highway Engineering /Plan/Mgmt [F]	3	C or better in CE 411 and CE 522

REQUIRED GEOTECHNICAL TRACK COURSES (6 hours required)

Two of the following three courses:

CE	641	Civil Engineering Materials I [F]	3	CE 534 and ENGL 415
CE	728	Adv Geotechnical Design [S]	3	CE 528
CE	822	Shear Strength and Slope Stability	3	CE 728

ADDITIONAL GEOTECHNICAL TRACK ELECTIVES (6 hours required)

Other Geotechnical Track Electives may be chosen from courses in Math, Science, Engineering or Business as approved by your advisor.

Engineering courses in other departments for which the prerequisites are at least MATH 221 or PHYS 213 or Junior standing.

Geology courses for which GEOL 100 is a prerequisite.

Chemistry courses for which CHM 210 or CHM 230 is a prerequisite.

Physics courses for which PHYS 213 or PHYS 214 is a prerequisite.

Statistics courses for which STAT 510 is a prerequisite.

TOTAL CREDIT HOURS REQUIRED FOR BS IN CIVIL ENGINEERING = 128

**Program of Study for a BS in Civil Engineering at K-State
(Structural Engineering Track)**

Approved by CE Faculty Spring 2020

<u>Dept.</u>	<u>No.</u>	<u>Course Name</u> <u>[Semester, if not both]</u>	<u>Credit</u> <u>Hours</u>	<u>Prerequisites</u>
DESIGN ELECTIVES FOR STRUCTURAL TRACK (12 hours required)				
CE	528	Foundation Engineering [F]	3	C or better in CE 522
CE	544	Structural Engineering in Concrete [F]	3	C or better in CE 537
CE	552	Hydraulic Engineering [S]	3	ME 571 and pre or conc CE 550
CE	572	Highway Engineering /Plan/Mgmt [F]	3	C or better in CE 411 and CE 522

REQUIRED STRUCTURAL TRACK COURSES (6 hours required)

CE	542	Structural Engineering in Steel [S]	3	C or better in CE 537
CE	732	Adv Structural Analysis I [F]	3	C or better in CE 537

ADDITIONAL STRUCTURAL TRACK ELECTIVES (6 hours required)

ARE	723	Timber Structures [S]	3	CE 537
ARE	760	Masonry Structural Design [F]	3	ARE 528 or equiv. first course in reinforced concrete design
CE	641	Civil Engineering Materials I [F]	3	CE 534 and ENGL 415
CE	742	Adv Steel Design [F]	3	CE 542
CE	743	Adv Reinforced Concrete Theory [S]	3	CE 544
CE	844	Prestressed Concrete Design [S]	3	consent of instructor and Graduate School

Other Structural Track Electives may be chosen from courses in Math, Science, Engineering or Business as approved by your advisor.

Engineering courses in other departments for which the prerequisites are at least MATH 221 or PHYS 213 or Junior standing.

Geology courses for which GEOL 100 is a prerequisite.

Chemistry courses for which CHM 210 or CHM 230 is a prerequisite.

Physics courses for which PHYS 213 or PHYS 214 is a prerequisite.

Statistics courses for which STAT 510 is a prerequisite.

TOTAL CREDIT HOURS REQUIRED FOR BS IN CIVIL ENGINEERING = 128

**Program of Study for a BS in Civil Engineering at K-State
(Transportation / Materials Engineering Track)**

Approved by CE Faculty Spring 2020

<u>Dept.</u>	<u>No.</u>	<u>Course Name</u> <u>[Semester, if not both]</u>	<u>Credit</u> <u>Hours</u>	<u>Prerequisites</u>
DESIGN ELECTIVES FOR TRANSPORTATION/MATERIALS TRACK (12 hours required)				
CE	528	Foundation Engineering [F]	3	C or better in CE 522
CE	544	Structural Engineering in Concrete [F]	3	C or better in CE 537
CE	552	Hydraulic Engineering [S]	3	ME 571 and pre or conc CE 550
CE	572	Highway Engineering/Plan/Mgmt [F]	3	C or better in CE 411 and CE 522

REQUIRED TRANSPORTATION/MATERIALS TRACK COURSES (6 hours required)

Any two of the following

CE	641	Civil Engineering Materials [F]	3	CE 534 and ENGL 415
CE	774	Pavement Design [F]	3	CE 522
CE	775	Traffic Engineering [F]	3	CE 572

ADDITIONAL TRANSPORTATION / MATERIALS TRACK ELECTIVES (6 hours required)

CE	542	Structural Engineering in Steel [S]	3	C or better in CE 537
CE	680	Economics of Design/Construction [S]	3	Senior standing
CE	741	Civil Engineering Materials II [S]	3	CE 641 or CHE 350
CE	786	Land Development [F]	3	CE 572
ECON	631	Principles of Transportation	3	ECON 120 or AGECE 120

Other Transportation/Materials Track Electives may be chosen from courses in Math, Science, Engineering or Business as approved by your advisor.

Engineering courses in other departments for which the prerequisites are at least MATH 221 or PHYS 213 or Junior standing.

Geology courses for which GEOL 100 is a prerequisite.

Chemistry courses for which CHM 210 or CHM 230 is a prerequisite.

Physics courses for which PHYS 213 or PHYS 214 is a prerequisite.

Statistics courses for which STAT 510 is a prerequisite.

TOTAL CREDIT HOURS REQUIRED FOR BS IN CIVIL ENGINEERING = 128

**Program of Study for a BS in Civil Engineering at K-State
(Water Resources Engineering Track)**

Approved by CE Faculty Spring 2020

<u>Dept.</u>	<u>No.</u>	<u>Course Name</u> <u>[Semester, if not both]</u>	<u>Credit</u> <u>Hours</u>	<u>Prerequisites</u>
DESIGN ELECTIVES FOR WATER RESOURCES TRACK (12 hours required)				
CE	528	Foundation Engineering [F]	3	C or better in CE 522
CE	552	Hydraulic Engineering [S]	3	ME 571 and pre or conc CE 550
CE	565	Water/Waste Engineering [S]	3	CE 550, C or better in CE 563, PHYS 214, and ME 571

One of the following three courses:

CE	544	Structural Engineering in Concrete [F]	3	C or better in CE 537
CE	542	Structural Engineering in Steel [S]	3	C or better in CE 537
CE	572	Highway Engineering /Plan/Mngmt [F]	3	C or better in CE 411 and CE 522

REQUIRED WATER RESOURCES TRACK COURSES (6 hours required)

Two of the following three courses:

CE	654	Design of Groundwater Flow Sys [S]	3	ME 571
CE	751	Hydraulics of Open Channels [F]	3	CE 552
CE	752	Adv Hydrology	3	CE 550

ADDITIONAL WATER RESOURCES TRACK ELECTIVES (6 hours required)

Other Water Resources Track Electives may be chosen from courses in Math, Science, Engineering or Business as approved by your advisor.

Engineering courses in other departments for which the prerequisites are at least MATH 221 or PHYS 213 or Junior standing.

Geology courses for which GEOL 100 is a prerequisite.

Chemistry courses for which CHM 210 or CHM 230 is a prerequisite.

Physics courses for which PHYS 213 or PHYS 214 is a prerequisite.

Statistics courses for which STAT 510 is a prerequisite.

TOTAL CREDIT HOURS REQUIRED FOR BS IN CIVIL ENGINEERING = 128