

California State University, Bakersfield
REQUIREMENTS FOR THE MAJOR: ENGINEERING SCIENCES

2013-2016 Catalog

Name		ID#
Phone	Email	

CORE REQUIREMENTS:

INTRODUCTORY COURSES (LD ENGR - 30 UNITS)					
		Units	Institution	Date	Grade
ENGR 160	Introduction to Engineering	1			
ENGR 161	Introduction to Engineering Design	2			
ENGR 162	Introduction to Engineering Computing	2			
ENGR 207	Electric Circuits	5			
ENGR 240	Analytic Mechanics – Statics	5			
ENGR 241	Analytic Mechanics – Dynamics	5			
ENGR 243	Mechanics of Materials	5			
ENGR 244	Materials Science & Engineering	5			

CORE REQUIREMENTS:

INTERMEDIATE COURSES (UD ENGR - 35 UNITS)					
		Units	Institution	Date	Grade
ENGR 300	Engineering Modeling and Analysis	5			
ENGR 301	Numerical Methods and Applications in Engineering	5			
ENGR 310	Thermodynamics	4			
ENGR 320	Fluid Mechanics	5			
ENGR 330	Heat Transfer	4			
ENGR 401	Senior Laboratory	1			
ENGR 405	Machine Design	5			
ENGR 490A	Senior Design Project A	2			
ENGR 490B	Senior Design Project B	2			
ENGR 490C	Senior Design Project C	2			

CORE REQUIREMENTS:

COGNATES (47 UNITS)					
		Units	Institution	Date	Grade
MATH 201 or 231	Calculus I	5			
MATH 202 or 232	Calculus II	5			
MATH 203 or 233	Calculus III	5			
MATH 205	Ordinary Differential Equations	5			
PHYS 221	Classical Physics I	6			
PHYS 222	Classical Physics II	6			
CHEM 211/211L	Principles of General Chemistry I	5			
CHEM 212/212L	Principles of General Chemistry II	5			
PHIL 316*	Professional Ethics	5			

ADDITIONAL COGNATES: MATHEMATICS AND SCIENCE ELECTIVES (5 UNITS minimum)

5

ANY BIOL, OR GEOL; CHEM 213/213L; MATH 204/234; PHYS 223, 323A, 323B,325

(Biosystems & Agricultural Engineering Emphasis students must take BIOL 100, 103, 201, 202, or 203)

ENGR ELECTIVES: BIOSYSTEMS & AGRICULTURAL ENGINEERING EMPHASIS (UD ENGR 23 Units)

Courses		Units	Institution	Date	Grade
ENGR 340	Soil and Water Resource Management	4			
ENGR 341	Principles of Agricultural Machines	3			
ENGR 342	Bioprocess Engineering	4			
ENGR 440	Biological Systems Applications	4			
ENGR 441	Environmental Engineering	4			
ENGR 442	Food and Bioprocess Engineering Unit Operations	4			

ENGR ELECTIVES: ENGINEERING MANAGEMENT EMPHASIS (UD ENGR – 23 UNITS)

Courses		Units	Institution	Date	Grade
ENGR 420	Operations Research	4			
ENGR 422	Project Management	4			
ENGR 424	Quality Management	4			
ENGR 426	Economics of Engineering Design	4			
ENGR 3XX	Additional course that applies towards the BS in Engineering Sciences	4			
ENGR 3XX	Additional course that applies towards the BS in Engineering Sciences	3			

ENGR ELECTIVES: PETROLEUM ENGINEERING EMPHASIS (UD ENGR – 23 UNITS)

Courses		Units	Institution	Date	Grade
ENGR 351	Fundamentals Petroleum Engineering	5			
ENGR 426	Economics of Engineering Design	4			
ENGR 452	Petroleum Production Engineering	4			
ENGR 453	Reservoir Engineering	5			
ENGR 454	Drilling Engineering and Completion Technology	5			

OTHER ENGR ELECTIVES:

Courses		Units	Institution	Date	Grade
ENGR 307	Principles of Electronics	5			
ENGR 477	Special Topics in Engineering Sciences	1-4			

Note: An emphasis in any of the three areas is not required – the 23 units of electives can be chosen from any subarea.

Note: Students must have a minimum of

1. College-level mathematics and basic sciences*: 45 quarter units
2. Engineering** topics: 67.5 quarter units

*PHIL 316 does not count towards the 45 quarter units.

**Not all ENGR courses qualify as engineering topics units. See advisor for details.

Approval:

Chair _____

Date _____

Last revised: November 15, 2017