

**Guideline for Majors at Nearby 4 Year Institutions**

<b>Major: <i>ENGINEERING</i></b>
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Riverside Community College  
 Counseling Department  
 2009-2010

Date: 1/10

**NOTE: This Articulation Agreement is subject to periodic revision. Please consult the ASSIST website, [www.assist.org](http://www.assist.org), for up-to-date information.**

College or University	Transfer Requirements	Units	RCC Equivalents	Units	Remarks
<b>CAL POLY                      POMONA</b> 2009-2010	<u>1. Aerospace:</u>				
	CHM 121-122/L	5	CHE 1A	5	
	MAT 114-215	16	MAT 1A,1B,1C	4,4,4	
	MAT 216	4	MAT 2	4	
	PHY 131,132,133	4,4,4	PHY 4A,4B,4C	4,4,4	
	ETT 210	3	ENE 35	3	
	<u>2. Chemical:</u>				
	CHM 121-123/L	10	CHE 1A,1B	5,5	
	ME 214 or MAT 216	3	ENE 35 or MAT 2	3-4	
	MAT 114-215	16	MAT 1A,1B,1C	4,4,4	
	MAT 214,215,216	4,4,4	MAT 2 or ENE 35	3-4	
	PHY 131,132,133	4,4,4	PHY 4A,4B,4C	4,4,4	
	<u>3. Civil :</u>				
	MAT 114-215	16	MAT 1A,1B,1C	4,4,4	
	MAT 208,224	4,4	MAT 2,3	4,3	
	PHY 131,132,133	4,4,4	PHY 4A,4B,4C	4,4,4	
	CHM 121-123/L	5,5,5	CHE 1A,1B	5,5	
	CE 127/L,122	3,1	ENE 30,10	1	
	ME 214/L	3	ENE 35	3	
	CIS 101	4	CIS 1A	3	
	CE 134/L,220/L	4,4	ENE 1A,1B	3,3	
	<u>4. Computer :</u>				
	MAT 114-215	16	MAT 1A,1B,1C	4,4,4	
	MAT 208,224	4,4	MAT 2,3	4,3	
	PHY 131,132,133	4,4,4	PHY 4A,4B,4C	4,4,4	
	CHM 121-122/L	5	CHE 1A	5	
	<u>5. Construction Engineering Technology :</u>				
	CHM 121-122/L	5	CHE 1A	5	
	ETC 230/L	3	ARE 25	3	
	ETT 210,220/L	3,4	ENE 35,20	3,3	
	PHY 121-123/L	12	PHY 2A,2B	4,4	
	CE 134/L	4	ENE 1A	3	
MAT 130,131	4,4	MAT 1A,1B	4,4		

College or University	Transfer Requirements	Units	RCC Equivalents	Units	Remarks
Cal Poly (cont'd)	<u>6. Electrical:</u>				
	MAT 114-215	16	MAT 1A,1B,1C	4,4,4	
	MAT 208,224	4,4	MAT 2,3	4,3	
	PHY 131,132,133	4,4,4	PHY 4A,4B,4C	4,4,4	
	CHM 121-122/L	5	CHE 1A	5	
	<u>7. Engineering Technology: General</u>				
	ETT 210	3	ENE 35	3	
	PHY 121-123/L	12	PHY 2A,2B	4,4	
	CHM 121-122/L	5	CHE 1A	5	
	ETT 217,220/L	3,4	ENE 45,20	2,3	
	ETT 234/L	2	ENE/WEL/MAN 34	2	
	MFE 226/L	3	ENE 28,30	3,3	
	MFE 126/L	3	ENE 21,30	3,3	
	MAT 130,131	4,4	MAT 1A,1B	4,4	
	<u>8. Industrial:</u>				
	MAT 114-215	16	MAT 1A,1B,1C	4,4,4	
	MAT 208,224	4,4	MAT 2,3	4,3	
	PHY 131,132,133	4,4,4	PHY 4A,4B,4C	4,4,4	
	CHM 121-123/L	10	CHE 1A,1B	5,5	
	ME 214/L	3	ENE 35	3	
	MFE 126/L	3	ENE 21,30	3,3	
	EC 201 or 202	4	ECO 7 or 8	3	
	<u>9. Mechanical:</u>				
	CHM 121-123/L	5,5	CHE 1A,1B	5,5	
	MFE 126/L	3	ENE 21,30	3,3	
	ME 214/L,100/L	3,1	ENE 35,10	3,1	
	MAT 114-215	16	MAT 1A,1B,1C	4,4,4	
	MAT 208,224	4,4	MAT 2,3	4,3	
	PHY 131,132,133	4,4,4	PHY 4A,4B,4C	4,4,4	
	EC 201 or 202	4	ECO 7 or 8	3	
	<u>10. Manufacturing:</u>				
	CHM 121-123	12	CHE 1A,1B	5,5	
	MAT 114-215	16	MAT 1A,1B,1C	4,4,4	
	MAT 208,224	4,4	MAT 2,3	4,3	
ME 214/L	4	ENE 35	3		
PHY 131-234/L	4,4,4,4	PHY 4A,4B,4C	4,4,4		
EC 201 or 202	4	ECO 7 or 8	3		
MFE 126/L, 226	3,2	ENE 21,30,28	3,3,3		

College or University	Transfer Requirements	Units	RCC Equivalents	Units	Remarks
USC 2009-2010	Students must transfer with a strong "B" average to be competitive for admission.				
	1. <u>Aerospace:</u>				
	CALC	16	MAT 1ABC,2	16	
	PHYS	12	PHY 4A,4B,4C,4D	16	
	CHEM	4	CHE 1A or 1AH	5	
	Electives	6	choose from: CIS 5,11, 15A,17ABC,18ABC; CHE 12A,12B		
	2. <u>Biomedical:</u>				
	CALC	16	MAT 1ABC,2	16	
	PHYS	12	PHY 4A,4B,4C	12	
	CHEM	20	CHE 1A or 1AH, 1B or 1BH + 12A,12B	15	
	BIO	9	BIO 2A,2B	5,5	
	3. <u>Civil:</u>				
	CALC	16	MAT 1ABC,2	16	
	PHYS	4,4,4	PHY 4A,4B,4C	12	
	CHEM	5,5	CHE 1A or 1AH	5	
	BIO	5,5	BIO 2A,2B	5,5	
	4. <u>Chemical:</u>				
	CALC	16	MAT 1ABC,2	16	
	PHYS	12	PHY 4A,4B,4C	12	
	CHEM	10	CHE 1A or 1AH, 1B or 1BH	10	
	CHEM	10	CHE 12A,12B	5,5	
	5. <u>Electrical:</u>				
	CALC	16	MAT 1ABC,2	16	
	PHYS	12	PHY 4A,4B,4C,4D	16	
	CHEM	4	CHE 1A or 1AH	5	
	6. <u>Industrial and Systems:</u>				
	CALC	15	MAT 1ABC,2,3	19	
	PHYS	12	PHY 4A,4B,4C	12	
	CHEM	4	CHE 1A or 1AH	5	
	ECON 203	4	ECO 8	3	
	7. <u>Mechanical:</u>				
	CALC	16	MAT 1ABC,2	16	
	PHYS	12	PHY 4A,4B,4C,4D	16	
	CHEM	4	CHE 1A or 1AH	5	

College or University	Transfer Requirements	Units	RCC Equivalents	Units	Remarks
<b>CSU FULLERTON</b> 2009-2011	<u>Core courses:</u>				
	MATH 150A,B	4,4	MAT 1A,1B	4,4	*req'd for Civil, Elect & Cmpt. Engr
	MATH 250AB	4,4	MAT 1C,2,3	4,4,3	
	**CHEM 120A	5	**CHE 1A	5	**req'd for Mech Engr
	PHYS 225-226	8	PHY 4AB	8	
	***PHYS 227	4	***PHY 4C,4D or BIO 1 + CHE 12A	8-10	***req'd for Elect, Cmpr Engr
	*BIOL 101	3	*BIO 1	4	+req'd for Civil & Electrical
	+CHEM 115	4	+CHE 3	4	
<u>Additional requirements listed below by major:</u>					
<u>Mechanical:</u>					
	EGME 102	3	ENE 22	3	
	EGCE 201	3	ENE 35	3	
	EGEE 203	3	ENE 17	4	
<u>Civil &amp; Architectural:</u>					
	EGCE 201	3	ENE 35	3	
	EGCE 214/L	3	ENE 1A,1B	3,3	
	EGEE 203	3	ENE 17	4	
	CHEM 125	3	CHE 1B	5	
<u>Electrical:</u>					
	EGEE 203	3	ENE 17	4	
<u>Computer:</u>					
	CPSC 121,131	3,3	CIS 17A,17C	3,3	
	EGEE 203	3	ENE 17	3	
<b>CSU LONG BEACH</b> 2009-2011	1. <u>Chemical:</u>				Major is impacted
	CHEM 111A,111B	5,5	CHE 1A,1B	5,5	
	MICR 200 or		MIC 1	4	
	MATH 122,123,224	4,4,4	MAT 1A,1B,1C	4,4,4	
	CE 205	3	ENE 35	3	
	PHYS 151,152	4,4	PHY 4A,4B	4,4	
	EE 211/L	4	ENE 17	4	
	2. <u>Civil:</u>				
	CHEM 111A	5	CHE 1A	5	
	MICR 200 or BIO 200	4	MIC 1 or BIO 1	4	
	MATH 122,123,224	4,4,4	MAT 1A,1B,1C	4,4,4	
	CE 205,130	3	ENE 35,1A	3,3	
	PHYS 151,152	4,4	PHY 4A,4B	4,4	

College or University	Transfer Requirements	Units	RCC Equivalents	Units	Remarks
	<u>3. Computer:</u>				
	MAT 122,247	4,3	MAT 1A	4	
	PHYS 151,152	4,4	PHY 4A,4B	4,4	
	<u>4. Electrical:</u>				
	MATH 122,123,224	4,4,4	MAT 1A,1B,1C	4,4,4	
	PHYS 151,152,254/5	12	PHY 4A,4B,4C	12	
	EE 211/L	4	ENE 17	4	
	<u>5. Mechanical and Aerospace:</u>				
	CHEM 111A	5	CHE 1A	5	
	MATH 122,123,224	4,4,4	MAT 1A,1B,1C	4,4,4	
	CE 205; EE 211/L	3,4	ENE 35,17	3,4	
	PHYS 151,152	4,4	PHY 4A,4B	4,4	
	<u>6. Electronics and Computer:</u>				
	MAT 122	4	MAT 1A	4	
	ENGR 203	4	MAT 1B	4	
	PHYS 100A,100B	4,4	PHY 2A,2B	4,4	
	ET 202	3	MAT 12	3	
	ET 250/L,255	3,3	ELE 21,22,25	4,3,4	
	ET 260/L	3	ELE 23	4	
<b>UCR</b> 2009-2010	<u>Chemical:</u>				
	CS 10	4	*CIS 5,17A or 17B	3	Major is impacted
	CHEM 1ABC	4,4,4	*CHE 1A or 1AH	5	
			*CHE1B or 1BH	5	*critical prior to transfer
	CHEM (organic)	4,4,4	*CHE 12A,12B	5,5	-Prioritize major reqt's over gen. educ
	MATH 9ABC	4,4,4	*MAT 1A,1B	4,4	
	MATH 10AB,46	4,4,4	*MAT 1C,2	4,4	
	PHYS 40ABC	4,4,4	*PHY 4ABC	4,4,4	
	BIO 5A,5B,5C	4,4,4	*BIO 11	5	
	<u>Computer:</u>				
	MATH 9ABC	4,4,4	*MAT 1A,1B	4,4	-IGETC not accepted
	MATH 10AB,46	4,4,4	*MAT 1C,2	4,4	Follow Coll. of Engin.
	CS 10	4	*CIS 5,17A or 17B	3	gen. educ. reqt's
	CS 61	4	*CIS 11	3	
	PHYS 40ABC	4,4,4	*PHY 4ABC	4,4,4	
	EE 1A/L	4	*ENE 17	4	
	BIO 2 or 5A	4	BIO 1,11 or 17	4-5	

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College or University	Transfer Requirements	Units	RCC Equivalents	Units	Remarks
UCR (cont'd)	<u>Electrical:</u>				
	CS 10	4	*CIS 5,17A or 17B	3	
	MATH 9ABC	4,4,4	*MAT 1A,1B	4,4	
	MATH 10AB,46	4,4,4	MAT 1C,*2	4,4	
	PHYS 40ABC	4,4,4	*PHY 4ABC	4,4,4	
	EE 1A/L	4	*ENE 17	4	
	CHEM 1A	4	CHE 1A or 1AH	5	
	BIOL 2 or 5A	4	BIO 1,11 or 17	4-5	
	CS 61	4	CIS 11	3	
	<u>Environmental:</u>				
	CHEM 1ABC	4,4,4	*CHE 1A or 1AH	5	
			*CHE 1B or 1BH	5	
	CS 10	4	*CIS 5,17A or 17B	3	
	MATH 9ABC	4,4,4	*MAT 1A,1B	4,4	
	MATH 10AB,46	4,4,4	MAT 1C,*2	4,4	
	ME 10	4	*ENE 35	3	
	PHYS 40ABC	4,4,4	*PHY 4ABC	4,4,4	
	BIOL 5A/L	4	BIO 11	5	
	CHEM (organic)	4,4,4	CHE 12A,12B	5,5	
	<u>Mechanical:</u>				
	MATH 9ABC	4,4,4	*MAT 1A,1B	4,4	
	MATH 10AB,46	4,4,4	*MAT 1C,2	4,4	
	CHEM 1ABC	4,4,4	*CHE 1A or 1AH	5	
			*CHE 1B or 1BH	5	
	PHYS 40ABC	4,4,4	*PHY 4ABC	4,4,4	
	ME 10	4	*ENE 35	3	
	EE 1A/L	4	ENE 17	4	
	ME 9	4	ENE 22,**30	6	**subject credit only
	BIOL 5A/L	4	BIO 11	5	

**NOTE:** Applications are accepted for fall quarter only

SAN DIEGO ST. UNIVERSITY 2008-2009	<u>Aerospace, Mechanical:</u>				
	MATH 150,151,252	13	MAT 1A,1B,1C	4,4,4	
	PHYS 195-197	9	PHYS 4A,4B,4C,4D	16	
	EM 200	3	ENE 35	3	
	<u>Civil:</u>				
	CHEM 200	5	CHE 1A or 1AH	5	
	MATH 150,151,252	13	MAT 1A,1B,1C	4,4,4	
	PHYS 195,196	3,3	PHY 4A,4B	4,4	
	CIV E 218	3	ENE 1A	3	
	EM 200	3	ENE 35	3	

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College or University	Transfer Requirements	Units	RCC	Units	Remarks
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University	Requirements		Equivalent	
SDSU (cont'd)	<u>Computer:</u>			
	MATH 150,151,254	12	MAT 1A,1B,3	4,4,3
	PHYS 195,196	3,4	PHYS 4A,4B	4,4
	<u>Electrical:</u>			
	MATH 150,151,252	13	MAT 1A,1B,1C,3	4,4,4,3
	PHYS 195,196	3,3	PHY 4A,4B	4,4
	<u>Environmental:</u>			
	BIOL 201B	4	BIO 12	5
	CHEM 200	5	CHE 1A or 1AH	5
	MATH 150,151,252	13	MAT 1A,1B,1C	4,4,4
	PHYS 195-197	9	PHYS 4A,4B,4C,4D	16
	EM 200	3	ENE 35	3
	GEOL 100	3	GEO 3	3
	<u>Mechanical:</u>			
	MATH 150,151,252	13	MAT 1A,1B,1C	4,4,4
	PHYS 195-197	9	PHYS 4A,4B,4C,4D	16
	EM 200	3	ENE 35	3

### ***THE MAJOR:***

This area of study produces graduates whose specialized skills are in high demand. The purpose of **aerospace engineering** is to develop aerospace vehicles. It includes knowledge from many areas such as electrical and chemical engineering, design, structure, and analysis of materials. A high number of graduates move into military service as engineering officers; many other find employment in the aerospace industry.

The **chemical engineer's** principal activity is changing raw materials into useful and valuable products, and as such they are widely employed applying these principles of chemical research and engineering to production and processing operations. Virtually all qualified graduates find employment in some form of research, design, operation, or management, especially as it deals with current problems such as energy or pollution. The chemical engineering technician assists the chemical engineer in all industries by obtaining and analyzing data, operating equipment, and planning and carrying out experiments. Most technicians find employment in areas such as industrial design, environmental engineering, and related research and developmental projects. Combining a knowledge of mathematics, chemistry, and physics, the **civil engineer** develops means to utilize the materials and forces of nature in the design and construction of structures, pollution control, and other engineering endeavors. The civil engineering technician assists the engineer in providing facilities and structures for the community, industry, and government. A shortage of civil engineers and the need for solutions to technical problems (waste disposal, mass transportation, urban growth) will continue to increase job possibilities for civil engineering graduates.

**Electrical engineers** apply a thorough knowledge of electricity and education in physics, chemistry, and mathematics to develop systems and equipment used in the generation, transmittal, and reception of information and energy. Solid-state electronic devices must be designed for thousands of new applications each year. Current demands on resources for more electrical power, communications systems, and computer systems increase the need for

electrical engineers. The need for thousands more in the field of electrical engineering and technical manpower requirements provide many opportunities.

**Electronics engineering** technologists apply electronic devices and systems to the control of equipment in industry, laboratories, and the home. Graduates are prepared to enter shipbuilding, medical electronics, research laboratories, aerospace industries, communication, computer productions and a variety of industries on the basis of their knowledge of electronic circuit principles, equipment operations, and digital-computer hardware and software. Electronic technicians (with two-year degrees) are prepared to assist engineers with practical and detailed work in any of the industries listed above. Because of the rapid increase in digital-computer use in all walks of life, as well as other essential contributions of electronics, the occupational opportunities in this field are tremendous.

As a chief industry in the United States, manufacturing employs over 19 million people, accounting for over 25 percent of all dollars earned. **Manufacturing technology** combines engineering and management principles and skills for planning, developing, implementing and controlling industrial manufacturing processes. The manufacturing technologist analyzes and plans process equipment and facilities required for the fabrication and assembly of products. Increased sophistication of manufacturing with computer-aided techniques has greatly increased the international job market for qualified graduates.

**Mechanical engineering** is the applied science that deals with analysis, design, development, fabrication, and application of products that are predominantly mechanical and energy-related. The field includes many varieties of specialization, from farm machinery to consumer goods (such as automobiles and equipment). Projected needs in the area of mechanical engineering exceed the number of graduates expected, and job opportunities should remain plentiful in the near future.

**Metallurgical Engineers** develop new types of metal with characteristics that are tailored to meet specific requirements, such as heat resistance, high strength but lightweight, or high malleability. They also develop methods to process and convert metals into useful products. The metalworking industries - primarily the iron and steel and nonferrous metals industries - employ over one-half the metallurgical and materials engineers. Metallurgical engineers also work in industries that manufacture machinery, electrical equipment, and aircraft parts, and in the mining industries. Some work for government agencies, colleges, and universities.

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**CAREER FIELDS:**

Aeronautical Engineer	Design Engineer	Mechanical Engineer
Chemical Engineer	Electrical Engineer	Metallographer
Chemical Metallurgist	Electronics Engineer	Nuclear Engineer
Civil Engineer	Environmental Engineer	Petroleum Engineer
Communications Engineer	Hydraulic Engineer	Quality Control
Computer Designer	Industrial Engineer	Sanitation Engineer
Computer Technologist	Industrial and Systems Engineer	Structural Engineer
Construction Engineer	Manufacturing Engineer	Water Quality Engineer

*For further information on career options, please visit the Career Center.*