CCC Major or Area of Emphasis: Engineering

CSU Major or Majors: Engineering

Degree Type (*indicate one)*: Transfer Preparation Certificate

As there are different types of engineering, the Engineering FDRG has developed four different model curricula and each one feeds into one or more majors at the baccalaureate level. The four discipline clusters are:

1. Mechanical, Aerospace, and Manufacturing
2. Civil
3. Electrical
4. Computer and Software

Colleges that are able to offer more than one option may want to consider presenting a core of courses common to the different options.

The "Fundamentals Core" is indicated below.

Fundamentals Core Courses for Engineering Major: 25 units

Introduction to Engineering (2)	ENGR 110	
Calculus I (4)	MATH 210 or 211	Area B4
Calculus II (4)	MATH 220 or 221	
Calculus III – Multivariable (4)	MATH 230	
Ordinary Differential Equations (3)	MATH 240	
Physics – Mechanics (4) [1]	PHYS 205	Area B1 and B3
Physics – E&M (4) [1]	PHYS 210	

Required Engineering Courses:

A. Mech., Aero, Manuf. Track (21-22 units)

Course Title	**C-ID Designation**	**Rationale**
Chemistry – General Chem I (5)	CHEM 110	
Circuit Analysis (3)	ENGR 260	
Engineering Graphics (3)	ENGR 150	
Statics (3)	ENGR 130	
Materials Science and Engineering (4)	ENGR 140B or ENGR 140 + ENGR 140L	
Programming and Problem Solving in MATLAB (3) Or Introduction to Programming Concepts and Methodologies for Engineers (4)	ENGR 220 Or ENGR 120	

B. Civil Track (21-22 units)

Course Title	C-ID Designation	Rationale
Chemistry – General Chem I (5)	CHEM 110	
Surveying (3) Or Circuit Analysis (3)	ENGR 180 Or ENGR 260	
Engineering Graphics (3)	ENGR 150	
Statics (3)	ENGR 130	
Materials Science and Engineering (4)	ENGR 140B or ENGR 140 + ENGR 140L	
Programming and Problem Solving in MATLAB (3) Or Introduction to Programming Concepts and Methodologies for Engineers (4)	ENGR 220 Or ENGR 120	

C. Electrical Track (13 units)

Course Title	C-ID Designation	Rationale
Chemistry – General Chem I (5)	CHEM 110	
Circuit Analysis (3)	ENGR 260	
Circuit Analysis Lab (1)	ENGR 260L	
Introduction to Programming Concepts and Methodologies for Engineers (4)	ENGR 120	

D. Computer, Software Track (14 units)

Course Title	C-ID Designation	Rationale
Circuit Analysis (3)	ENGR 260	
Circuit Analysis Lab (1)	ENGR 260L	
Introduction to Programming Concepts and Methodologies for Engineers (4)	ENGR 120	
Intermediate Programming and Data Structures (3)	COMP 132	
Discrete Structures (3)	COMP 152	

Notes:

1 - Each of the following floating topics must be covered in C-IDs PHYS 205 and/or PHYS 210, otherwise it is recommended that students take PHYS 205, 210, and 215 and that colleges adjust units so that total units for the Fundamentals Core still fit within unit parameter indicated above:

1. Simple Harmonic Motion
2. Mechanical Waves
3. Properties of EM Waves
4. Fluids
5. Laws of Thermodynamics
    a. Heat Engines
    b. Kinetic Theory
    c. Entropy

2 – C-ID PHYS 215 is recommended for students planning on transferring into majors that require coverage of Optics or Modern Physics.

3 - The Dynamics and Strength of Materials courses are recommended if a.) available, and b.) required by the transfer university.

4 - These Engineering Model Curricula are to be used to create transfer certificates. Transfer certificates shall include general education courses that make a transfer student CSU eligible.

Document Authors: April 18, 2015 (FDRG)
January 11, 2018 corrected (FDRG)