

## Career Planning Guide Effective April 2006 for

### Mechanical/Civil/Aeronautical/ Industrial/ Materials Science/ pre-Engineering (Other Engineering) Pathway

**Length of Program:** 107 credits      **Goal:** Associate of Science (AS) Degree

**Official Designation:** AS-T Other Engineer/MRP Exit Code Q and CIP of 14.1901

**South Seattle Community College**  
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Seattle, Washington 98106-1499  
<http://www.southseattle.edu/>  
Academic Offices (206) 768-6600

**General Academic Advising:**  
(206)-764-5387  
[advisorsouth@sccd.ctc.edu](mailto:advisorsouth@sccd.ctc.edu)

**Quarterly Costs – check current schedule:**  
<http://www.southseattle.edu/services/tuition.htm>

**Class schedule and District catalog:**  
<http://www.southseattle.edu/programs/classCat/>

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RSB 189

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#### PROGRAM DESCRIPTION

Mechanical engineers are involved in the design, test, development, and manufacture of mechanical devices and systems. Civil and environmental engineers are involved in the design, construction, and operation of water facilities, wastewater disposal plants, hydraulic structures, electric energy generation, transportation systems such as highways, railroads and airports, buildings and bridges of all kinds, community planning, and solid and hazardous waste disposal. Aerospace engineers are involved in the design, test, development, and manufacture of commercial and military aircraft, spacecraft, missiles, and rockets. This AS degree is also appropriate for Industrial Engineering, Materials Engineering and other engineering majors. The Mechanical/Civil/Aeronautical/Industrial/ Materials Science/pre-Engineering Pathway Associate of Science (AS) degree program prepares students for transfer to Engineering programs at four-year colleges and universities and will give students basic skills needed by all engineers. Students study basic mathematical and scientific principles with an emphasis on problem solving and critical thinking. The curriculum includes a design component consistent with the Accreditation Board for Engineering and Technology (ABET) accreditation standards. Credits earned with the AS degree at South Seattle Community College can be applied toward the first two years of a four-year bachelor's degree in engineering.

#### PROGRAM OUTCOMES

Students who successfully complete this program will show:

- An ability to apply knowledge of mathematics and scientific principles to engineering problems.
- An ability to design and conduct experiments, as well as to analyze and interpret data.
- An ability to think critically in evaluating information, solving problems and making decisions.
- An ability to function on diverse, multi-disciplinary teams.
- An ability to access and evaluate information from a variety of sources including the Internet.
- An understanding of professional and ethical responsibility.
- An ability to communicate effectively with written, oral, and visual means.
- The broad education necessary to understand the impact of engineering solutions in a global and societal context.
- A recognition of the need for and an ability to engage in life-long learning.
- An ability to use modern engineering techniques, skills, and technology including computing and programming tools necessary for engineering practice.

#### CAREER OPPORTUNITIES

The employment outlook for Engineers is very good. Graduates can be employed in private industry as well as various governmental departments, consulting services, and technical sales. Nationwide, the average starting salary for graduates with a Bachelor's degree in Engineering in 2008 varies from \$50,940 to \$63,616 depending on the field studied. Source: National Association of Colleges and Employers.

## Associate of Science

### Mechanical/Civil/Aeronautical/ Industrial/ Materials Science/ pre-Engineering Pathway

#### CURRICULUM

107 credits are required for the AS degree. All classes are 5 credits unless otherwise listed.

##### **BASIC REQUIREMENTS (20 credits):**

- ENGL& 101 – Composition
- MATH& 151 – Calculus I
- MATH& 152 – Calculus II
- MATH& 153 – Calculus III

##### **DISTRIBUTION REQUIREMENTS (15 credits):**

A course in Economics is recommended.

##### **Visual, Literary and Performing Arts (5 - 10 credits)**

- Language and Speech
- Literature/History of Ideas
- Music, Art and Drama

##### **Individuals, Cultures and Societies (5 - 10 credits)**

- Individuals and Societies
- United States Culture
- Global Studies

##### **MAJOR AREA OF STUDY (62 credits):**

- CHEM& 161<sup>†</sup> (6 credits), CHE 162 (6 cr)
- CSC 142<sup>‡</sup> (or ENGR 142<sup>‡</sup>)
- ENGR 110 (1 cr), 116 (4 cr)
- ENGR& 214, ENGR& 215, ENGR& 225
- MATH 220, 238
- PHYS& 221, 222, & 223

##### **ELECTIVES (10 credits):**

Courses may not be used to satisfy other requirements. Choose two from the list below.

**Selection should be made based on advisor recommendation, given the branch of engineering that the student plans to pursue.**

ENGR& 111 Engineering Graphics (4 cr)  
ENGR& 204 Fundamentals of Electrical Engineering  
ENGR& 230 Technical Writing (3 cr)  
ENGR& 224 Thermodynamics  
ENGR 170 + ENGR 171 Material Science + lab  
MATH 224 Vector Calculus

##### **Footnotes:**

<sup>†</sup>CHEM 139 is a prerequisite for CHEM& 161

<sup>‡</sup>CSC 110 is a prerequisite for CSC/ENGR 142

#### SAMPLE COURSE PLAN

By starting in the Fall and taking a full-time load, students may complete the curriculum in six quarters, though many students find they need to take summer classes. Certain higher-level classes are only offered once a year, **so be sure to consult with advisors here at SSCC and at the 4-year institution you will attend to plan your schedule.**

##### **FRESHMAN YEAR:**

###### **First quarter**

- MATH& 151 Calculus I
- ENGL& 101 Composition
- ENGR 116 Engineering Design and Creativity
- ENGR 110 Engineering Orientation

###### **Second quarter**

- MATH& 152 Calculus II
- CSC 142 Computer Programming for Engineers
- CHEM& 161 Chemistry I

###### **Third quarter**

- CHEM& 162 Chemistry II
- MATH 153 Calculus III
- PHYS& 221 Engineering Physics I

##### **SOPHOMORE YEAR:**

###### **First quarter**

- Distribution Requirement (5 credits)
- ENGR& 230 Technical Writing
- MATH 238 Differential Equations
- PHYS& 222 Engineering Physics II

###### **Second quarter**

- PHYS& 223 Engineering Physics III
- ENGR& 214 Statics
- MATH 220 Linear Algebra
- Distribution Requirement (5 cr)

###### **Third quarter**

- Distribution Requirement (5 cr)
- MATH 224 Vector Calculus
- ENGR& 225 Strength of Materials
- ENGR& 215 Dynamics



**ASSOCIATE OF SCIENCE DEGREE Mechanical/Civil/Aeronautical/  
Industrial/ Materials Science/ Engineering**

Name	SID#				
No course fulfills more than one requirement	Course Credit	Credit Earned	Grade	College	Quarter
<b>Basic Requirements: 20 credits</b>					
ENGL& 101	5				
MATH& 151	5				
MATH& 152	5				
MATH& 153	5				
<b>Areas of Knowledge Distribution Requirements: 15 credits</b>					
<b>Visual, Literary, and Performing Arts (Humanities and Arts): 5 – 10 credits</b>					
<b>Individuals, Cultures, and Society (Social Sciences): 5 – 10 credits</b>					
<b>Major Area of Study: 62 credits</b>					
CHEM& 161	6				
CHEM& 162	6				
CSC 142 or ENGR 142	5				
ENGR 110	1				
ENGR 116	4				
ENGR& 214	5				
ENGR& 215	5				
ENGR& 225	5				
MATH 220	5				
MATH 238	5				
PHYS& 221	5				
PHYS& 222	5				
PHYS& 223	5				
<b>Electives: 10 credits Choose two classes from the list.</b> Courses may not be used to satisfy other requirements. Selection should be made based on advisor recommendation, given the four-year institution that the student plans to attend.					
ENGR 111 Engineering Graphics	5				
ENGR 170 + 171 Material Science + lab	5				
ENGR& 204 Fundamentals of Electrical Engineering	5				
ENGR& 230 Technical Writing	5				
ENGR 224 Thermodynamics	5				
ENGR 271 Digital Logic	5				
MATH 224 Vector Calculus	5				

Note: Students must have a minimum 2.0 GPA for graduation and must take a minimum of 30 credits at SCCC. Final quarter must be at SCCC.

**Total Credits Required: 107**    Evaluator \_\_\_\_\_    Date \_\_\_\_\_