



# Chemical Engineering

## ASSOCIATE OF SCIENCE DEGREE

**Faculty Advisors:** Mark Allen, Phil Hunter

TCC's Associate of Science in Bioengineering and Chemical Engineering Degree is a state recognized Major Related Program (MRP) designed to provide a pathway for students who plan to transfer to a Bachelor of Science degree program in Bioengineering or Chemical Engineering. Students planning to transfer in Biomass Resource Science and Engineering should also follow this pathway. After completing the degree courses, the student must apply to graduate with the AS MRP degree. Upon completion of this degree, students will be able to transfer to most four-year colleges and universities as juniors. Entry into many engineering programs is competitive. Completion of this degree does not guarantee admission into a specific engineering program. Courses in this pathway are relevant for multiple majors, so a course may apply to one particular major, but not another. Students should work with advisors at TCC and their university advisors to make sure that all entry requirements are met. Students should check with their transfer institution for admission requirements, including overall minimum GPA, a higher GPA in a selected subset of course, or a specific minimum grade in one or more courses such as math or English. Admission deadlines for transfer institutions vary and students are required to meet the transfer admission deadline of their intended transfer institution. Students are encouraged to enroll in math and science sequence courses at a single institution and, if possible, not break up sequenced courses between institutions.

**Preparation:** While in high school, students should pursue all of the available courses in mathematics, chemistry, biology, computer programming and physics.

**Academic Plan:** Students should meet with an engineering advisor as soon as they are admitted. Many courses have prerequisites, are offered only once or twice a year and are sequential. Careful selection of classes each quarter is necessary to complete the program without delay. The following schedule is intended as a sample academic plan for a student who placed into MATH 95 and ENGL 95. It is not the only method or even the preferred method to complete the degree. Each student will have an individualized academic plan based on preparation level, start quarter, full time versus part time status, major and intended university for transfer. Check current year's planned course offerings.

### SAMPLE SPECIALIZATION DEGREE MAP – Chemical Engineering

#### Pre-engineering Year

| Fall            | Winter      | Spring    | Summer    |
|-----------------|-------------|-----------|-----------|
| MATH 95         | MATH 96/140 | MATH& 141 | MATH& 142 |
| HD 101 for STEM | ENGL& 101   | CHEM& 140 |           |
| ENGL 95         | ENGR& 104   | HIST& 128 |           |

#### First Year

| Fall      | Winter    | Spring    | Summer   |
|-----------|-----------|-----------|----------|
| MATH& 151 | MATH& 152 | MATH& 153 | MATH 238 |
| CHEM& 161 | CHEM& 162 | PHYS& 221 |          |
| ENGL& 235 | ART 105   | CHEM& 163 |          |

#### Second Year

| Fall      | Winter    | Spring | Summer |
|-----------|-----------|--------|--------|
| MATH& 254 | MATH 220  |        |        |
| PHYS& 222 | PHYS& 223 |        |        |
| CHEM& 261 | CHEM& 262 |        |        |

*This degree requires 98 credit hours. Students may need to take additional prerequisite courses. See catalog for prerequisite information. The Humanities and Social Science courses must total 15 credits taken from the distribution course lists including at least one course from the multicultural list. Engr& 104 and Econ& 202 are required Social Science courses. While more than one class may be acceptable for the Associate of Science degree, four-year institutions may require a specific class for a specific engineering major. Admission to some university programs will require more the minimum courses. Financial aid recipients can receive aid for up to 125% of the required college level credits to complete the program. This includes college level pre-requisites. Detailed information is available from the Financial Aid Office.*



# Associate of Science in Bioengineering and Chemical Engineering

Degree Completion Worksheet (Not an official evaluation document)

NAME: \_\_\_\_\_ SID: \_\_\_\_\_ Date: \_\_\_\_\_

| <b>BASIC REQUIREMENTS (15 credits)</b>  |              |    |    |  |
|---|--------------|----|----|--|
| <b>Communication Skills</b><br><i>- 5 credits</i>   | 1. ENGL& 101 | GR | CR |  |
|   |              |    | 5  |  |
| <b>Quantitative Skills</b><br><i>- 10 credits</i>   | 1. MATH& 151 |    | 5  |  |
|   | 2. MATH& 152 |    | 5  |  |
| <b>DISTRIBUTION REQUIREMENTS (15 credits)</b>   |              |    |    |  |
| <b>Humanities &amp; Social Sciences</b><br><i>- 15 credits</i><br><i>Most students fulfill the Multicultural Requirement here.</i>  | 1.           |    |    | <ul style="list-style-type: none"> <li>• 5 credits Humanities</li> <li>• 5 credits Social Sciences</li> <li>• 5 additional credits Humanities or Social Sciences</li> </ul> At least five credits must be a multicultural course. Economics and Engr& 104 Recommended  |
|   | 2.           |    |    |  |
|   | 3.           |    |    |  |
| <b>SPECIALIZATION COURSES (48 CREDITS)</b>  |              |    |    |  |
| <b>Physics</b><br><i>- 18 credits</i>   | 1. PHYS& 221 |    | 6  |  |
|   | 2. PHYS& 222 |    | 6  |  |
|   | 3. PHYS& 223 |    | 6  |  |
| <b>General Chemistry</b><br><i>- 20 credits</i>   | 1. CHEM& 161 |    | 5  |  |
|   | 2. CHEM& 162 |    | 5  |  |
|   | 3. CHEM& 163 |    | 5  |  |
|   | 4. CHEM& 261 |    | 5  |  |
| <b>Additional Math</b><br><i>- 10 credits</i>   | 1. MATH& 153 |    | 5  |  |
|   | 2. MATH 238  |    | 5  |  |
| <b>ADDITIONAL SPECIALIZATION COURSES (20-21 credits)</b>  |              |    |    |  |
| ENGR& 104 may be taken either to meet Social Sciences distribution requirement or to meet additional specialization course requirements, but not both.  | 1.           |    |    | <ul style="list-style-type: none"> <li>• Select a minimum of 4 additional courses from the following list. You MUST select either CHEM&amp; 262 or BIOL&amp; 221. You may select both. BIOL&amp; 221, 222, CHEM&amp; 262, CS 142, MATH 220, MATH&amp; 254, ENGR&amp; 104, 204, 214, 224, ENGL&amp; 235, ENGR 170, 240</li> </ul> |
|   | 2.           |    |    |  |
|   | 3.           |    |    |  |
|   | 4.           |    |    |  |
| <b>TOTAL COLLEGE LEVEL CREDITS EARNED TOWARD THE DEGREE:</b>  |              |    |    | <input type="checkbox"/> <b>At least 5 credits applied to the degree are from an approved multicultural course.</b>  |
| 98-99 credit hours are listed in the degree.<br>30 additional credits are required to earn a second degree.   |              |    |    |  |
| To earn the Associate of Science degree, student must have earned at least 30 applicable credits at TCC, have a cumulative GPA of 2.00 in all coursework applied to the degree, and have a cumulative GPA of 2.00 in all TCC college-level courses. |              |    |    |  |

|      |        |        |        |
|------|--------|--------|--------|
| FALL | WINTER | SPRING | SUMMER |
|------|--------|--------|--------|