

# Applied Engineering - Biomedical Device Engineering

Associate in Science Degree 2012-2013

Program Requirements.....	30
General Education/MnTC .....	30
<b>TOTAL CREDITS.....</b>	<b>60</b>

## PROGRAM INFORMATION:

This 60 credit program will prepare the learner for transfer to Bemidji State University. A secondary benefit to this program is that it will prepare students for a career in Biomedical Device Manufacturing, at either a technician level, or to advance to an applied engineering level in conjunction with Bemidji State University. Drawing heavily on industry representative feedback this unique program of study includes an introduction to biomedical manufacturing technology and industry-specific software and hardware training. Along with a strong general education core including a solid science and math foundation, students will participate in coursework that strengthens their communication and critical thinking/problem solving abilities. "Hands-on" learning and field experiences with a local biomedical company will help maximize the employment opportunities for program graduates.

## PROGRAM GOALS:

By completing this program, students will achieve the following learning goals:

1. Apply mathematical, physical and biological foundations to the solution of biomedical engineering problems.
2. Incorporate techniques, skills, and tools necessary for achieving robust engineering solutions.
3. Develop a comprehensive awareness of constraints that challenge the design and manufacture of biomedical devices.
4. Demonstrated capacity to participate on multi-disciplinary teams to achieve desired results.

## DEVELOPMENTAL COURSES:

Some students may need preparatory courses in the areas of English or Mathematics. Courses numbered below 1000 will not apply toward this degree.

## COMPLETION REQUIREMENTS:

- A minimum grade of C must be earned in all program requirements.
- A minimum of **60 semester credits** in courses numbered 1000 or above.
- A minimum cumulative grade point average (GPA) of 2.0 in courses numbered 1000 or above at ARCC.
- A minimum of **20 semester credits** applied toward the degree must be taken from ARCC. This requirement may be reduced from **20 to 12 semester credits** for students transferring in at least **8 semester credits** from either another MnSCU college or the University of Minnesota.
- Completion of specific degree requirements.

## Program Requirements 30 credits

<input type="checkbox"/> BMED 1100 Introduction to Biomedical Devices/Industry .....	2
<input type="checkbox"/> BMED 2100 Design & Manufacturing in the Medical Device Industry .....	3
<input type="checkbox"/> BMED 2200 Introduction to Medical Device Regulations Ethics .....	3
<input type="checkbox"/> BMED 2300 Introduction to Quality Assurance .....	3
<input type="checkbox"/> BMED 2297* Field Experience & Seminar .....	4
<input type="checkbox"/> BMED 2520* Technical Writing for Regulated Industries .....	3
<input type="checkbox"/> ENGR 1111* Engineering Graphics .....	3
<input type="checkbox"/> AENG 2225 Digital Electronics .....	3
<input type="checkbox"/> AENG 2230 Electromechanical Devices .....	3
<input type="checkbox"/> AENG 2235 Instrumentation & Control .....	3

\*It is recommended that all biomedical courses be completed prior to taking BMED 2297 Field Experience & Seminar. Permission of Program Director required for this course.

## General Education/MnTC Requirements: 30 credits

Complete at least 30 credits in courses from the Minnesota Transfer Curriculum (MnTC), including all courses listed. You must complete at least one course in six of the ten goal areas. One course may satisfy more than one emphasis area, but the course credits may be counted only once.

<input type="checkbox"/> 1. <b>Communication</b>	
<input type="checkbox"/> ENGL 1121* .....	4
<input type="checkbox"/> CMST 2251 .....	3
<input type="checkbox"/> 2. <b>Critical Thinking</b> (met by ENGL 1121)	
<input type="checkbox"/> 3. <b>Natural Science</b>	
<input type="checkbox"/> BIOL 1104 .....	4
<input type="checkbox"/> PHYS 1317* .....	4
<input type="checkbox"/> 4. <b>Mathematical/Logical Reasoning</b>	
<input type="checkbox"/> MATH 1110* .....	3
<input type="checkbox"/> MATH 1200* .....	3
<input type="checkbox"/> MATH 1201* .....	4
<input type="checkbox"/> 5. <b>History/Social/Behavioral Sciences</b>	
<input type="checkbox"/> PSYC 1110 .....	4
<input type="checkbox"/> 6. <b>Humanities/Fine Arts</b>	
<input type="checkbox"/> 7. <b>Human Diversity</b>	
<input type="checkbox"/> 8. <b>Global Perspective</b>	
<input type="checkbox"/> 9. <b>Ethical/Civic Responsibility</b>	
<input type="checkbox"/> 10. <b>People and the Environment</b>	

\* Course has a prerequisite. Prerequisites are listed on the course schedule and in the ARCC Catalog Course Descriptions pages.

NOTE: The requirements of this program are subject to change without notice. You are encouraged to contact an academic advisor, Cambridge Campus 763-433-1840 or Coon Rapids Campus 763-433-1240, for course planning assistance and information about transfer credit evaluation.

