To: Curriculum & Programs Committee (CPC)  
Faculty Senate

From: Academic Program Working Group (APWG)  
Steve Cherry, Doug Downs, Bill Brown,  
Michael Babcock (Chair)

Date: August 10th, 2016

Re: Minor in Biomedical Engineering

Overview
This is a proposal for a new minor in Biomedical Engineering. Faculty in the department of Chemical and Biological Engineering that have knowledge in biology and biomedical engineering designed the curriculum. The minor is targeting undergraduate students in the College of Engineering that have an interest in biomedical engineering.

Curriculum and Academic Quality
The minor requires a minimum of 27 credits; two required courses (6 credits), Biology and Engineering/Math electives (6 credits each- 12 credits total), and general electives (9 credits). The curriculum provides flexibility such that students can focus on different areas of biomedical applications of engineering. The proposal outlines a detailed description of possible electives for each focus area. Courses used to satisfy Engineering/Math elective credits cannot be used to satisfy the general electives in the focus areas (i.e., no double counting).

MSU does not currently offer a major in Biomedical Engineering. Thus, it will be important that the curriculum for this proposed minor be separate from any requirements associated with an existing Engineering major.

Resources
The courses described in the proposal are currently offered at MSU. The APWG encourages dialog with units outside of the College of Engineering regarding potential increases to course demand (i.e., Math, Cell Biology and Neuroscience). For example, courses like Human Anatomy & Physiology I & II are in high demand and could be impacted by this new minor. This could potentially require additional resources to accommodate demand.
Assessment
The proposal outlines a specific plan to assess the learning outcomes. Courses will be assessed every 3 years by faculty, with a secondary assessment by the Department Advisory Committee for ChBE. The College also plans to monitor the number of students that pursue and complete the minor, student retention, their employment after graduation, and student awards.

Demand and Support
According to the proposal, biomedical engineering is one of the fastest growing occupations in the United States. People with training in the biosciences are in high demand. Indeed, the proposal notes that this trend is particular evident in Montana where the employment growth rate in the biosciences was four time greater than the national average from 2001-2011. The department of Chemical and Biological Engineering has receive a significant number of inquires from current and prospective students about a program in Biomedical Engineering. Thus, offering this new minor could positively impact recruitment of high quality students to our institution and better prepare them for employment opportunities.

Summary
This proposal for the creation of a minor in Biomedical Engineering offers evidence of academic quality, potential for student demand, and resource availability. The APWG is supportive of this new program and believes that it represents an opportunity for our institution. It is highly recommended that units outside of the Chemical and Biological Engineering Department providing coursework for student pursuing this minor be informed of the proposal.