

THE UNIVERSITY OF NORTH CAROLINA AT ASHEVILLE
FACULTY SENATE

Senate Document Number 10616S
Date of Senate Approval 05/05/16

Statement of Faculty Senate Action:

APC Document 89 **Delete EGM 180, 360, 484, 485 and EGM 171-4, 271-4, 371-4, 471-4 and the heading Courses in Engineering-Mechatronics (EGM), changing the courses to JEM 180, 360, 484 and 485, and increasing the credit hours of JEM 360 and 485**

Effective Date: Fall 2016

1. **Delete:** On page 138, the heading and all courses under **Courses in Engineering-Mechatronics (EGM):**

Courses in Engineering-Mechatronics (EGM)

180 Introduction to Mechatronics Laboratory (2)

An introduction to the mechatronics engineering discipline as a synergistic combination of mechanical and electrical engineering, computer science, control and information technology. Foundational concepts in mechatronics are addressed including analog and digital electronics, sensors, actuators, microprocessors, and microprocessor interfacing to electromechanical systems through hands-on laboratory exercises. Spring.

360 Advanced Mechatronic Design Laboratory (1)

An introduction to the design and construction of microprocessor-controlled electromechanical systems. This course builds on fundamental mechatronics concepts and is project and design oriented. It provides hands-on working knowledge of real time software, real time programming, computer interfacing, mechanical design, fabrication and control system design and the integration of these areas. Prerequisite: EGM 180. Fall and Spring.

484 Senior Design Project in Mechatronics Engineering I (3)

In this laboratory course, students will be exposed to the fundamentals of the engineering design process via the construction of a prototype mechatronics system in a team environment. Prerequisites: ECE 301; EGM 360; MAE 301, 314. 435. Fall.

485 Senior Design Project in Mechatronics Engineering II (1)

In this laboratory course, students will develop and refine oral, written and graphical communication skills as their senior design project is finalized, presented and demonstrated. The course is conducted in a team environment. Prerequisite: EGM 484. Spring.

EGM 171-4, 271-4, 371-4, 471-4 Special Topics in Engineering (1-4)

Courses not otherwise included in the catalog listing but for which there may be special needs. May be repeated for credit as often as permitted and as subject matter changes. See program director.

Add: On page 139, under **Courses in the Joint Engineering-Mechatronics Program (JEM):**

JEM

180 Introduction to Mechatronics Laboratory (2)

This course introduces students to the mechatronic engineering discipline as a synergistic combination of mechanical and electrical engineering, computer science, and control and information technology. Fundamental concepts in mechatronics engineering and design are introduced including analog and digital electronics, serial communication, sensors, actuators, motors, microcontrollers, and microcontroller interfacing to electromechanical systems. This is a “hands-on” course; all concepts will be introduced in an interactive lab/lecture environment. Two design projects are required with ample opportunity for self-guided exploration and creativity. Pre- or corequisite: JEM 123. Spring.

360 Advanced Mechatronic Design Laboratory (2)

This is a hands-on lecture-lab course focused on the design of microcontroller-based systems that interact with their environment and communicate over the Internet, the quintessential *thing* on the *Internet of Things (IoT)*. We will pay particular attention to robotic *things*. This course has two primary objectives: (1) to provide an understanding of design strategy, and (2) to provide an understanding of technology used in creating IoT things. Prerequisites: JEM 180, ECE 209 and junior standing in the major. Pre- or corequisite: ECE 306. Fall.

484 Senior Design Project in Mechatronics Engineering I (3)

In this laboratory course, students will be exposed to the fundamentals of the engineering design process via the construction of a prototype mechatronic system in a team environment. Prerequisites: ECE 306, JEM 360, MAE 201, 214, 435. Fall.

485 Senior Design Project in Mechatronics Engineering II (3)

In this laboratory course, students will develop and refine oral, written, and graphical communication skills as their senior design project is finalized, presented and demonstrated. The course is conducted in a team environment. Prerequisite: JEM 484. Spring.

Impact: Changing the program-specific course prefix from EGM to JEM will have no impact on the resources and staffing of the Engineering Program. Changing the description of JEM 360 along with the pre- and co-requisites for several of these courses will have no impact on the resources and staffing of the Engineering Program. It is anticipated that increasing the number of credit hours for JEM 360 and JEM 485 will have little impact on Program resources and staffing.

Rationale: JEM (Joint Engineering with a Mechatronics concentration) will replace EGM as the prefix for program-specific courses. All JEM courses are locally taught lab-based courses. The additional credit hours assigned to JEM 360 and JEM 485 reflect the expanded roles that these courses have in the Program curriculum. The revised description of JEM 360 expresses newly formed course content. The increased number of co- and pre-requisites for several of the JEM courses is necessitated by their expanded role in the Program curriculum.