

THE UNIVERSITY OF NORTH CAROLINA AT ASHEVILLE
FACULTY SENATE

Senate Document Number 10716S
Date of Senate Approval 05/05/16

Statement of Faculty Senate Action:

APC Document 90: **Add new courses: ECE 306, Embedded Systems, JEM 123, Introduction to Computer Aided Design for Mechatronics Engineering, and JEM 420, Mechatronics Systems Modeling**

Effective Date: Fall 2016

1. Add: On page 138, a new course, **ECE 306, Introduction to Embedded Systems:**

306 Introduction to Embedded Systems (3)

Introduction to designing microcontroller-based embedded computer systems using assembly and C programs to control input/output peripherals. Use of embedded operating system. Prerequisite: C- or better in both ECE 209 and 212. Fall.

2. Add: On page 139, a new course, **JEM 123, Introduction to Computer Aided Design for Mechatronics Engineering:**

123 Introduction to Computer Aided Design for Mechatronics Engineering (1)

In this laboratory course, students will be exposed to the fundamentals of graphical communication and computer aided design. Corequisite: E 101. Fall and Spring.

3. Add: On page 139, a new course, **JEM 420, Mechatronics Systems Modeling:**

420 Mechatronics Systems Modeling (3)

This is an introductory course devoted to the development of mathematical models of mechatronics engineering systems while also providing a strong foundation in the basic principles of electro mechanics and electric machinery. The course will introduce the fundamental concepts of modeling, Laplace Transforms, Fourier Transforms, computer simulation and control theory. In addition, it will provide the basis for understanding many real-world electric machinery applications.

Prerequisite: ECE 306; MAE 315, 435. Fall.

Impact: ECE 306 is presented via live-link distance education from NCSU. Adding this course will have limited impact on the resources and staffing of the Engineering Department at UNCA. JEM 123 and JEM 420 are locally taught courses; JEM 123 is required in the major, and JEM 420 is an approved elective. The current departmental staffing is adequate to support these courses.

Rationale: The addition of these three courses is recommended by NCSU Engineering which is responsible for the Engineering curriculum in the JEM program. ECE 306 is an existing course in the NCSU Engineering curriculum. JEM 123 and JEM 420 are being added to the curriculum in response to input from alumni and the Industrial Advisor Board.