### Course Code: MECH 3680  
### Course Title: Avionics System

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<tr>
<th>Required Course Or Elective Course:</th>
<th>Terms Offered (Credits): Fall or Spring, 3 credits</th>
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<tr>
<td>Required course</td>
<td>Pre-Requisites: ELEC2420</td>
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<th>Faculty In Charge:</th>
<th>Course Structure:</th>
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<tr>
<td>Hongyu YU</td>
<td>Lecture – 3 hours per week; Tutorial – 1 hour per week</td>
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<th>Textbook/Required Material:</th>
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### Course Description:
Elective course for BEng in Aerospace Engineering  
Avionic systems will be introduced for students to understand modern avionics. The systems include electrical system, display and interface, navigation and sensor system, Radar system, control system and data system.

### Course Topics:
Electronic components and systems, electrical systems, human-machine interface with an emphasis on display, radar system, navigation systems and sensors, and data systems

### Course Objectives:
1. Fundamental understanding on avionics systems for MAE students to partially fulfill Program Objectives (P-O4) and (P-O5).

### Course Outcomes:
On successful completion of this course, students will be able to:

- Understand basic concepts of avionics and its system structure (POC1, POC3, POC4, POC5);
- Analyze basic requirements and specs for individual avionics systems (POC1, POC3, POC4, POC5, POC6);
- Recognize basic integration of different avionics systems (POC1, POC3, POC5);
- Envision future trend of avionics development (POC7, POC9, POC10, POC11);

### Assessment Tools:
- Homework sets (10%, including 3-4 homeworks), Midterm (35%), Project lab: MATLAB flight control modeling (30%), Flight simulation (10%), Specific topic
BEng in Aerospace Engineering (4-year program)

Program Objectives:
P-O1. Be able to communicate and perform as an effective engineering professional in both individual and team-based project environments,
P-O2. Have an international outlook with clear perspectives on the Pearl river Delta and Greater China,
P-O3. Be able to research, design, develop, test, evaluate and implement engineering solutions to problems that are of complexity encountered in professional practice and leadership,
P-O4. Clearly consider the ethical implications and societal impacts of engineering solutions,
P-O5. Continuously improve through lifelong learning.

Program Outcomes:
POC1. Ability to identify and formulate problems in multidisciplinary environment with an understanding of engineering issues and constraints
POC2. Ability to design and conduct experiments as well as analyze and interpret data
POC3. Ability to apply knowledge of mathematics, science, and engineering for problem solving in aerospace engineering and related sectors or for further education in a research career
POC4. Ability to develop specification and to design system, component, or process to meet needs
POC5. Ability to understand the design, operation, and maintenance of aircraft components and systems
POC6. Ability to use modern engineering tools, techniques, and skills in engineering practice
POC7. Ability to communicate effectively
POC8. Ability to function in multi-disciplinary teams and provide leadership
POC9. Broadly educated with an understanding of the impact of engineering solutions on issues such as economics, business, politics, environment, health and safety, sustainability, and societal context
POC10. Clear understanding of professional and ethical responsibilities
POC11. Recognition of the need for life-long learning and continuing education
POC12. International outlook with knowledge of contemporary issues