

## Course Calendar for Mechatronics (EGMN416) for Fall 2020

(Please treat this as a general guideline. You may expect small changes to it)

In person location: W101, online: <https://vcu.zoom.us/j/94800780024>

| Week | Date         | Topics  | Reading           | Lab                                | Assignments  |
|------|--------------|---|-------------------|------------------------------------|--------------|
| 1    | Monday 8/17  | Introduction and class policy   |                   | NO LABS                            |              |
| 2    | Friday 8/21  | Introduction to Mechatronics  | Ch. 1             |                                    |              |
| 3    | Monday 8/24  | Analog: Basic electronics review: R, C, L, KCL, KVL, Grounding                        | 2.1 – 2.3<br>2.10 | NO LABS                            |              |
|      | Friday 8/28  | Analog: Voltage and current sources, Thevenin and Norton circuits, impedance matching | 2.4 – 2.5<br>2.9  |                                    |              |
| 4    | Monday 8/31  | Analog: AC circuits, Power  | 2.6–2.8           | In person lab:<br>Introduction     | Assignment-1 |
|      | Friday 9/4   | Analog: Semiconductors, diodes  | 3.1-3.3           |                                    |              |
| 5    | Monday 9/7   | Labor Day Holiday, no classes   |                   | In person lab:<br>Introduction     |              |
|      | Friday 9/11  | Analog: Transistors: BJT  | 3.4               |                                    |              |
| 6    | Monday 9/14  | Analog: Operational Amplifiers  | Ch. 5             | In person lab:<br>Introduction     |              |
|      | Friday 9/18  | Digital: Analog vs. digital signals, quantizing theory                                | Ch. 6             |                                    | Assignment-2 |
| 7    | Monday 9/21  | Data acquisition  | 8.1 – 8.2         | Take Home Lab 2:                   |              |
|      | Friday 9/25  | Digital: Binary numbers, Gates  | 6.1-6.5           |                                    |              |
| 8    | Monday 9/28  | Digital: Boolean Algebra, Gates   | 6.6-6.7           | Take Home Lab 3:                   |              |
|      | Friday 10/2  | Digital: Flip-flops, Timers   | 6.8 – 6.9         |                                    | Assignment-3 |
| 9    | Monday 10/5  | Digital: Flip-flops and Timers Applications   | 6.10, 6.12        | MAKE-UP LAB                        |              |
|      | Friday 10/9  | Review for Exam-1   |                   |                                    |              |
| 10   | Monday 10/12 | <b>Midterm EXAM 1-1.50pm; Best of luck!</b>   |                   | Exam week-No Labs                  |              |
|      | Friday 10/16 | <b>Midterm EXAM 1-1.50pm; Best of luck!</b>   |                   |                                    | Assignment-4 |
| 11   | Monday 10/19 | Solution to midterm exam  |                   | Take Home Lab 4:                   |              |
|      | Friday 10/23 | Adv Digital: Intro' to Microcontrollers   | Ch. 7             |                                    |              |
| 12   | Monday 10/26 | Adv Digital: Microcontroller (simple programs)  | Ch. 7             | Take Home Project                  |              |
|      | Friday 10/30 | No Class: I am at a conference  | 10.1-10.5         |                                    |              |
| 13   | Monday 11/2  | Actuators: DC motor and dynamics  |                   | Take Home Project                  | Assignment-5 |
|      | Friday 11/6  | Actuators: Stepper motor and its control  | 10.6              |                                    |              |
| 14   | Monday 11/9  | Actuators: DC Servos  | 10.6 and 9.2      | Take Home Project                  |              |
|      | Friday 11/13 | Sensors: position and angle   | 9.1-9.2           |                                    | Assignment-6 |
| 15   | Monday 11/16 | Sensors: position and angle   | 9.1-9.2           | Online PROJECT<br>DEMO by Students |              |
|      | Friday 11/20 | Review for Final Exam -1  |                   |                                    |              |
| 16   | Monday 11/23 | Thanksgiving, no classes  |                   |                                    |              |
|      | Friday 11/27 | Review for Final Exam -2  |                   |                                    |              |
| 17   | Monday 11/30 | <b>FINAL EXAM 1-3:50 pm Best of Luck!</b>   |                   | EXAM WEEK                          |              |
|      | Friday 12/4  | <b>FINAL EXAM 1-3:50 pm Best of Luck!</b>   |                   |                                    |              |