

# MECHATRONICS TECHNOLOGY ASSOCIATE IN APPLIED SCIENCE

## Program Description

This program is designed to teach the skills required by mechatronics technicians for the 21st century's high-tech world of automated manufacturing. This is an interdisciplinary field involving control systems, electronic systems, computers, robotics and mechanical systems.

Courses taken under the Mechatronics I and Mechatronics II certificates may be applied toward the associate degree program.

The Mechatronics Technology program combines the technologies areas of Mechatronics Certificates I and II with additional general educational requirements to ensure a well-rounded graduate. The student will develop basic foundational skills and understanding in electronics, electrical control systems, hydraulics and pneumatics, mechanical power systems, AC/DC motors and drive systems, programmable logic controllers, robotics and troubleshooting strategies.

### Embedded Certificate

This program contains one or more embedded certificates which will automatically be awarded if the certificate requirements are met unless the student completes and submits the Program of Study Change Form ([https://www.gvltec.edu/admissions\\_aid/student\\_forms/](https://www.gvltec.edu/admissions_aid/student_forms/)) requesting to opt out of the embedded certificate.

## Mission Statement

The Mechatronics program mission, to produce students who are ready for today's advanced manufacturing jobs, furthers the college's mission to transform students' lives through world-class education in a field that has seen significant growth in our community.

## Entrance Requirements

High school diploma or GED

## Type of Program

Day or evening

## Requirements for Completion

This program requires a minimum grade of "C" in all concentration courses.

## Employment Opportunities

Students who successfully complete this course of study may be employed by national and international high-tech industries throughout the Upstate and globally.

Visit our web page at <https://www.gvltec.edu/mechatronics/>.

## Recommended Program Schedule

Listed below is the ideal grouping of courses in order by semester. This plan assumes a full-time schedule. Note, however, that many variables can affect this plan, and not every course is offered every semester.

Please see your advisor to map out your own personalized progression toward graduation.

**Note:** Please contact your advisor for recommended evening schedules.

| First Semester                        |  | Hours     |
|---------------------------------------|--|-----------|
| IMT 112                               | Hand Tool Operations                               | 3         |
| or MTT 121                            | Machine Tool Theory I                              |           |
| EEM 117                               | AC/DC Circuits I                                   | 4         |
| COL 105                               | Freshman Seminar                                   | 3         |
| MAT 170                               | Algebra, Geometry, and Trigonometry I <sup>1</sup> | 3         |
| <b>Total Semester Hours</b>           |  | <b>13</b> |
| Second Semester                       |  | Hours     |
| IMT 161                               | Mechanical Power Applications                      | 4         |
| EEM 118                               | AC/DC Circuits II                                  | 4         |
| EEM 271                               | Sensors and System Interfacing                     | 2         |
| PHS 111                               | Conceptual Physics I                               | 3         |
| <b>Total Semester Hours</b>           |  | <b>13</b> |
| Third Semester                        |  | Hours     |
| MEC 130                               | Motor Controls                                     | 4         |
| IMT 131                               | Hydraulics and Pneumatics                          | 4         |
| ENG 165                               | Professional Communications <sup>2</sup>           | 3         |
| IMT 104                               | Schematics   | 2         |
| <b>Total Semester Hours</b>           |  | <b>13</b> |
| Fourth Semester                       |  | Hours     |
| AMT 105                               | Robotics and Automated Control I                   | 3         |
| EEM 221                               | DC/AC Drives                                       | 3         |
| EEM 251                               | Programmable Controllers                           | 3         |
| Humanities Elective <sup>3</sup>      |  | 3         |
| <b>Total Semester Hours</b>           |  | <b>12</b> |
| Fifth Semester                        |  | Hours     |
| EEM 252                               | Programmable Controllers Applications              | 3         |
| MFG 110                               | Introduction to Manufacturing CAD                  | 3         |
| IMT 170                               | Statistical Process Control                        | 3         |
| AMT 205                               | Robotics & Automated Control II                    | 3         |
| <b>Total Semester Hours</b>           |  | <b>12</b> |
| Sixth Semester                        |  | Hours     |
| EEM 274                               | Technical/Systems Troubleshooting                  | 4         |
| or MEC 299                            | Research in Advanced Mechatronics                  |           |
| Social Sciences Elective <sup>3</sup> |  | 3         |
| WLD 240                               | Robotic Welding and Manufacturing                  | 4         |
| <b>Total Semester Hours</b>           |  | <b>11</b> |
| <b>Total Required Credit Hours</b>    |  | <b>74</b> |

<sup>1</sup> Recommend MAT 110 College Algebra in lieu of MAT 170 Algebra, Geometry, and Trigonometry I, if placement allows. A minimum grade of "C" is required.

<sup>2</sup> Recommend ENG 101 English Composition I and SPC 205 Public Speaking in lieu of ENG 165 Professional Communications, if placement allows.

<sup>3</sup> South Carolina Act 26 of 2021, the "REACH Act", requires undergraduate students completing a baccalaureate degree to complete a three-credit course that requires, at a minimum, the reading of the U.S. Constitution, the Declaration of Independence, the

Emancipation Proclamation, five Federalist Papers, and one document foundational to the African American Struggle; collectively known as the "Founding Documents." Therefore, students graduating from the BAS.MFG program are required to successfully complete either PSC 201 (American Government) as the social science requirement or one of the general education elective requirements OR HIS 201 (American History – Discovery to 1877) as the humanities requirement or one of the general education elective requirements.