SCSC South Central Service Cooperative

South Central COLLEGE

NEXTGEN MANUFACTURING & ENGINEERING ACADEMY

Where innovation meets precision. Preparing students to design, build, and power the technologies of tomorrow.

Junior Year

Fall Semester

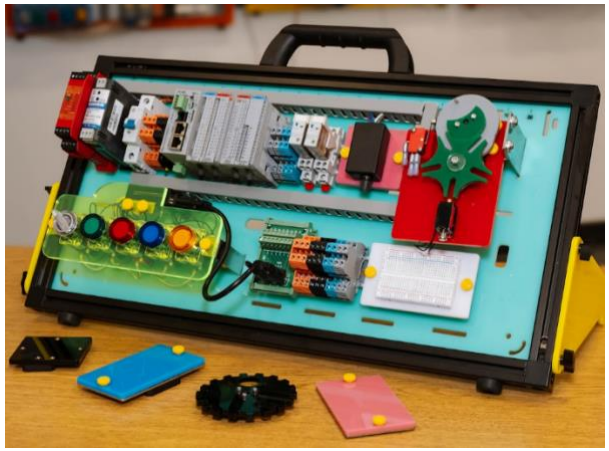
Electronics in Action

1 HS Semester Credits
3 South Central College Credits

Spring Semester

Mechatronics in Action

1 HS Semester Credits
3 South Central College Credits



Senior Year

Fall Semester

Sensors in Action

1 HS Semester Credits
3 South Central College Credits

Spring Semester

Power Under Pressure

1 HS Semester Credits
3 South Central College Credits

All classes are online. Each participating district will receive trainers, see picture above. Please call with questions or enrollment assistance. 507.389.1889.

Updated 11/20/2025

NextGen Manufacturing & Engineering Academy Course Descriptions

Electronics in Action (MECA 1122 Electricity - Devices and Circuits I)
3 SCC Credits, 1 HS Semester Credit
This course provides an exploration of the basics in electricity and electronics. Topics include an overview of direct current, circuit laws, components, and use of test equipment. Students learn the basic technique of troubleshooting electric circuits, including measurement techniques, analysis of faults, and repair procedures. Teamwork, critical thinking, and problem solving are emphasized. Hands-on experience and practical applications are included.

Mechatronics in Action (MECA 1250 Mechatronics Systems Operations I)
3 SCC Credits, 1 HS Semester Credit
This course will provide the students with the principles of programmable logic controllers (PLC) hardware and fundamental sequence control systems. The student will gain essential knowledge necessary to create and edit basic PLC programs that will include timers, counters and special function blocks. As well as gaining an understanding of interfacing discrete input-output (I/O). The student will also perform fundamental PLC troubleshooting procedures. Technical writing skills and safety procedures will be implemented throughout the course

Sensors in Action (MECA 2110 Sensors and Control)
3 SCC Credits, 1 HS Semester Credit
This course will provide students with the principles of measurement and control systems. The student will gain an understanding of different sensor technologies used to measure and detect physical properties used in a variety of electromechanical, electrohydraulic and electro pneumatic systems. The student, through lab work, will also learn how to use and troubleshoot sensors used in open and closed loop control systems. Technical writing skills and safety procedures will be implemented throughout the course

Power Under Pressure (MECA 2120 Fluid Power I)
3 SCC Credits, 1 HS Semester Credit
This course provides the basics of fluid powered devices and systems found in modern industrial machinery and automation. Topics include proper safety procedures, basic laws of fluid mechanics, standard symbols, pumps, control valves, control assemblies, actuators, maintenance procedures, and switching and control devices. At the completion of this course, the student will be able to apply basic laws of fluid mechanics to design and specify characteristics of a pneumatic system; select and size actuators and control valves and match the pneumatic components with its American National Standards Institute (ANSI) symbol. Upon completion of this course, the student should be able to identify long-term symptoms associated with a lack of preventive maintenance of pneumatic components while demonstrating good safety practices including lock out procedures. Technical writing skills and safety procedures will be implemented throughout the course.

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