

# Certificate Programs

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The James Worth Bagley College of Engineering offers certificates in the following areas:

- Automotive;
- Computational Biology;
- Information Assurance;
- Manufacturing;
- Materials; and
- Six Sigma.

Certificates are available to traditional and non-traditional students who meet all admission requirements; students must be admitted to Mississippi State University in order to pursue certificates. Prerequisite courses are required in order to qualify for the certificate programs (normally satisfied at the undergraduate level). Some engineering certificate programs may be available to non-engineering graduate students. Please refer to the specific certificate of interest for prerequisite requirements and certificates available to non-engineering graduate students.

All certificates require that a student take a minimum of 15 hours of academic credit (five courses) in an approved certificate area and may be earned by completing selected courses from a list of qualifying courses designated by a representative faculty member or committee. Hours earned in acquiring a certificate **may** be counted toward completion of an advanced engineering degree. A graduate student must achieve a minimum cumulative GPA of 3.00 on courses taken to acquire a certificate. Upon satisfactory completion of the required coursework, the student will become a candidate for certification. The MSU transcript will indicate successful completion of the certificate program. Contact information is provided below for each certificate program.

## Automotive Engineering

The Automotive Engineering Certificate enhances the education of a student in topical subject matter related specifically to automotive engineering. This certificate was developed in support of the automotive manufacturing companies in the State of Mississippi to provide students an opportunity to focus on engineering knowledge and issues related to the design of vehicle systems and their production. The program is multi-disciplinary, allowing students from all areas of engineering to participate. Coursework will be selected from Aerospace Engineering, Chemical Engineering, Civil and Environmental Engineering, Electrical and Computer Engineering, Computer Science Engineering, Engineering Mechanics, Industrial and Systems Engineering, and Mechanical Engineering. All students are required to participate in a vehicle design/construction experience which must be approved by the director of the Automotive Engineering Certificate and will be designated as a 3-hour Directed Individual Study (4000 for undergraduate students/7000 for graduate students) course. Membership in the student section (or appropriate level) of the Society of Automotive Engineers is strongly encouraged. An Automotive Engineering Committee comprised of faculty members from various engineering departments who have an interest in the automotive industry will administer the certificate in conjunction with the Office of the Dean of Engineering. For additional information, contact Dr. Marshall Molen, (662) 325-2046 or [molen@ece.msstate.edu](mailto:molen@ece.msstate.edu).

## Computational Biology

The Computational Biology Certificate combines coursework in computer science and biology to offer students a formal program of study to address how biological systems work by analyzing the data made available with high throughput biology. Students will gain fundamental skills in computing integrated with biology (i.e., application techniques to understand the structures, functions, dynamics, and evolution of living organisms) and will become competitive for high-end employment in emerging technical fields. The well-defined program will provide students with recognition of their training in the area and will allow students from diverse disciplines to learn together. The program will be administered by the Department of Computer Science and Engineering, the Center for Computer Security Research, and the Office of the Dean of Engineering. The certificate is awarded by the Bagley College of Engineering and the College of Agriculture and Life Sciences. For additional information, contact Dr. Andy Perkins at (662) 325-0004 or [ap335@msstate.edu](mailto:ap335@msstate.edu).

## Information Assurance

The Information Assurance Certificate provides educational coursework in the areas of information assurance and data security. MSU is certified as a Center of Academic Excellence in Information Assurance (IA) by the National Security Agency; the IA program of instruction has been certified by the Committee on National Security Standards (CNSS) against the National Training Standard for Information Systems Security (INFOSEC) Professionals—NSTISSI No. 4011 and the National Training Standard for Information Systems Security Officers (ISSO)—NSTISSI No. 4014. The curriculum for the certificate conforms to the Federal training standards in this area. A faculty member from the Department of Computer Science and Engineering's Center for Computer Security Research (CCSR) will be appointed annually to administer the program. The certificate is jointly administered through the CCSR, the Dean of Engineering, and the College of Agriculture and Life Sciences. Additional information may be found at <http://security.cse.msstate.edu/IAcertificateappl.doc>. For more information, contact Dr. David Dampier at (662) 325-8923 or [dampier@cse.msstate.edu](mailto:dampier@cse.msstate.edu).

## Manufacturing

In addition to coursework, the Manufacturing Certificate requires actual work experience in a manufacturing environment equivalent to a cooperative work semester or a summer internship. The certificate is a means for students to gain an enhanced manufacturing related educational experience.

Verification of employment by the employer, including a description of work duties may be required of the candidate prior to certification. The Manufacturing Certificate is jointly administered by the Department of Industrial and Systems Engineering and the Dean of Engineering. For additional information, contact Ms. Rita Burrell at [rburrell@bagley.msstate.edu](mailto:rburrell@bagley.msstate.edu) .

## **Materials**

The Materials Certificate recognizes the completion of an organized plan of study in the interdisciplinary materials related areas. Courses for the certificate cover topics on advanced composites, biomaterials, materials processing, polymers, and electrical materials. Through the combination of research and engineering, students may choose to specialize their certificate in any two additional areas of study that include: aerospace, biomedical, chemistry, computer, environmental, forest products, mechanical, and physics. The Materials Engineering Working Group (MWG) will serve as the advisory committee to oversee and recommend courses in the certificate group. The Materials Certificate is administered by the Dean of Engineering. Additional information, including course selection, may be accessed at <http://www.bagley.msstate.edu/research/workinggroups/materials/index.php> . For specific information, contact Dr. Judith Schneider, Materials Engineering Coordinator, at (662) 325-9154 or [Schneider@me.msstate.edu](mailto:Schneider@me.msstate.edu) .

## **Six Sigma**

The Six Sigma Certificate offers students formal training in order to utilize various problem solving and process improvement methods to facilitate improved performance by identifying and eliminating “non-value added” activity or waste in organizational functions. The program is a rigorous application of an extensive set of skills and methods, both statistical and non-statistical, utilized to reduce the amount of output variation in any given process. Completion of this certificate lends to salary and career enhancement, proven credibility, and an improved skill set. The certificate is jointly administered by the Department of Industrial Engineering and the Dean of the Bagley College of Engineering. For additional information, contact Ms. Rita Burrell at [rburrell@bagley.msstate.edu](mailto:rburrell@bagley.msstate.edu) .