

**Big
ideas.**
Real-world thinking.



**MINNESOTA STATE
UNIVERSITY**
MANKATO

AUTOMOTIVE ENGINEERING TECHNOLOGY *College of Science, Engineering & Technology*

WHAT DEGREES AND PROGRAMS DO WE OFFER?

Automotive Engineering Technology (AET) is a four-year BS degree, located within the College of Science, Engineering and Technology. According to the Society of Automotive Engineers, automotive engineering technology refers not only to passenger cars, but all forms of ground vehicles and equipment intended for the movement of goods and people. Areas include: agricultural equipment, high performance vehicles (street and race), industrial equipment, recreational vehicles (motorcycles, snowmobiles), trucks, buses, and aircraft.

WHAT CAREER OPPORTUNITIES ARE AVAILABLE FOR STUDENTS COMPLETING THIS PROGRAM?

There are many challenging and rewarding career opportunities for AET graduates. Employment opportunities for BS graduates include the area of automotive design/development/research and the area of automotive service. The typical starting salary range is \$65,000 to \$70,000. Academic opportunities include admittance to graduate school.

EXAMINING THE QUALITY OF OUR PROGRAM

Accreditations

The Automotive Engineering Technology program is accredited by the Engineering Technology Accreditation Commission of ABET.

Faculty

All faculty are directly involved in research and often are the recipients of grants. All research is conducted directly with students. The primary purpose of such research is to provide learning opportunities for students in a project/group setting that is realistic with respect to scope, budget, timelines, and cooperative effort. Many research projects become the capstone Senior Design Projects for the students and result in published technical papers with the students as authors.

Alumni successes

Some companies that have hired AET graduates include General Motors, Ford, DaimlerChrysler, Toyota, Polaris, Arctic Cat, Owatonna Tool Company, Toro, Competition Cams, John Deere.

Other special programs

Since 1974, the Automotive Engineering Technology Program has been involved in the production of experimental cars. The 33 cars built to date have been entered in 24 national competitions that

included cross-country fuel economy rallies and test sessions at the General Motors Proving Grounds and at the World's Fair. These projects provide real-life experience in design, testing, deadlines, budgets, and conforming to established regulations. In 1990, a solar-powered car was built, which ran in the GM Sunrayce USA from Florida to Michigan. It also became the first solar-powered car to climb to the top (14,110 ft.) of Pike's Peak in Colorado. Since then, four more solar-powered vehicles have been constructed and raced in the United States and in Japan, where Minnesota State Mankato placed first of 28 universities. The AET Department also participates in the Formula Society of Automotive Engineers Competition each year, where students design, build and compete with an open-wheel race car against schools from around the world. The Minnesota Center for Automotive Research (MnCAR) is an integral component of the Automotive Engineering Technology program. The purpose of the center is to provide industry and government with direct assistance in automotive research and product development while allowing undergraduate students the opportunity to become directly involved in comprehensive projects.

STUDENT EXPERIENCE/PROGRAM REQUIREMENTS

Faculty/student ratio

Due to the laboratory nature of the curriculum, most class sizes are kept in the 20-30 range to allow for full access to laboratory equipment and direct interaction with faculty. All classes are taught by department faculty. In addition, technical staff supervises laboratories.

Specialized equipment/facilities

The automotive engineering technology area consists of three laboratories and an engine dynamometer research room, vehicle emissions test lab, 40-seat multimedia classroom, and library-resource room. Major equipment in the labs includes emissions research lab (FTP), SuperFlow engine dyno, mustang chassis dyno, scope/scan tools, air flow test benches, computer wheel balancer, infra-red exhaust analyzer (5 gas), engine rebuilding tools, computer camshaft analyzer. The Memorial Library has an extensive automotive collection that includes many SAE technical papers and government publications.

Unique program components

Senior Design Project

During the senior year, each student is required to complete a Senior Design Project. This hands-on project involves groups of students

conducting research on a specific automotive problem. The research is often done directly with the automotive industry or as part of a research grant or vehicle design competition.

Internships

Paid internships are available (although not required) in the automotive industry and are typically completed in the summer between the junior and senior years. The majority of students in the program participate in the internship program. Local, national, and international internships are available. Many internships lead to offers of full-time employment upon graduation.

Scholarships

Scholarships for new students are available from Minnesota State University and also the Society of Automotive Engineers. For students already attending MNSU, yearly scholarships from the Society of Automotive Engineers are available. The annual application process is available each spring.

Clubs and organizations

Minnesota State University, Mankato has a student chapter of the Society of Automotive Engineers. Through this group, students take field trips, attend regional meetings, and participate in a variety of automotive, fund-raising, and service activities.

HOW DO I PREPARE FOR THIS PROGRAM?

The best high school curriculum to prepare you to enter a program in automotive engineering technology includes courses in algebra, trigonometry and physics. Other helpful courses are geometry, computer science and chemistry. A solid foundation in English is desirable. High school courses in technology education are also useful.

FOR MORE INFORMATION PLEASE CONTACT

Department of Automotive Engineering Technology Minnesota State University, Mankato
205 Trafton Science Center E Mankato MN, 56001

Phone

507-389-6383 (V)
800-627-3529 or 711 (MRS/TTY)

Website

cset.mnsu.edu/aet

You are encouraged to visit the campus.

To arrange a visit, please call:

Office of Admissions: 507-389-1822

Toll-Free: 800-722-0544

SAMPLE FOUR-YEAR CURRICULUM (AUTOMOTIVE ENGINEERING TECHNOLOGY, BS)

First Year (Fall)	First Year (Spring)
AET 102 Intro to Automotive Engineering Technology (1) AET 160 Auto Technology & Systems (4) CHEM 104 Introduction to Chemistry (3) MATH 115 Precalculus (4) ENG 101 Foundations of Writing and Rhetoric (4)	AET 261 Auto Drivability & Diagnosis (4) MET 142 Introduction to Parametric Modeling (3) EET 113 DC Circuits (3) MATH 121 Calculus I (4) CMST 100 Fundamentals of Communication (3) OR CMST 102 Public Speaking (3)
Second Year (Fall)	Second Year (Spring)
AET 262 Auto Computers & Electronics (4) MET 275 Manufacturing Processes I (4) MATH 122 Calculus II (4) PHYS 211 Principles of Physics I (4) General Education (2)	AET 280 Data Acquisition & Analytics (3) ECON 202 Principles of Microeconomics (3) ENG 271W Technical Communication (4) STAT 154 Elementary Statistics (4) PHYS 212 Principles of Physics II (4)
Third Year (Fall)	Third Year (Spring)
AET 334 Fluid Power (3) AET 364 Chassis Design & Perf Testing (4) MET 323 Statics (3) MET 341 Advanced Parametric Modeling (3) MET 375 Manufacturing Processes II (4)	AET 366 Auto Thermo Dynamics (3) AET 387 Junior Design Project (3) MET 324 Strength of Materials & Dynamics (4) MET 425 Project and Value Management (4) Amet 100/400 Elective (3)
Fourth Year (Fall)	Fourth Year (Spring)
AET 488 Senior Design I (3) AET 468 Auto Research Methods (4) AET 465 Automotive Lab (2) (3) General Education (5)	AET 489W Senior Design II (3) MET 424 Industrial Safety (2) AET 436 Hybrid / Electric Vehicles (3) General Education (4)

For additional information about course requirements, please visit mnsu.edu/supersite/academics/bulletins/

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Safety/Security Programs & Statistics are available at www.mnsu.edu/safety

Placement & Occupational Outlook for Majors are available at www.mnsu.edu/cdc/ (Click on Resources and then Graduate Statistics)



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