OBJECTIVE
The Department of Applied Engineering Technology offers comprehensive instructions and laboratory trainings leading to the BS Degree in Applied Engineering Technology and BS Degree in Motorsports Technology. The degree programs are accredited by the Association of Technology, Management, and Applied Engineering (ATMAE). Our graduates were hired by various companies such as John Deere, Lockheed Martin, Cummins, Texas Instruments, Caterpillar, Rockwell Collins, Cargill, Cross Fluid Power, Johnson Controls, Inc., Ingersoll Rand, Altria, VOLVO, Good Year, Core Technology Molding, Xerox, 3M, British Aerospace Electronics (BAE) Systems, Pratt & Whitney, Bank of America, US Air Force, US Army, and many others.

VISION
The Department of Applied Engineering Technology strives to become a premiere learner-centered community in industrial technology through global and interdisciplinary learning, innovation and engagement, producing human capital to meet the 21st Century US industrial needs.

MISSION
The Department of Applied Engineering Technology seeks to provide opportunities for individuals from diverse backgrounds to achieve excellence at the graduate and undergraduate levels, prepares its students for successful professional and personal lives in the 21st century, equipping them with 21st century management-oriented skills that they need to adapt to the ever-changing world.

Our degree programs enable students to apply basic engineering principles, technical and management skills to secure application-oriented technical and management positions in today's industrial environment. Specifically, the programs are designed to prepare our students for various engineering support and management functions for research, production, and operations, and applications to specific engineering specialties. The program will enhance their proficiencies in the following areas:

- Planning, organizing and managing technology, workforce, and resources.
- Applying and controlling the use of various high-level technologies, e.g., information based business management systems, such as, enterprise resource planning systems, supply chain management systems, manufacturing execution systems, etc.
- Mastering the technical skills such as industrial materials and processing, computer aided drafting, design and manufacturing; computer-integrated manufacturing; machine vision, power technology; automation technologies such as robotics, PLC, and CNC machines.
- Controlling processes to improve quality, reliability, and productivity.
- Managing and developing a changing workplace to achieve organizational goals.
- Problem solving and creative thinking skills.
- Technology innovation and implementation.

TARGET AUDIENCE AND CAREER OPPORTUNITIES
The program is designed to serve the diverse needs of people who are interested in pursuing careers in engineering technology enterprises, academic society, and government agencies.

- Individuals recently graduated from high schools and want to embark on a career in engineering technology positions.
- Individuals recently graduated from community colleges and want to advance their degree level to prepare for a career in engineering technology positions.
- Individuals currently employed in the technical and/or management positions that have professional growth aspirations.

DEGREES OFFERED
Applied Engineering Technology – Bachelor of Science
Motorsports Technology – Bachelor of Science
GENERAL PROGRAM REQUIREMENTS

DEPARTMENTAL REQUIREMENTS

All students in the Department of Applied Engineering Technology must complete 120 credit hours, and maintain a minimum of 2.0 GPA in order to receive a BS degree. A minimum of 66 credit hours must be completed in applied engineering technology or motorsports technology specialization courses, which include 30 credit hours of departmental core courses. A minimum grade of “C” must be earned in all Applied Engineering Technology (AET), Motorsports Technology (MST) courses, Computer Systems Technology (CST), and ESH courses.

Graduates of technical institutes and community colleges who have earned the Associate Degree in technology areas may be admitted to the BS degree programs as juniors. Specific course requirements for these students will have to be made on an individual basis after their previously earned credits have been assessed. All transferable credits must have a grade “C” or higher. The typical student in this program will be required to take at least 64 additional credit hours for graduation. If a high school graduate has taken Advanced Placement (AP) courses during high school years, the student will need to submit a test score report directly from the Testing Service of the College Board in order to receive transfer credits. A high school transcript will not suffice. In addition, the course work must meet the curriculum requirements.

Any student transferring to the BS degree programs from other disciplines must have a minimum 2.5 grade point average. Specific course requirements for these students will have to be made on an individual basis after previously earned credits have been assessed.

ACCREDITATION

Both Bachelor of Science Degrees in Applied Engineering Technology and Motorsports Technology are accredited by the Association of Technology, Management, and Applied Engineering (ATMAE).

CAREER OPPORTUNITIES

Graduates of the BS Degree programs are very successful in securing employment in industrial, service areas and government organizations. Positions typically include enterprise managers, production supervisors, manufacturing engineers, production engineers, automation engineer, manufacturing management, quality control, facilities planner, service management, motorsports marketing, NASCAR related areas, etc.

AET CORE COURSES (30 credit hours)

All undergraduate students in the Department of Applied Engineering Technology must take the following departmental core courses: AET 110, AET 121, AET 191, AET 232, AET 270, AET 281, AET 293, AET 395, AET 445, and AET 496.

AET TECHNICAL ELECTIVES

AET specialization courses may be chosen from the following four groups of manufacturing courses:

(1) Industrial Materials and Material Processing Courses:
AET 361, AET 381, AET 392, AET 461, AET 475, AET 476, AET 477, AET 492, AET 493.

(2) Industrial Automation Courses:
AET 373, AET 377, AET 440, AET 441, AET 450, AET 491.

(3) Industrial Management Courses:
AET 311, AET 332, AET 421, AET 432, AET 445, AET 481, AET 482, AET 483, AET 484, AET 494.

(4) Alternative Energy Courses:
AET 325, AET 326, AET 425, AET 426, AET 427.

Department of Applied Engineering Technology
Bachelor of Science in Motorsports Technology
Major Code: MTSP

Curriculum Guide
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Total Credit Hours: 120

**MAJOR PROGRAM REQUIREMENTS**

*Students must earn a C or better in the following courses:*

1) All AET courses
2) All MST courses
3) EHS 101
4) CST 110 and CST 120

**COURSE DESCRIPTIONS IN MOTORSPORTS TECHNOLOGY**

**MST 251. Introduction to Motorsports**

Credit 3(3-0)

This course provides an introduction to the history, structure and organization of motorsport; overview of the various types of races, vehicles, venues and sanctioning bodies of motorsports. Students learn the racing rules, and regulations, and point systems governing various classes of racing, emphasizing the ethical and legal responsibility of motorsport industry. Students research various career paths in motorsport industry and functions of motorsport facilities. (F:S)

**MST 252. Engine Performance**

Credit 3(3-0)

This course is a study of the principles of the internal combustion engine. Students learn to identify different engine types and components, chemistry of combustion, fuel systems, and exhaust systems. Basic functions of engine design are examined with an emphasis on those aspects that enable improved engine performance, such as, spark timing, valve timing, A/F ratio, engine geometry, fuel type, manifold tuning, cooling and lubricating systems. Students practice engine assembly maintenance and trouble shooting. Prerequisite: PHYS 225/226. (F:S)
MST 255. Automotive Powertrain Technology
Credit 3(3-0)
This course will have in-depth discussions on a variety of manual and automatic power transmission and drive train components including drive shafts, universal joints, gears, axles, differentials, bearing, clutches and seals. Modern automatic transmissions that heavily rely on control technologies are presented, including step gear transmissions (ATs), continuous variable transmissions (CVTs) and hybrid power train systems. Students will also practice proper service procedures for diagnosis, disassembly and assembly of manual transmissions, transfer cases and differentials. (F;S)

MST 275. Motorsports Performance Technology
Credit 3(3-0)
This course teaches students the technologies required for improving motorsport performance, such as, racing vehicle structural integrity (crashworthiness, structural strength and stiffness, aerodynamic characteristics performance); driver and track safety equipment; tire technology, suspension system analysis, damper analysis, aerodynamics and dynamic testing, driver’s perspective, performance modeling and the race modeling. (F;S)

MST 452. Motorsport Management
Credit 3(3-0)
This course prepares students to operate a successful motorsports team. Students learn how to manage motorsport businesses strategically; create and sustain competitive advantage; plan marketing and positioning of sponsorship, raise capital and handle budgeting and finance. Students investigate the integration of management principles through assessment and evaluation of a series of motorsport case studies. (F;S)

MST 455. Motorsports Data Acquisition and Controls
Credit 3(3-0)
Students learn to develop understanding of the automotive electrical system, operation and components; principles of operation of fuses, relays, solenoids and actuators, fuel injectors, electric motors, ignition coils, batteries; engine electronics, function of components; minimizing the environmental impact of the internal combustion engine by using electronic control. Introduction to hybrid (full and mild), electric, fuel cell vehicles and their environmental benefits will also be presented. (F;S)

MST 456. Vehicle Dynamics and Control
Credit 3(3-0)
Students will learn the fundamental dynamic considerations that influence the performance of ground vehicles. Load transfer during braking, acceleration, and cornering are analyzed. Students will investigate vehicle handling as it directly relates to chassis, suspension components, springs and shocks, tires and the overall race set up. Different types of suspension and dampers to compare their influence on transferring the vehicle loads to the road and limitation on the vehicle performance. (F;S)

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