Automotive Engineering Institute

Your Partner in Automotive Research

LAWRENCE TECHNOLOGICAL UNIVERSITY

Extremely knowledgeable automotive engineering faculty, exceptional students, plus more than 70 years of theory and practice at the hub of one of America's great industrial and technological centers—this winning combination places Lawrence Technological University in an ideal position to partner with the automotive industry.

An experimental modal analysis project conducted in the Automotive Engineering Institute's NVH laboratory using FFT software in an acoustic/anechoic chamber under sound control conditions.

Knowledge-Based Engineering develops software toolsets that let design engineers build analysis-ready models. Parametric feature-based CAD is integrated with computational fluid dynamics, allowing the product design process to advance quickly to the final analysis stage.

A Winning Combination

Lawrence Tech's newly created Automotive Engineering Institute (AEI) is an applied research and academic organization focused on creating new knowledge in the field of automotive engineering. AEI extends Lawrence Tech's strong research and development capabilities to corporations and governmental organizations. This synergy benefits the entire field of ground vehicle applications. Industry experience and university expertise create a powerful team.

Research Strengths

- Vehicle dynamics
- Driveline technology
- NVH
- Emerging energy technologies (e.g., fuel cells)
- Internal combustion engines
- Emissions
- Hybrid vehicles
- Fuel economy
- Safety
- Fasteners
- Materials
- Computer-aided engineering
- Controls

The AEI can conduct applied research on multi-wheeled vehicles designed for various terrains for the Departments of Defense, Energy, and Transportation and the Environmental Protection

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Agency. Faculty and students in the AEI are eager to tackle complex research projects for automotive corporations.

Advantages Abound

The research possibilities are endless. As a nonprofit educational institution, Lawrence Tech offers a cost-effective research option to industry and government.

- Technology development for potential applications in new products
- Deeper understanding and resolution of complex technical issues
- Specific research projects
- Innovative solutions to recurring problems
- Access to multidisciplinary faculty expertise
- Custom-designed university courses
- Use of automotive research database
- Access to motivated, highly-skilled, future engineers, many of whom are in graduate programs

A Matter of Degrees

Lawrence Tech supports a Master of Science in Automotive Engineering program and a Bachelor of Science in Mechanical Engineering program with a concentration in automotive engineering. Students participate in national competitions, such as Future Car, Formula SAE, Mini Baja, Supermileage, and Tour de Sol, and rank among the top performing teams. Graduates seek additional learning opportunities through applied research projects and doctoral programs. They also offer fresh ideas and perspectives to participating firms and organizations.

Ongoing research on the mechanical behavior of materials includes the study of the engineering and economic feasibility of using carbon fibers in an epoxy matrix to manufacture composite driveshafts for automobiles and light duty trucks.

The alternative and emerging energy program not only includes development work in the laboratory but also work with companies like DTE in supporting their Hydrogen Power Park project in Southfield, Michigan. Research projects also include fuel cell technology.

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Become an Automotive Engineering Institute Partner

For more information on partnering with Lawrence Tech and the Automotive Engineering Institute, contact Dr. Suresh Bansal at 248.204.2563 or Dr. Vladimir Vantsevich at 248.204.2577 or email AEI@ltu.edu.

Dynamometer Debuts

The Automotive Engineering Institute introduces a new addition to its Vehicle Dynamics Laboratory—a unique 4 x 4 vehicle chassis dynamometer with individual wheel control. Key to the development of next-generation vehicles, this dynamometer can help researchers optimize vehicle performance, safety, and fuel economy and respond to emerging needs in vehicle engineering.