

# ETT - ELECTRICAL TRANSPORTATION TECHNOLOGY

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## **ETT 3190 Fundamentals of Automotive Electrical and Electronic Systems Cr. 3**

Foundations in contemporary automotive electronic systems. Topics include: review of automotive electronics, basic circuit building blocks, vehicle controllers, networking, diagnostics, sensors, actuators, and power electronics. Offered Fall.

**Prerequisites:** EET 2000 with a minimum grade of C- and PHY 2140 with a minimum grade of C-

**Restriction(s):** Enrollment is limited to Undergraduate level students.

## **ETT 4150 Fundamentals of Hybrid and Electric Vehicles Cr. 3**

Hybrid and electric vehicle technologies: concepts and design, energy analysis, unified model approach, hybridization, hybrid powertrain architectures, IC engines for HEVs, transmissions used in HEVs, on-board energy storages. Offered Winter.

**Prerequisites:** ET 3430 with a minimum grade of C- and PHY 2140 with a minimum grade of C-

**Restriction(s):** Enrollment is limited to Undergraduate level students.

## **ETT 4310 Energy Storage Systems for Hybrid and Electric Vehicles Cr. 3**

Overview of advanced battery technologies and applications in EV/HEV, hybrid powertrain configuration and requirements, in-vehicle energy storage systems, battery development, thermal management, control systems, cell monitoring, balancing, and on-board diagnostics. Offered Winter.

**Prerequisites:** ET 3430 with a minimum grade of C- and PHY 2140 with a minimum grade of C-

**Restriction(s):** Enrollment is limited to Undergraduate level students.

## **ETT 4410 Introduction to Advanced Energy Storage Cr. 3**

Comprehensive coverage of energy storage for automotive and renewable energy; battery technology; hydrogen electrochemical cells and regenerative fuel cells; mechanical energy storage; thermal and chemical storage; superconductor. Offered Fall.

**Prerequisites:** ET 3430 with a minimum grade of C- and PHY 2140 with a minimum grade of C-

**Restriction(s):** Enrollment is limited to Undergraduate level students.

## **ETT 4650 Power Electronics and Charging Infrastructure for Hybrid and Electric Drive Vehicles Cr. 3**

Principles of power systems, distribution systems, and ac/dc charging systems; applications of power electronic technologies in traction control, battery management, and regenerative braking for electric drive vehicles. Offered Winter.

**Prerequisites:** EET 3150 with a minimum grade of C-

**Restriction(s):** Enrollment is limited to Undergraduate level students.

## **ETT 4740 In-Vehicle Networking and Embedded Systems Cr. 3**

Principles of data communications and real time embedded systems networking, with emphasis on in-vehicle networking. Controller Area Networks and FlexRay are covered. Project-oriented course utilizing various hardware/software. Offered Yearly.

**Prerequisites:** EET 3100 with a minimum grade of C-

**Restriction(s):** Enrollment is limited to Undergraduate level students.