INTM 462-152/-02: SPECIAL TOPICS IN SUSTAINABILITY: ENERGY AUDITS (TOMAL) ~ CLOSED (4-9-15) ~
Many buildings are energy inefficient and costly to maintain. This research project will focus on the technical and social challenges in developing solutions to improve energy efficiency in buildings. You will learn about the employment of new technologies, alternative energies, energy conservation strategies, and more. Research will include conducting energy analysis of buildings, thermal measurements, and exploration of smart technologies for lighting, communication systems, HVAC control/monitoring, energy storage, and more.

INTM 497-106/-02: SPECIAL PROJECTS: SUSTAINABLE ENERGY RESEARCH (DAVIS) ~ CLOSED (4-9-15) ~
The world is undergoing a transition from fossil fuel-based energy production to renewable energy production, which requires increased energy efficiencies and energy conservation measures. This project course allows students to research, in groups or independently, a problem related to energy conservation or energy production. Learn about the obstacles to fully sustainable energy systems and how research is converted into commercially viable businesses. Projects will include opportunities to exercise industrial design skills.

INTM 497-03: ENERGY CONSUMPTION MONITORING (HAMILL-GOVERNALE)
Energy consumption monitoring is critical for efficient operation of facilities. City codes require reporting of energy consumption on an annual basis for many buildings. Research will involve utilizing utility meter data, Building Automation System custom reports, permanently installed sub-metering, temporary sub-metering, algorithm analysis and development, space analysis and building type analysis. The research area will include connected buildings located in the Chicago area. Complete research of existing energy monitoring systems to determine complexity of installing comprehensive systems at least cost with greatest ease of use.

INTM 497-04: APPLYING SMART MANUFACTURING TECHNIQUES (MAURER)
Innovative technologies are transforming the manufacturing industry, enabling products to be made in totally new ways. This research project will explore how lean thinking, 3-D printing/additive manufacturing, and nanotechnologies are utilized to create new materials and processes that are reshaping traditional manufacturing. Students will research various types of equipment to identify capabilities, and learn how to use and apply new technologies in combination with lean principles to design, build and manage the production of actual products. Visits to manufacturing facilities will demonstrate how companies are using applying these technologies.

INTM 497-05: ENERGY PRICING AND FORECASTING (TIJUNELIS)
This research will explore fossil fuel resources and the many variables impacting oil prices, both upstream and downstream. Students will review factors for supply and demand of energy resources worldwide, then conduct a survey of gasoline retail practice and pricing in the U.S. (Chicago) in order to complete an analysis of published crude oil production forecasts and the significance of prime alternatives. Price elasticity will be examined against public concern for carbon footprint and global warming.

INTM 497-06: GLOBAL SMART GRID DEVELOPMENT (HAMILL-GOVERNALE)
Developing smart grids in undeveloped regions allows engineers to incorporate new equipment and methods from concept to completion. Utilizing research and design methods developed for entirely new smart grid systems can offer insight into the improvement of existing power grids. Research topics related to AC and DC distribution systems, grid tied and off grid renewable energy, localized battery storage, municipal scale battery storage, data analysis of grid performance with multiple generation sources will be included. In addition, research about existing versus ideal energy consumption and thermal energy resources will be researched. Water resources and conservation, drought conditions and potential solutions, solar desalination, wave motion desalination, and other water topics will be researched.
ITMT 495-170: TOPICS IN INFORMATION TECHNOLOGY (HAJEK)  ~ **CLOSED (4-9-15)** ~

Undertake research on intelligent devices, small computers and wearable technology. The Arduino platform will be used as a base for high level programming languages, giving intelligence to analog and digital sensors. Hands-on lab exercises will include designing prototypes for use in sensor networks and developing platforms into commercial applications. Projects can be group or individual; no previous electronics experience is needed.

TECH 497-01: TOPICS IN SUSTAINABLE URBAN FOOD SYSTEMS (COOLEY, ALLEN)
Developing sustainable urban food systems involves production, processing, marketing, distribution, consumption and waste management. Student research will focus on innovative programs, projects, business, policies, and community partnerships which are creating sustainable (social, environmental and economic) urban food systems. Gain hands-on experience through IIT’s Urban Agriculture Program, including vegetable production, embedded monitoring/control systems, composting and aquaponics.

TECH 497-02: TECHNOLOGY INNOVATION (CARLSON, ENGLAND, PAPADEMAS)
Driver-less vehicles (cars, trucks, drones, etc.) represent an emerging technology that raises many technical, policy, operational, and economic issues that need to be solved. Further, with these technologies the retrofitting of existing vehicles to work in harmony with new digital driven technologies is also a challenge. Digital controlled vehicles such as the modern car present problems when the technology malfunctions, and customer overrides during vehicle failure present a challenge to designers as well. Changes in the transportation infrastructure also present new challenges. Students will be organized into groups to propose solutions to various digital control and infrastructure problems.

If you wish to pursue one of these projects, please send a request to intm.iit.edu using the following template (COPY AND PASTE INTO YOUR EMAIL):

EMAIL SUBJECT:  **PERMIT REQUEST** (Insert course number and title here)

FULL NAME:

IIT CWID NUMBER:

REGISTRATION PIN:

IIT EMAIL ADDRESS:

PHONE NUMBER:

FIRST CHOICE PROJECT:

SECOND CHOICE PROJECT:

PLEASE NOTE ANY QUESTIONS OR CONCERNS:

Please do not send a permit request to any other email besides intm@iit.edu. Doing so will delay our receipt of your request.