ENERGY AND SUSTAINABLE TECH (EST)

EST 100 C Renewable Sustainable Energy **3 Units**

Term hours:54 lecture and 18 laboratory. This course investigates the potential of renewable energy technologies for sustainable environmental and economic problems within society. Areas of investigation include solar energy, wind power, hydro-power, geothermal, fuel cells, biomass, and ocean wave power. Also addressed are conventional energy sources including oil, coal, natural gas, and nuclear energy. Consideration given to related issues such as costs, system efficiencies, emissions and other environmental impacts, financing incentives, and the regulatory and market forces impacting the alternative energy industry. Students will learn how to assess the viability of incorporating renewable technology, such as solar or wind power, for residential and commercial applications. (UC/CSU)

EST 110 C Climate Change & Global Resp. **3 Units**

Term hours: 27 54 lecture and 27 18 laboratory. Formerly: EST 110 C Tools and Safety This course provides an introduction to the essential roles of energy in Nature and human activity. It is an interdisciplinary general education course intended for all students who desire basic understanding of the forms and applications of energy and their influence on the development of civilization, geopolitics, economics and our environment. In addition to traditional sources of energy, special emphasis is given to renewable energy. Field trips may be arranged. etc. (CSU)

EST 120 C Energy Eff. 1-Sust. Bldg Srvs **3 Units**

Formerly EST 120 Digital Controls and Inverters Term hours: 27 lecture and 81 laboratory. This course will present basic energy concepts lighting fundamentals, energy utilities and rates, and identification of opportunities for efficiency changes in buildings. Topics include scientific principles of energy, light and heat, energy codes and standards, metering and monitoring. Students will examine the economic, regulatory, and infrastructure issues affecting implementation of energy efficiency measures as well as their potential for solving energy and environmental problems, and Energy Sustainability Technology.(CSU)

EST 130 C Engy Eff. 2-Sust. Com.Bldg.Srv **3 Units**

Advisory: EST 120 C.

Formerly: EST 130 C Solar Photovoltaics-install Term hours: 27 lecture and 81 laboratory. This course examines energy efficiency concepts as they apply to reductions in energy consumption for commercial buildings. Assessment of building performance related to design, construction, and operation will be analyzed. Students will examine various gas and electric rate options, HVAC systems and types of high-intensity lighting. Load profiles, calculating return on investment, and life-cycle cost of commercial building energy retrofit measures are explored. (CSU)

EST 135 C Solar Concentrators -Hot Water **3 Units**

Term hours: 27 lecture and 81 laboratory. In this course, students will learn theory, setting, design, procurement and techniques required to install and maintain a solar hot water system. Examine passive/active, unglazed/glazed, evacuated tube, and concentrated solar technologies, optimal designs, alternative space heating, building codes, utility conservation programs, and site and federal incentives. (CSU)