to radiographic equipment. Students will also study dynamic imaging (Fluoroscopy), image intensification and safety related to these procedures. Prerequisite: RAD 136L or permission of instructor. (Fall only) (3, 3T+0L)

236 PRINCIPLES OF RADIOLOGIC TECHNIQUES III – Students learn more advanced effects of radiation by studying radiation biology including specifications of the x-ray beam and radiation interaction with cellular matter such as DNA and RNA synthesis. Students will also learn digital technology as it applies to the clinical experience. Prerequisite: RAD 235 or Permission of the instructor. (Spring only) (2, 2T+0L)

240 RADIOLOGTIC PROCEDURES IV – Students will begin examining advance modalities and imaging systems. They will continue with contrast procedures related to the operating room, and other specialty areas. Modalities to include Mammography, Bone Densitometry, CT, MRI, Nuclear Medicine, Ultrasound, Angiography, Radiation Therapy and opportunities that may present as technology is offered.. Prerequisite: RAD 141L or permission of the instructor .Corequisite: RAD 245L (Fall only) (3, 3T+0L)

245L CLINICAL EXPERIENCE IV Students continue performing master competencies working towards more indirect supervision while also performing intermediate rotations in trauma, O.R. and other specialty areas. Prerequisite: RAD 240 or permission of the instructor; Corequisite: RAD 240 (Fall only) (8, 0T+8L)

246L CLINICAL EXPERIENCE V In, this final clinical rotation, students will complete the master competencies required for graduation, while continuing advanced rotations and learning administration and quality control. Prerequisite: 245L or permission of the instructor. (Spring only) (8, 0T+8L)

250 RADIOLOGIC PATHOLOGY This course is intended to be a supplemental writing skills course to enhance student communication abilities. Students will research radiologic pathology from studies seen and performed in the clinical setting and/or pertaining to the weekly area of study. Prerequisite: RAD 240 or Permission of the instructor. (Spring only) (1, 1T+0L)

251 REGISTRY REVIEW Complete medical radiography review to prepare students for the American Registry of Radiologic Technologist exam. Terminal competencies will also be completed at this time. Prerequisite: passing RAD and RAD 240 or Permission of the instructor. (Spring only) (1, 1T+L)

READING IMPROVEMENT (RDG)

108N READING IMPROVEMENT Introduces you to reading required for vocational programs and the workplace. Comprehension and critical thinking are stressed. Prerequisite: ENG 106N or adequate score on Course Placement Evaluation. (3,3T+0S)

109N READING AND CRITICAL THINKING Introduces you to reading required for college success. You will work on comprehension, problem solving, note taking, summarizing, and computer assisted research. Prerequisite: RDG 108N, or adequate score on Course Placement Evaluation. (3, 3T+0S)

RENEWABLE ENERGY (RE)

103 RENEWABLE ENERGY INTRODUCTION AND OVERVIEW In this course, you will view the past, present, and future fields of renewable energy used: to heat, light, and cool buildings; to produce domestic hot water; to power, heat, and cool industrial processes; to provide transportation; and to provide communications. You will cover many systems: passive, active and photovoltaic solar; wind; micro-hydro; wave; geothermal; biomass; fuel cells; human and animal power; and hydrogen. You will also cover vehicle fuels, such as ethanol, biodiesel, CNG, along with electric and hybrid systems, regenerative braking and flywheels. Classes will be conducted both on- and off-campus. Prerequisite: ENG 108N and MATH 100N. (3, 3T+0S)

104 ARCHITECTURE 2030 AND THE 2010 IMPERATIVE Because half of the planet's greenhouse gasses are produced by the construction and then the heating, cooling, and lighting of buildings, and because the state and several cities in New Mexico have committed to the Architecture 2030 movement -- a worldwide effort of monumental scope to change the design of buildings to end this contribution to global warming by the year 2030. in this course you will examine the changes needed in building design and construction, including design exercises. Prerequisites: ENG 108N and MATH 100N. (3, 3T+0S)

108 ACTIVE SOLAR HEATING Given that solar energy can supply heat for buildings, domestic hot water, and industrial processes and given that active systems acquire heat with collectors, distribute the heat with fluids driven by pumps or blowers, store the heat in liquids, solids, or change-of-state materials and control the process with electrical or electronic sensors and controls, in this course you will analyze requirements and match needs with appropriate systems. Recommended corequisite: RE 108L. (3, 3T+0S)

108L SOLAR ENERGY LAB Working with components of both active and passive solar heating systems: flat plate and concentrating collectors; heat transfer gasses, liquids, and solids; monitoring, control, and distribution systems; glazing, selective surfaces; and low emissivity materials. You will cover heat storage in liquids, solid, and change-of-state materials, with an emphasis on mounting components, pipe and duct connections, and safety. Classes will take place on- and off-campus. Recommended corequisite: RE 108 or ADOB 107. (2, 0t+2S)

110 INTRO TO SOLAR HEALING PLUMBING You will study the basics of plumbing technology found in solar heating systems, including domestic hot water (DHW), space hearting, and process heat systems. You will cover basic plumbing theory and the requirements of the International Plumbing Code (IPC) and the Uniform Plumbing Code (UPC). (1, 1T+0S)

110L INTRO TO SOLAR PLUMBING LAB You will engage in laboratory experiences which apply to the theoretical material covered in PLB 110. You will work with the most common components, methods, tools, and pipe materials needed to connect solar heating systems from collectors to heat exchangers to storage and to point-of-use. Safety in the plumbing environment is stressed. (2, 0T+2S)

121 BUILDING ENERGY AUDIT AND ASSESSMENT This course covers the tools, techniques, and methods needed to conduct building energy audits and assessments. (3, 1.5T+1.5S)

127 GEOTHERMAL SYSTEMS FOR HEAT AND POWER You will discuss the full range of geothermal systems, from their origins and uses to how geothermal energy can provide industrial process heat and electrical energy. Classes will take place on- and off-campus. Prerequisite: RE 103. (4, 2T+2S)

128 BIOMASS SYSTEMS FOR HEAT, POWER, AND COGENERATION You will study biomass, a wide range of heat and energy productions systems that use plant materials. You will also study the range of equipment: from the fire pit to the highly efficient nearly zero-emitting industrial furnaces. You will be introduced to coal-fired power plants, carbon material, and carbon-neutral and carbon-sequestering concepts. You will work with small scale systems and equipment both on- and off-campus. Prerequisite: RE 103. (4, 2T+2S)

129 TRENDS AND EMERGING ENERGY SOURCES You will use this class as a forum to research, discuss, and forecast emerging trends in the field of renewable and emerging energy sources, which have been around for a long time and have now grained international attention and a high status not previously enjoyed to the extent that homeowners, garage scientists, multinational companies and national governments are focused on incremental developments and giant leaps into new technologies. Prerequisite: RE 103. (2, 2T+0s)

130 HYDROELECTRIC POWER SYSTEMS You will be introduced to micro-hydro systems for single residences, macrco-hydro for small towns and mega-hydro such as the Tennessee Valley Authority. Lab experience will cover small micro turbines and their installation and use. Classes will take place on and off campus. (2, 1T+1S)

140L ELECTRIC VEHICLE CONVERSION: VOLTS AND BOLTS Through hands-on experience, you will learn how to convert an internal combustion engine vehicle to an electric vehicle (EV) powered by an electric motor and batteries. During the course, you will address vehicle selection, modification, removal of internal combustion-related parts, current EV technologies, performance considerations, driving techniques, charging infrastructure, and safety issues. (2, 1T+1S)

144 BIO-DIESEL FUEL PRODUCTION AND ENGINE REQUIREMENTS In this course, you will cover the history and present methods of producing bio-diesel fuel from soybeans and from recycled cooking oils and other industrial by-products. You will discuss the engine requirements for using bio-diesel fuels and demonstrate options. You will assemble and use a small-scale bio-diesel production unit. You will investigate fuels available at pumps and project future possibilities. You will spend time under the hood of a functioning bio-diesel vehicle. Prerequisites: ENG 108N, MATH 100N, and RE 103. Recommended corequisite: ELEC 190. Cross-listed as ATEC 144. (4, 2T+2S)

146 BIO-HYBRID FUEL PRODUCTION AND ENGINE REQUIREMENTS In this course, you will cover the methods of producing bio-diesel fuel for gas engines from corn and from recycled or redirected industrial products and by-products. You will discuss the engine requirements for using bio-hybrid fuels and demonstrate options. You will investigate home production and fuels available at pumps and project future possibilities. You will spend time under the hood of a functioning bio-hybrid vehicle. Prerequisites: ENG 108N, MATH 100N, and RE 103. Recommended corequisite: ELEC 190. Cross-listed as ATEC 146. (4, 2T+2S)

160 RENEWABLE ELECTRICAL POWER SYSTEMS You will study the basics of alternative power production from solar and wind energy, comparing and contrasting the different systems and methods so that you will be prepared to address selection and adaptation of systems to specific sites and requirements. You will study the calculations needed to provide sufficient power and conductor size to match the requirement of the user to cover the production, storage, and transmission to the point-of-use. In addition to theoretical considerations, through these hands-on lab activities, you will gain experience with some of the actual system components,, such as solar photovoltaic panels, trackers, wind generators, charge controllers, battery storage, inverters, and grid tie systems. Prerequisite: MATH 130 or permission. (3, 2T+1S)

207 WIND ENERGY SYSTEMS DESIGN AND INSTALLATION In this course you will study and discuss electrical energy production from the wind, including mechanical windmill water pumps; generator types from propeller driven units on towers to vertical axis turbines and emerging designs; the installation and maintenance of systems and safety concerns. Classes will take place on- and off-campus. Prerequisites: ENG 108N, MATH 100N, RE 103, and ECET 160. Recommended corequisite: ELEC 190. (4, 2T+2S)

208 PHOTOVOLTAIC SYSTEMS DESIGN AND INSTALLATION In this course, you will cover the rapidly developing technology dealing with electrical energy production from the sun. You will study the contrasts between AC versus DC, and grid-tied versus stand-alone systems. You will discuss collectors, batteries, control systems, disconnects, over-current protection and distribution to structures, with an emphasis on the installation and maintenance of systems and safety concerns. Classes will take place on- and off-campus. Prerequisites: ENG 108N, MATH 100N, RE 103, and ECET 160. Recommended corequisite: ELEC 190. (4, 2T+2S)

SCIENCE, MATH, AND ENGINEERING TECHNOLOGY GENERAL (SMET)

101 INTRODUCTION TO SCIENCE, MATH, ENGINEERING, AND TECHNICAL CAREERS This course is designed to ease the transition between two-year programs to four-year universities. Through active collaborative participation, you will learn about careers in science, mathematics, engineering, and technology; review and reinforce basic study and academic success skills; and learn additional methods for increasing learning and retention of material. You will also gain a strong working knowledge of collaborative learning environments and learn to effectively use study groups to increase academic success. Flexible learning strategies and creative problem-solving techniques will be emphasized through hands-on activities and exercises. (Spring only) (1-3, 1-3T+0S)