

§130.402. Principles of Applied Engineering (One Credit), Adopted 2015. – Abridged Version

DOMAIN 1 – PROFESSIONAL PRACTICE

(1A) demonstrate knowledge of how to dress, speak, and conduct oneself in a manner appropriate for the profession

(1B) show the ability to cooperate, contribute, and collaborate as a member of a group in an effort to achieve a positive collective outcome

(1E) demonstrate punctuality, dependability, reliability, and responsibility in performing assigned tasks as directed

(4E) maintain, safely handle, and properly store laboratory equipment

DOMAIN 2 – OFFICE PRACTICE

(1C) present written and oral communication in a clear, concise, and effective manner

(1D) demonstrate time-management skills in prioritizing tasks, following schedules, and performing goal-relevant activities in a way that produces efficient results

(3A) use clear and concise written, verbal, and visual communication techniques

DOMAIN 3 – CAREER RESEARCH

(2E) compare and contrast engineering, science, and technology careers

(7C) identify fields and career opportunities related to robotics, process control, and automation systems

(8B) describe career opportunities in electrical and mechanical systems

DOMAIN 4 – PROJECT ORGANIZATION

(2G) demonstrate proficiency of the engineering design process

(3B) maintain a design and computation engineering notebook

(3C) use sketching and computer-aided drafting and design to develop and present ideas

(3D) use industry standard visualization techniques and media

(3E) use the engineering documentation process to maintain a paper or digital portfolio

(6A) identify and describe the fundamental processes needed for a project, including the design process and prototype development and initiating, planning, executing, monitoring and controlling, and closing a project

(6C) use problem-solving techniques to develop technological solutions

(6E) assess the risks and benefits of a design solution

(7B) apply design concepts to problems in robotics, process control, and automation systems

(9A) apply the design process as a team participant

(9B) assume different roles as a team member within the project

(9C) maintain an engineering notebook for the project

(9D) develop and test the model for the project

(9E) demonstrate communication skills by preparing and presenting the project.

(10A) set up, create, and modify drawings

(10C) demonstrate an understanding of the use of line-types in engineering drawings

(10D) draw 2-D single view objects

(10E) create multi-view working drawings using orthographic projection

(10G) draw single line 2-D pictorial representations

(10H) create working drawings that include section views

DOMAIN 5 – INDUSTRY MATERIALS & METHODS

(2A) investigate and report on the history of engineering science

(2B) identify the inputs, processes, and outputs associated with technological systems

(2C) describe the difference between open and closed systems

(2D) describe how technological systems interact to achieve common goals

(2F) conduct and present research on emerging and innovative technology

(4A) master relevant safety tests

(4B) follow lab safety guidelines as prescribed by instructor in compliance with local, state, and federal regulations

(4C) recognize the classification of hazardous materials and wastes

(4D) dispose of hazardous materials and wastes appropriately

(4F) describe the implications of negligent or improper maintenance

(5A) describe how technology has affected individuals, societies, cultures, economies, and environments

(5B) describe how the development and use of technology influenced past events

(5C) describe how and why technology progresses

(5D) predict possible changes caused by the advances of technology

(6B) identify the chemical, mechanical, and physical properties of engineering materials

(7A) describe applications of robotics, process control, and automation systems

(7D) identify emerging trends in robotics, process control, and automation systems

(8A) describe the applications of electrical and mechanical systems

(8C) identify emerging trends in electrical and mechanical systems

(10F) dimension objects using current American National Standards Institute (ANSI) standards

(10I) demonstrate a knowledge of screw thread design per ANSI standards by drawing a hex head bolt with standard, square, and acme threads

DOMAIN 6 – MATHEMATICS & PHYSICS PRINCIPLES

(4G) demonstrate the use of precision measuring instruments

(6D) use consistent units for all measurements and computations

(8D) describe and apply basic electronic theory

(10B) store and retrieve geometry