



Science, Technology, Engineering and Mathematics

Foundation

Code	Topic	Course	Knowledge and Skill	Performance Element	Measurement Criteria
SCC02.01	Communications	English/Language Arts Courses	Demonstrate effective oral, written, and visual communication.	Discuss effective methods to communicate essential concepts to diverse audiences.	Write and report subjective and objective information.
					Write and report information with the intent of being persuasive.
					Write and report information with the intent of being informative.
					Write and report information with the intent of being instructive.
					Analyze the audience and presentation environment.
					Explain technical concepts to non-technical audiences.
					Use professional terminology.
					Identify, select, and use appropriate multimedia resources.
				Effectively communicate scientific, technological, engineering, or mathematical information to the intended audience.	Apply active listening skills using reflection, restatement, questioning, and clarification.
					Discern between various communication techniques and their abilities to convey various types of information.
					Prepare scientific, technological, engineering, or mathematical reports using oral presentation skills.
					Prepare scientific, technological, engineering, or mathematical reports using written presentation skills.
					Prepare scientific, technological, engineering, or mathematical reports using visual presentation skills.
					Prepare scientific, technological, engineering, or mathematical reports using multimedia presentation skills.
Explain the various methods of giving and obtaining information.					

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			(CONTINUED)	Read, interpret, and analyze technical materials, discerning information and concepts.	Use appropriate note-taking methods. Write and/or present a report on technical literature; use graphical tools as appropriate. Discriminate between fact and opinion. Seek clarity of communication by rephrasing, questioning and summarizing. Validate understanding and provide and or obtain constructive feedback.
SCC04.01	Information Technology Applications	#3: Information Technology Applications	Use information technology to gather, store, apply and communicate data.	Use information technology as it supports the gathering, storage, and transfer of data and information. Select and use different forms of information technology.	Apply different techniques for gathering, storing, and transferring data. Select and use appropriate tools to analyze and synthesize data. Describe the meaning of probability and how it applies to a set of data. Use computer to conduct research. Write a report based on Internet research, using calculations, graphs, and/or spreadsheets. Use simulation, modeling, and/or prototype techniques to solve problems. Create, organize, manage, and distribute electronic information. Apply technology to visualize a problem.
SCC04.02	Information Technology Applications	#3: Information Technology Applications	Evaluate the different technological tools used to manipulate and model data.	Use information technology tools to manipulate and create information from data.	Use statistical tools to analyze data. Query and extract information from data. Create knowledge from data.

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			(CONTINUED)	Use modeling, simulation, and visualization to efficiently analyze, synthesize and communicate information.	Apply techniques for modeling systems or problems. Apply techniques for scientific visualization and animation of complex physical systems or problems. Test different scenarios to multiple variables.
				Apply current computer programming languages.	Write and execute a simple program (e.g., Basic, Java, C++).
				Use statistical tools to show reliability of data.	Using a selected statistical tool, compute data reliability.
SCC06.01	Safety, Health, and Environmental	#2: Principles of Engineering #2: Laboratory Practices and Biology Laboratory	Apply safety practices in your environment.	Develop good safety and health practices.	Exercise good safety practices. Follow various regulatory codes, such as EPA, FEMA, UL, OSHA, and CSA. Reference and use material safety data sheets (MSDS). Encourage others to employ safe practices.
				Use appropriate safety techniques, equipment, and procedures.	Develop and implement emergency plans. Develop and implement workplace lab safety plan. Follow workplace regulations and record-keeping requirements. Use safety equipment in the workplace. Use eyewash and safety showers. Accurately interpret safety signs, symbols, and labels. Demonstrate basic first aid. Use tools and equipment safely.
SCC06.02	Safety, Health, and Environmental	#2: Principles of Engineering #2: Laboratory Practices and Biology Laboratory	Develop a broad awareness of safety, health, and environmental hazards.	Identify existing and potential hazards to safety, health, and environment.	Describe potential safety, health and environmental hazards in various situations. Identify physical, chemical, toxicological, biological, and radioactive hazards.

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SCC06.03	Safety, Health, and Environmental	#2: Principles of Engineering #2: Laboratory Practices and Biology Laboratory	Engage in continuous improvement of environmental, health and safety practices.	Provide feedback and analysis to those in charge of environmental, health and safety practices.	Analyze environmental impacts.
					Conduct a safety audit.
					Assess the impact of unsafe practices.
					Apply appropriate corrective action.
					Develop new safety practices and procedures for new and existing technology.
SCC07.01	Leadership and Teamwork	#4: Product Engineering and Development #6: Scientific Research	Participate effectively on a team.	Work effectively with others from diverse backgrounds.	Identify the challenge of barriers when working on a diverse team.
					Work effectively with multi-disciplinary teams.
					Develop consensus for best outcome.
				Exercise the ability to lead or follow in a team environment.	Describe leadership skills necessary to bring a team to consensus on a new method of working.
					Appropriately give/take credit and responsibility.
					Divide tasks among a team of three, with no designated leader.
					Demonstrate various management skills (e.g., strategies, collaborative, resourcefulness, flexibility) and decision-making models.
					Communicate effectively verbally and non-verbally with team colleagues.
					Exhibit a strong sense of team identity and commitment to purpose.
					Act responsibly as a team member, completing assigned tasks in a timely and effective manner.
					Respond to critical situations appropriately as a member of a team.
					Delegate tasks, responsibility, and authority as appropriate.
					Follow up on tasks delegated to others.
					Recognize and reward individual and team contributions.
Collaborate with others to formulate team objectives.					

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SCC07.02	Leadership and Teamwork	#4: Product Engineering and Development #6: Scientific Research	Understand how and when to form teams.	Exercise leadership and teamwork skills.	Analyze the need for a team. Identify roles of team members. Recognize individual abilities and the importance of forming teams with others whose abilities are complementary. Know how and when to move people in and out of the team environment. Recognize characteristics of effective teams. Explain the role of a team on a project. Use teamwork skills to achieve goals, solve problems, and manage conflict. Be involved in mentor/mentored relationships. Give and receive feedback constructively.

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SCC08.01	Ethics and Legal Responsibilities	#2: Principles of Engineering #2: Laboratory Practices and Biology Laboratory	Know current ethical and legal standards in the scientific, mathematics, engineering, and technology communities.	Adhere to ethical and legal standards.	<p>Evaluate the pros and cons of current ethical questions and scenarios; for example, environmental stewardship, genetic research, and living subjects in research.</p> <p>Make ethical decisions when presented with ethical choices or moral dilemmas.</p> <p>Comply with ethical standards (code of ethics) for your field.</p> <p>Follow legal requirements for the treatment of people in the workplace (ADA, EEO).</p> <p>Follow requirements of regulatory agencies in the scientific, and mathematics, engineering, or technology field (e.g., NFPA, OSHA, EPA, ADA, EOE, and FCC).</p> <p>Develop personal ethics for real-life situations/experiences in science, technology, engineering, and mathematics.</p> <p>Evaluate personal, professional, and organizational ethics.</p> <p>Explain fundamentals of patents, trademarks, copyrights, and proprietary information.</p> <p>Compare and contrast personal ethical values with various professional and organizational codes of ethics.</p> <p>Recognize and refute misleading information.</p> <p>Evaluate methods for protecting and conserving resources.</p>

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SCC09.01	Employability and Career Development	#1: Introduction to Engineering Design #1: Introduction to Careers	Identify patterns, relations, and functions of an organization or a workplace.	Study the essential parts of an organization or a workplace for the purpose of future employment.	Demonstrate ability to gather information about an organization.
					Evaluate and compare employment or advancement opportunities.
SCC09.02	Employability and Career Development	#1: Introduction to Engineering Design #1: Introduction to Careers	Exhibit continuous improvement for personal and professional growth.	Develop skills and knowledge for career growth.	Identify and participate in continuous education opportunities.
					Engage in continuous self-assessment and goals modification for personal and professional growth.
					Participate in professional or trade organizations.
				Identify performance expectations of a job.	Practice good work habits/time management.
					Be a team player.
					Demonstrate respectful behavior in workplace.
					Maintain knowledge and skills.
Describe benefits of certifications for various career paths.					
SCC09.03	Employability and Career Development	#1: Introduction to Engineering Design #1: Introduction to Careers	Research career pathways in science, technology, engineering, and mathematics.	Engage in a large variety of science, technology, engineering, or mathematics experiences to determine personal interest in respective pathways.	List resources for researching funding sources for scientific projects and technology.
					List careers that you have investigated, internships that you could apply for, and job shadowing opportunities that you have identified.
					Construct and maintain a portfolio of experiences and accomplishments.