

Career and Technical Education TEKS Review Draft Recommendations

Texas Essential Knowledge and Skills (TEKS) for Career and Technical Education Draft Recommendations Practicum in Engineering Work Group Courses: Practicum in Engineering

The document reflects the draft recommendations to the career and technical education (CTE) Texas Essential Knowledge and Skills (TEKS) that have been recommended by the State Board of Education’s TEKS review work group for: **Practicum in Engineering**.

Proposed additions and new courses are shown in green font with underline (additions). Proposed deletions are shown in red font with strikethroughs (~~deletions~~). Text proposed to be moved from its current student expectation is shown in purple italicized font with strikethrough (~~*moved text*~~) and is shown in the proposed new location in purple italicized font with underlines (*new text location*). Numbering for the knowledge and skills statements in the document will be finalized when the proposal is prepared to file with the *Texas Register*.

Comments in the right-hand column provide explanations for the proposed changes. The following notations may be used as part of the explanations.

Abbreviation	Description
CCRS	refers to the College and Career Readiness Standards
CDS	refers to cross disciplinary standards in the CCRS
ELA	refers to English language arts standards in the CCRS
M	refers to mathematics standards in the CCRS
SCI	refers to science standards in the CCRS
SS	refers to social studies standards in the CCRS
KS	refers to knowledge and skills statement
SE	refers to student expectation

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Course	Pages
Practicum in Engineering	2–6

§127.XX Practicum in Engineering (Two Credits), Adopted 2025.

	TEKS with edits	Work Group Comments/Rationale
(a)	<u>Implementation. The provisions of this section shall be implemented by school districts beginning with the 2025-2026 school year.</u>	
(b)	<u>General requirements. This course is recommended for students in Grade 12. Prerequisite: Recommended prerequisite:</u>	
(c)	<u>Introduction.</u>	
(1)	<u>Career and technical education instruction provides content aligned with challenging academic standards, industry-relevant technical knowledge, and college and career readiness skills for students to further their education and succeed in current and emerging professions.</u>	
(2)	<u>The Engineering Career Cluster focuses on planning, designing, testing, building, and maintaining of machines, structures, materials, systems, and processes using empirical evidence and science, technology, and math principles. This career cluster includes occupations ranging from mechanical engineer and drafter to electrical engineer and to mapping technician.</u>	
(3)	<u>Students enrolled in Practicum in Engineering</u>	
(4)	<u>Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.</u>	
(5)	<u>Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.</u>	
(d)	<u>Knowledge and skills.</u>	
(1)	<u>The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:</u>	New employability strand
(A)	<u>demonstrate dressing appropriately, speaking politely, and conducting oneself in a manner appropriate for the profession and work site;</u>	
(B)	<u>analyze how teams can produce better outcomes through cooperation, contribution, and collaboration from members of the team;</u>	

(C)	<u>present written and oral technical communication in a clear, concise, and effective manner for a variety of purposes and audiences, including explaining and justifying decisions in the design process;</u>	
(D)	<u>use time-management skills in prioritizing tasks, following schedules, and tending to goal-relevant activities in a way that optimizes efficiency and results independently and in groups;</u>	
(E)	<u>describe the importance of and demonstrate punctuality, dependability, reliability, and responsibility in reporting for duty and performing assigned tasks as directed;</u>	
(F)	<u>explain how engineering ethics as defined by professional organizations such as the National Society of Professional Engineers applies to engineering practice;</u>	
(G)	<u>Demonstrate respect for diversity in the workplace;</u>	
(H)	<u>identify consequences relating to discrimination, harassment, and inequality;</u>	
(I)	<u>analyze elements of professional codes of conduct or creeds in engineering such as the National Society of Professional Engineers Code of Ethics for Engineers and how they apply to the knowledge and skills of the course and the engineering profession;</u>	
(J)	<u>identify the components of a safety plan and why it is critical for employees and employers to maintain a safe work environment; and</u>	
(K)	<u>compare skills and characteristics of managers and leaders in the workplace.</u>	
(2)	<u>The student understands how a professional engineer serves the local and global community. The student is expected to:</u>	
(A)	<u>research and identify student and professional engineering organizations and the benefits of membership such as networking platforms, training and educational opportunities, and participating in community initiatives;</u>	
(B)	<u>explain an engineer's role and how various engineering roles serve the organization, community, and society; and</u>	
(C)	<u>evaluate how the work of student or professional engineering organizations impact the local or global community such as recommended practices and issuing standards.</u>	
(3)	<u>The student uses critical thinking and problem solving in the work-based learning experience. The student is expected to:</u>	
(A)	<u>conduct technical research to gather information, identify gaps, and make decisions in the work-based learning experience;</u>	

(B)	<u>develop creative and innovative solutions to problems in the work-based learning experience;</u>	
(C)	<u>analyze and compare alternative designs for an effective solution to a problem in the work-based learning experience; and</u>	
(D)	<u>evaluate and present solutions to problems in the work-based learning experience.</u>	
(4)	<u>The student understands and demonstrates how effective leadership and teamwork skills enable the accomplishment of goals and objectives. The student is expected to:</u>	Teamwork – leadership and teamwork within an engineering work setting and contract work setting
(A)	<u>analyze leadership characteristics such as trustworthiness, positive attitude, integrity, and work ethic;</u>	
(B)	<u>explain and demonstrate effective characteristics of teamwork;</u>	
(C)	<u>explain and demonstrate responsibility for shared group and individual work tasks in the work-based learning experience;</u>	
(D)	<u>describe and analyze how to use effective working relationships such as meeting deadlines, showing respect for all individuals, and clear and timely communication, to accomplish objectives; and</u>	
(E)	<u>research and identify opportunities to participate in extracurricular engineering activities.</u>	Added to match paragraph 4 in intro
(5)	<u>The student demonstrates oral and written communication skills in delivering and receiving information and ideas. The student is expected to:</u>	
(A)	<u>apply appropriate content knowledge, technical concepts, and vocabulary to analyze information and follow directions;</u>	
(B)	<u>use professional communication skills such as using technical terminology, email etiquette, and following the organization or team communication plan and hierarchy when delivering and receiving information in the work-based learning experience;</u>	
(C)	<u>identify and analyze information contained in informational texts, internet sites, or technical materials in the work-based learning experience;</u>	
(D)	<u>describe and analyze verbal and nonverbal cues and behaviors such as body language, tone, and interrupting to enhance communication in the work-based learning experience; and</u>	
(E)	<u>apply active listening skills to receive and clarify information in the work-based learning experience.</u>	

(6)	<u>The student reflects on the work-based learning experience to prepare for postsecondary and employment success. The student is expected to:</u>	
(A)	<u>assess and evaluate personal strengths and weaknesses in knowledge and skill proficiency and contributions to a project related to the work-based learning experience;</u>	
(B)	<u>develop and maintain a professional portfolio to include:</u>	
(i)	<u>attainment of technical skill competencies;</u>	
(ii)	<u>licensure or certifications;</u>	
(iii)	<u>recognitions, awards, and scholarships;</u>	
(iv)	<u>extended learning experiences such as community service and active participation in career and technical student organizations and professional organizations;</u>	
(v)	<u>abstract of key points of the practicum;</u>	
(vi)	<u>resume;</u>	
(vii)	<u>samples of work; and</u>	
(viii)	<u>evaluation from the practicum supervisor; and</u>	
(C)	<u>present the professional portfolio to interested stakeholders.</u>	
(7)	<u>The student develops a presentation describing the culmination of skills and knowledge gained from the work-based learning experience. The student is expected to:</u>	
(A)	<u>develop a professional presentation to display and communicate the work-based learning experience, including goals and objectives, levels of achievement, skills and knowledge gained, areas for improvement and personal growth, challenges encountered throughout the experience, and a plan for future goals;</u>	
(B)	<u>identify an appropriate audience and coordinate the presentation of findings related to the work-based learning experience;</u>	
(C)	<u>present findings in a professional manner using concise language, engaging content, relevant media, and clear speech; and</u>	
(D)	<u>analyze feedback received from a presentation.</u>	

(8)	<u>The student compares engineering work-based learning project budget documents and processes to project budget documents and processes learned in engineering courses. The student is expected to review and interpret a budget for a project from the work-based learning experience.</u>	Could consider explanation of employment contracts
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