

Source: The provisions of this §127.419 adopted to be effective August 1, 2025, 50 TexReg 4876.

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

- (a) Implementation.
 - (1) The provisions of this section shall be implemented by school districts beginning with the 2025-2026 school year.
 - (2) School districts shall implement the employability skills student expectations listed in §127.15(d)(2) of this chapter (relating to Career and Technical Education Employability Skills) as an integral part of this course.
- (b) General requirements. This course is recommended for students in Grade 12. Prerequisites: Algebra I and Geometry and a minimum of two credits with at least one course in a Level 2 or higher course from the Engineering Career Cluster.
- (c) Introduction.
 - (1) 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.

- (2) The Engineering Career Cluster focuses on planning, designing, testing, building, and maintaining 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 mapping technician.
 - (3) Practicum in Engineering is designed to give students supervised practical application of knowledge and skills. Practicum experiences can occur in a variety of locations appropriate to the nature and level of experiences such as employment, independent study, internships, assistantships, mentorships, or laboratories. To prepare for careers in engineering, students must attain academic knowledge and skills, acquire technical knowledge and skills related to the workplace, and develop knowledge and skills regarding career opportunities, entry requirements, and industry expectations. To prepare for success, students need opportunities to learn, reinforce, apply, and transfer their knowledge and skills and technologies in a variety of settings.
 - (4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other organizations that foster leadership and career development in the profession such as student chapters of related professional associations.
 - (5) 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.
- (d) Knowledge and skills.
- (1) The student researches and describes ethics pertaining to engineering. The student is expected to explain how engineering ethics as defined by the Texas Board of Professional Engineers and Land Surveyors apply to engineering practice.
 - (2) The student understands how a professional engineer serves the local and global community. The student is expected to:
 - (A) 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;
 - (B) explain an engineer's role and how various engineering roles serve the organization, community, and society; and
 - (C) evaluate how the work of student or professional engineering organizations impact the local or global community such as recommended practices and issuing standards.
 - (3) The student uses critical thinking and problem solving in the work-based learning experience. The student is expected to:
 - (A) conduct technical research to gather information, identify gaps, and make decisions in the work-based learning experience;
 - (B) develop creative and innovative solutions to problems in the work-based learning experience;
 - (C) analyze and compare alternative designs for an effective solution to a problem in the work-based learning experience; and
 - (D) evaluate and present solutions to problems in the work-based learning experience.
 - (4) The student understands and demonstrates how effective leadership and teamwork skills enable the accomplishment of goals and objectives. The student is expected to:
 - (A) analyze leadership characteristics such as trustworthiness, positive attitude, integrity, and work ethic;
 - (B) explain and demonstrate effective characteristics of teamwork;

- (C) explain and demonstrate responsibility for shared group and individual work tasks in the work-based learning experience;
 - (D) describe and analyze how strategies such as meeting deadlines, showing respect for all individuals, and communicating clearly and timely contribute to effective working relationships and accomplishing objectives; and
 - (E) research and identify opportunities to participate in extracurricular engineering activities.
- (5) The student demonstrates oral and written communication skills in delivering and receiving information and ideas. The student is expected to:
- (A) apply appropriate content knowledge, technical concepts, and vocabulary to analyze information and follow directions;
 - (B) 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;
 - (C) identify and analyze information contained in informational texts, internet sites, or technical materials in the work-based learning experience;
 - (D) 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
 - (E) apply active listening skills to receive and clarify information in the work-based learning experience.
- (6) The student reflects on the work-based learning experience to prepare for postsecondary and employment success. The student is expected to:
- (A) assess and evaluate personal strengths and weaknesses in knowledge and skill proficiency and contributions to a project related to the work-based learning experience;
 - (B) develop and maintain a professional portfolio to include:
 - (i) attainment of technical skill competencies;
 - (ii) licensures or certifications;
 - (iii) recognitions, awards, and scholarships;
 - (iv) extended learning experiences such as community service and active participation in career and technical student organizations and professional organizations;
 - (v) abstract of key points of the practicum;
 - (vi) resume;
 - (vii) samples of work; and
 - (viii) evaluation from the practicum supervisor; and
 - (C) present the professional portfolio to interested stakeholders.
- (7) The student develops a presentation describing the culmination of skills and knowledge gained from the work-based learning experience. The student is expected to:
- (A) 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;
 - (B) identify an appropriate audience and coordinate the presentation of findings related to the work-based learning experience;

- (C) present findings in a professional manner using concise language, engaging content, relevant media, and clear speech; and
- (D) analyze feedback received from a presentation.

Source: The provisions of this §127.452 adopted to be effective August 1, 2025, 50 TexReg 4876.

§127.453. Extended Practicum in Engineering (One Credit), Adopted 2025.

- (a) Implementation.
 - (1) The provisions of this section shall be implemented by school districts beginning with the 2025-2026 school year.
 - (2) School districts shall implement the employability skills student expectations listed in §127.15(d)(2) of this chapter (relating to Career and Technical Education Employability Skills) as an integral part of this course.
- (b) General requirements. This course is recommended for students in Grade 12. The practicum course is a paid or unpaid capstone experience for students participating in a coherent sequence of career and technical education courses in the Engineering Career Cluster. Prerequisites: Algebra I and Geometry and a minimum of two credits with at least one course in a Level 2 or higher course from the Engineering Career Cluster. This course must be taken concurrently with Practicum in Engineering and may not be taken as a stand-alone course. Students shall be awarded one credit for successful completion of this course. A student may repeat this course once for credit provided that the student is experiencing different aspects of the industry and demonstrating proficiency in additional and more advanced knowledge and skills.
- (c) Introduction.
 - (1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.
 - (2) The Engineering Career Cluster focuses on planning, designing, testing, building, and maintaining 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 mapping technician.
 - (3) Extended Practicum in Engineering is designed to give students supervised practical application of previously studied knowledge and skills. Practicum experiences can occur in a variety of locations appropriate to the nature and level of experience.
 - (4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other organizations that foster leadership and career development in the profession such as student chapters of related professional associations.
 - (5) 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.
- (d) Knowledge and skills.
 - (1) The student researches and describes ethics pertaining to engineering. The student is expected to explain how engineering ethics as defined by the Texas Board of Professional Engineers and Land Surveyors apply to engineering practice.
 - (2) The student understands how a professional engineer serves the local and global community. The student is expected to:
 - (A) 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;

- (B) explain an engineer's role and how various engineering roles serve the organization, community, and society; and
- (C) evaluate how the work of student or professional engineering organizations impact the local or global community such as recommended practices and issuing standards.
- (3) The student uses critical thinking and problem solving in the work-based learning experience. The student is expected to:
 - (A) conduct technical research to gather information, identify gaps, and make decisions in the work-based learning experience;
 - (B) develop creative and innovative solutions to problems in the work-based learning experience;
 - (C) analyze and compare alternative designs for an effective solution to a problem in the work-based learning experience; and
 - (D) evaluate and present solutions to problems in the work-based learning experience.
- (4) The student understands and demonstrates how effective leadership and teamwork skills enable the accomplishment of goals and objectives. The student is expected to:
 - (A) analyze leadership characteristics such as trustworthiness, positive attitude, integrity, and work ethic;
 - (B) explain and demonstrate effective characteristics of teamwork;
 - (C) explain and demonstrate responsibility for shared group and individual work tasks in the work-based learning experience;
 - (D) describe and analyze how strategies such as meeting deadlines, showing respect for all individuals, and communicating clearly and timely contribute to effective working relationships and accomplishing objectives; and
 - (E) research and identify opportunities to participate in extracurricular engineering activities.
- (5) The student demonstrates oral and written communication skills in delivering and receiving information and ideas. The student is expected to:
 - (A) apply appropriate content knowledge, technical concepts, and vocabulary to analyze information and follow directions;
 - (B) 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;
 - (C) identify and analyze information contained in informational texts, internet sites, or technical materials in the work-based learning experience;
 - (D) 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
 - (E) apply active listening skills to receive and clarify information in the work-based learning experience.
- (6) The student reflects on the work-based learning experience to prepare for postsecondary and employment success. The student is expected to:
 - (A) assess and evaluate personal strengths and weaknesses in knowledge and skill proficiency and contributions to a project related to the work-based learning experience;
 - (B) develop and maintain a professional portfolio to include:
 - (i) attainment of technical skill competencies;

- (ii) licensures or certifications;
- (iii) recognitions, awards, and scholarships;
- (iv) extended learning experiences such as community service and active participation in career and technical student organizations and professional organizations;
- (v) abstract of key points of the practicum;
- (vi) resume;
- (vii) samples of work; and
- (viii) evaluation from the practicum supervisor; and
- (C) present the professional portfolio to interested stakeholders.
- (7) The student develops a presentation describing the culmination of skills and knowledge gained from the work-based learning experience. The student is expected to:
 - (A) 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;
 - (B) identify an appropriate audience and coordinate the presentation of findings related to the work-based learning experience;
 - (C) present findings in a professional manner using concise language, engaging content, relevant media, and clear speech; and
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