# Scope & Sequence

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| Course Name: Practicum in Construction Technology/Extended Practicum in Construction Technology **TSDS PEIMS Code:** 13005255 (First Time Taken)  13005265 (Second Time Taken) | **Course Credit:** 3.0  **Course Requirements:** Grade Placement 12.  **Prerequisites:** Construction Technology II, Building Maintenance Technology II; Electrical Technology II; Heating, Ventilation, and Air Conditioning (HVAC) and Refrigeration Technology II; Plumbing Technology I; or Mill and Cabinetmaking Technology.  **Corequisites:** Practicum in Construction Technology. |
| **Course Description:** In Extended Practicum in Construction Technology, students will be challenged with the application of knowledge and skills gained in previous construction-related coursework. In many cases students will be allowed to work at a job (paid or unpaid) outside of school or be involved in local projects the school has approved for this class. | |
| **NOTE 1:** 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 Architecture & Construction Career Cluster. This is a suggested scope and sequence for the course content. This content will work with any textbook, instructional materials or practicum experience. If locally adapted, make sure all TEKS are covered.  **NOTE 2:** Completion of skill sets may be demonstrated throughout the practicum. Therefore, content based on the TEKS does not have to be delivered sequentially. The major reason students take a practicum is to provide additional time on task for learning specialized skills. In most cases where the Extended Practicum is added to the Practicum, it is because the student is spending more than 15 hours per week at his/her training station (place of employment or internship).  **NOTE 3:** The information in this scope and sequence document does not describe detailed activities, because the activities will vary from student to student and training station to training station. The intent is that students incorporate and use previously learned knowledge and skills related to the career cluster. | |

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| **Practicum Plan** | **TEKS Covered**  **130.64. (c) Knowledge and Skills.** |

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| **Section 1: Pre-Practicum**  Prior to beginning practicums, students will review and explain the role of an employee in the construction industry, discuss professional standards and employers’ expectations, personal and workplace safety, problem-solving strategies, positive interpersonal skills, the principles of teamwork, appropriate work habits, ethical conduct, and conflict-management skills. Students will also discuss the technical and academic skills required for the practicum, and put into place strategies for mastering any/all skills necessary to manage and perform work/practicum responsibilities.  Also prior to beginning their practicum experiences, students will agree to adhere to policies and procedures, demonstrate positive work attitudes and behaviors, including punctuality and effective time management, and to comply with all applicable ethical and legal practices, codes, rules, laws, and regulations in a consistent manner.  Students, supervising instructors, and practicum experience supervisors will read and review locally created practicum checklist(s). Parents/guardians will also be provided with a copy. Checklist(s) will include all relevant TEKS along with rubrics for supervisor evaluations and student self-evaluations. Students will read, discuss, and demonstrate an understanding of the provided checklist and rubric criteria before beginning their practicum experiences | (1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:  (A) explain the role of an employee in the construction industry;  (B) demonstrate critical-thinking skills;  (C) demonstrate the ability to solve problems using critical-thinking skills;  (D) demonstrate knowledge of basic computer systems;  (E) explain common uses for computers in the construction industry;  (F) demonstrate effective relationship skills; and  (G) recognize workplace issues such as sexual harassment, stress, and substance abuse.  (3) The student applies the appropriate codes, laws, standards, or regulations related to a research and development project. The student is expected to:  (A) identify areas where codes, laws, standards, or regulations may be required;  (B) locate the appropriate codes, laws, standards, or regulations; and  (C) interpret and comply with the appropriate codes, laws, standards, or regulations. |
| **Section 2: TEKS Checklist Components for Practicum in Construction Technology**  Students, parents/guardians, and instructional/workplace supervisors will review, understand, and agree to a checklist of practicum objectives. Checklists may be locally adapted/modified, but all corresponding TEKS Checklist Components must be addressed. | (1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:  (A) explain the role of an employee in the construction industry;  (B) demonstrate critical-thinking skills;  (C) demonstrate the ability to solve problems using critical-thinking skills;  (D) demonstrate knowledge of basic computer systems;  (E) explain common uses for computers in the construction industry; and  (F) demonstrate effective relationship skills.  (3) The student applies the appropriate codes, laws, standards, or regulations related to a research and development project. The student is expected to:  (A) identify areas where codes, laws, standards, or regulations may be required;  (B) locate the appropriate codes, laws, standards, or regulations; and  (C) interpret and comply with the appropriate codes, laws, standards, or regulations.  (4) The student describes the expectations for each project using a flowchart. The student is expected to:  (A) use an assessment strategy to determine the task's needs;  (B) describe why each task needs to be in the order it has been assigned;  (C) assess the time frame for each task; and  (D) plot a completed project flowchart expectation.  (8) The student uses advanced tools, materials, processes, and procedures in the construction project. The student is expected to:  (A) determine and use the appropriate technology needed to solve a problem or complete a task;  (B) evaluate the use of technology in a given situation; and  (C) describe the factors that influence the use of technology in a variety of situations. |
| **Section 3: Critical-Thinking and Problem-Solving: Practicum: Check-Ins**  Students will discuss and demonstrate critical-thinking and problem-solving skills as they participate in check-in(s) with practicum instructional supervisors throughout their practicum experiences. Students will analyze and evaluate their practicum experiences as they describe how they have applied critical-thinking and problem-solving skills, and alternative solutions to possible problems they have encountered thus far or may still encounter. Students will also be encouraged to discuss and predict what math, technology, and other technical skills will be necessary for a successful practicum experience as well as a successful career in a construction-related field.  During check-ins, students will self-evaluate and discuss their practicum check list progress as well as any questions or problems they may have encountered during their practicum. Students and supervising instructors will discuss course timelines and requirements as well as effective time management strategies for task completion.  As part of their practicum experience, students will also use appropriate computer applications/technology to develop a management plan for a project or an activity. Projects/activities will include the steps and resources required, a project schedule, an assessment strategy, a time frame as well as a description for each task, and a completed project flowchart. | (1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:  (B) demonstrate critical-thinking skills;  (C) demonstrate the ability to solve problems using critical-thinking skills;  (2) The student develops a management plan for a project or an activity. The student is expected to:  (A) identify and describe the steps required to complete a project using project management processes, including initiating, planning, executing, monitoring and controlling, and closing a project;  (B) determine and acquire the resources needed to complete a project; and  (C) develop a project schedule.  (4) The student describes the expectations for each project using a flowchart. The student is expected to:  (A) use an assessment strategy to determine the task's needs;  (B) describe why each task needs to be in the order it has been assigned;  (C) assess the time frame for each task; and  (D) plot a completed project flowchart expectation. |
| **Section 4: Research Project and Practicum Culmination**  As part of their practicum experience, students will complete a research project that develops or improves a product by following a problem-solving strategy. The project will include a technical report that includes a budget, bill of materials list, and a description of the costs. Students will discuss the mathematical and science concepts associated with the project, and deliver a technical presentation to their instructor after completion of the project. As a practicum culminating activity, students will reflect upon, evaluate, and discuss their practicum experiences with their instructor. | (5) The student solves problems, thinks critically, and makes decisions related to research, design, and development. The student is expected to:  (A) develop or improve the project by following a problem-solving strategy;  (B) apply critical-thinking strategies to the analysis and evaluation of proposed technological solutions; and  (C) apply decision-making techniques to the selection of technological solutions.  (6) The student describes the costs associated with the project. The student is expected to:  (A) develop a bill of materials list for the complete project;  (B) develop a budget, including a cost list, for the complete project; and  (C) determine the most effective way to minimize project costs.  (7) The student applies communication, mathematics, and science knowledge and skills to the construction activities. The student is expected to:  (A) write technical reports;  (B) deliver technical presentations to the instructor;  (C) identify and describe the mathematical concepts used in projects; and  (D) identify and describe the science concepts used in projects.  (8) The student uses advanced tools, materials, processes, and procedures in the construction project. The student is expected to:  (A) determine and use the appropriate technology needed to solve a problem or complete a task;  (B) evaluate the use of technology in a given situation; and  (C) describe the factors that influence the use of technology in a variety of situations. |

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| **Extended Practicum Plan** | **TEKS Covered**  **130.69. (c) Knowledge and Skills.** |

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| **Section 1: Pre-Practicum**  Prior to beginning practicums, students will review and discuss professional standards and employers’ expectations, personal and workplace safety, problem-solving strategies, positive interpersonal skills, the principles of teamwork, appropriate work habits, ethical conduct, and conflict-management skills. Students will also discuss the technical and academic skills required for the practicum, and put into place strategies for mastering any/all skills necessary to manage and perform work/practicum responsibilities.  Also prior to beginning their practicum experiences, students will agree to adhere to policies and procedures, demonstrate positive work attitudes and behaviors, including punctuality and effective time management, and to comply with all applicable ethical and legal practices, codes, rules, laws, and regulations in a consistent manner.  Students, supervising instructors, and practicum experience supervisors will read and review locally created practicum checklist(s). Parents/guardians will also be provided with a copy. Checklist(s) will include all relevant TEKS along with rubrics for supervisor evaluations and student self-evaluations. Students will read, discuss, and demonstrate an understanding of the provided checklist and rubric criteria before beginning their practicum experiences | (1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:  (A) participate in a paid or unpaid, laboratory- or work-based application of previously studied knowledge and skills related to construction technology;  (B) participate in training, education, or preparation for licensure, certification, or other relevant credentials to prepare for employment;  (C) demonstrate professional standards and personal qualities needed to be employable such as punctuality, time management, initiative, and cooperation with increased fluency;  (D) complete tasks with high standards to ensure quality products and services;  (E) employ teamwork and conflict-management skills with increased fluency to achieve collective goals; and  (F) employ planning and time-management skills and tools with increased fluency to enhance results and complete work tasks.  (2) The student implements advanced professional communications strategies. The student is expected to:  (A) apply appropriate content knowledge, technical concepts, and vocabulary with increased fluency when analyzing information and following directions;  (B) demonstrate verbal and non-verbal communication consistently in a clear, concise, and effective manner;  (C) analyze, interpret, and effectively communicate information, data, and observations;  (D) observe and interpret verbal and nonverbal cues and behaviors to enhance communication; and  (E) apply active listening skills to obtain and clarify information.  (3) The student applies concepts of critical thinking and problem solving. The student is expected to:  (A) employ critical-thinking skills with increased fluency both independently and in groups to solve problems and make decisions.  (4) The student understands and applies proper safety techniques in the workplace. The student is expected to:  (A) demonstrate understanding of and consistently follow workplace safety rules and regulations; and  (B) demonstrate knowledge of procedures for reporting and handling accidents and safety incidents.  (5) The student understands the professional, ethical, and legal responsibilities in construction technology. The student is expected to:  (A) demonstrate a positive, productive work ethic by performing assigned tasks as directed;  (B) apply ethical reasoning to a variety of situations in order to make ethical decisions; and  (C) comply with all applicable rules, laws, and regulations in a consistent manner.  (6) The student participates in a construction technology experience. The student is expected to:  (A) conduct, document, and evaluate learning activities in a supervised construction technology experience;  (B) develop advanced technical knowledge and skills related to the student's occupational objective;  (D) apply the appropriate codes, laws, standards, or regulations related to a research and development project;  (E) develop a flowchart to plan a project;  (F) determine and use the appropriate technology to solve a problem or complete a task;  (G) demonstrate growth of technical skill competencies;  (H) evaluate strengths and weaknesses in technical skill proficiency. |
| **Section 2: TEKS Checklist Components for Extended Practicum in Construction Technology**  Students, parents/guardians, and instructional/workplace supervisors will review, understand, and agree to a checklist of practicum objectives. Checklists may be locally adapted/modified, but all corresponding TEKS Checklist Components must be addressed. | (1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:  (A) participate in a paid or unpaid, laboratory- or work-based application of previously studied knowledge and skills related to construction technology;  (B) participate in training, education, or preparation for licensure, certification, or other relevant credentials to prepare for employment;  (C) demonstrate professional standards and personal qualities needed to be employable such as punctuality, time management, initiative, and cooperation with increased fluency;  (D) complete tasks with high standards to ensure quality products and services;  (E) employ teamwork and conflict-management skills with increased fluency to achieve collective goals; and  (F) employ planning and time-management skills and tools with increased fluency to enhance results and complete work tasks.  (2) The student implements advanced professional communications strategies. The student is expected to:  (A) apply appropriate content knowledge, technical concepts, and vocabulary with increased fluency when analyzing information and following directions;  (B) demonstrate verbal and non-verbal communication consistently in a clear, concise, and effective manner;  (C) analyze, interpret, and effectively communicate information, data, and observations;  (D) observe and interpret verbal and nonverbal cues and behaviors to enhance communication; and  (E) apply active listening skills to obtain and clarify information.  (3) The student applies concepts of critical thinking and problem solving. The student is expected to:  (A) employ critical-thinking skills with increased fluency both independently and in groups to solve problems and make decisions; and  (B) analyze elements of a problem to develop creative and innovative solutions.  (4) The student understands and applies proper safety techniques in the workplace. The student is expected to:  (A) demonstrate understanding of and consistently follow workplace safety rules and regulations; and  (B) demonstrate knowledge of procedures for reporting and handling accidents and safety incidents.  (5) The student understands the professional, ethical, and legal responsibilities in construction technology. The student is expected to:  (A) demonstrate a positive, productive work ethic by performing assigned tasks as directed;  (B) apply ethical reasoning to a variety of situations in order to make ethical decisions; and  (C) comply with all applicable rules, laws, and regulations in a consistent manner.  (6) The student participates in a construction technology experience. The student is expected to:  (A) conduct, document, and evaluate learning activities in a supervised construction technology experience;  (B) develop advanced technical knowledge and skills related to the student's occupational objective;  (D) apply the appropriate codes, laws, standards, or regulations related to a research and development project;  (F) determine and use the appropriate technology to solve a problem or complete a task;  (G) demonstrate growth of technical skill competencies; and  (I) collect representative work samples. |
| **Section 3: Critical-Thinking and Problem-Solving: Practicum: Check-Ins**  Students will discuss and demonstrate critical-thinking and problem-solving skills as they participate in check-in(s) with practicum instructional supervisors throughout their practicum experiences. Students will analyze and evaluate their practicum experiences as they describe how they have applied critical-thinking and problem-solving skills, and alternative solutions to possible problems they have encountered thus far or may still encounter. Students will also be encouraged to discuss and predict what math, technology, and other technical skills will be necessary for a successful practicum experience as well as a successful career in a construction-related field.  During check-ins, students will self-evaluate and discuss their practicum check list progress as well as any questions or problems they may have encountered during their practicum. Students and supervising instructors will discuss course timelines and requirements as well as effective time management strategies for task completion, collection of work samples, and the evaluation and development of advanced technical skills. | (1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:  (A) participate in a paid or unpaid, laboratory- or work-based application of previously studied knowledge and skills related to construction technology;  (B) participate in training, education, or preparation for licensure, certification, or other relevant credentials to prepare for employment;  (C) demonstrate professional standards and personal qualities needed to be employable such as punctuality, time management, initiative, and cooperation with increased fluency; and  (F) employ planning and time-management skills and tools with increased fluency to enhance results and complete work tasks.  (2) The student implements advanced professional communications strategies. The student is expected to:  (A) apply appropriate content knowledge, technical concepts, and vocabulary with increased fluency when analyzing information and following directions;  (B) demonstrate verbal and non-verbal communication consistently in a clear, concise, and effective manner; and  (C) analyze, interpret, and effectively communicate information, data, and observations.  (3) The student applies concepts of critical thinking and problem solving. The student is expected to:  (A) employ critical-thinking skills with increased fluency both independently and in groups to solve problems and make decisions; and  (B) analyze elements of a problem to develop creative and innovative solutions.  (6) The student participates in a construction technology experience. The student is expected to:  (A) conduct, document, and evaluate learning activities in a supervised construction technology experience;  (B) develop advanced technical knowledge and skills related to the student's occupational objective;  (H) evaluate strengths and weaknesses in technical skill proficiency; and  (I) collect representative work samples. |
| **Section 4: Research Project and Practicum Culmination**  As part of their practicum experience, students will also use critical-thinking skills and appropriate computer applications/technology to develop a management plan for a project or an activity. Projects/activities will include the appropriate codes, laws, standards, or regulations as well as a project flowchart.  As a practicum culminating activity, students will reflect upon, evaluate, and discuss their growth in technical skill competencies as well as their strengths and weaknesses, and share representative work samples from their practicum experiences with their instructor. | (3) The student applies concepts of critical thinking and problem solving. The student is expected to:  (A) employ critical-thinking skills with increased fluency both independently and in groups to solve problems and make decisions; and  (C) develop or improve a project by following a problem-solving strategy.  (6) The student participates in a construction technology experience. The student is expected to:  (A) conduct, document, and evaluate learning activities in a supervised construction technology experience;  (B) develop advanced technical knowledge and skills related to the student's occupational objective;  (C) develop a management plan for a project or an activity;  (D) apply the appropriate codes, laws, standards, or regulations related to a research and development project;  (E) develop a flowchart to plan a project;  (F) determine and use the appropriate technology to solve a problem or complete a task;  (G) demonstrate growth of technical skill competencies;  (H) evaluate strengths and weaknesses in technical skill proficiency; and  (I) collect representative work samples. |