

The State Board of Education (SBOE) adopts amendments to §§130.30, 130.136, 130.137, 130.138, 130.143, 130.144, 130.445, and 130.446, concerning Texas Essential Knowledge and Skills for career and technical education. The amendments are adopted without changes to the proposed text as published in the August 2, 2024 issue of the *Texas Register* (49 TexReg 5627) and will not be republished. The adopted amendments make technical adjustments to course titles, prerequisites, and corequisites to align with the recently revised career and technical education (CTE) programs of study.

REASONED JUSTIFICATION: The federal *Strengthening Career and Technical Education for the 21st Century Act*, commonly referred to as Perkins V, requires states that receive federal CTE funds to align CTE programs of study to high-wage, in-demand, and high-skill occupations. In fall 2023, the Texas Education Agency engaged members of the workforce, secondary education, and higher education to advise on the development and refresh of programs of study, which include coherent course sequences, industry-based certifications, and work-based learning opportunities to ensure students are prepared for high-wage, in-demand, and high-skill careers in Texas.

The adopted amendments align existing CTE course titles and language related to prerequisites and corequisites to ensure alignment with the refreshed programs of study.

The SBOE approved the amendments for first reading and filing authorization at its June 28, 2024 meeting and for second reading and final adoption at its September 13, 2024 meeting.

In accordance with Texas Education Code, §7.102(f), the SBOE approved the amendments for adoption by a vote of two-thirds of its members to specify an effective date earlier than the beginning of the 2025-2026 school year. The earlier effective date will allow for technical adjustments to be made to course titles, prerequisites, and corequisites at the earliest possible date to avoid confusion and ensure students have access to appropriate corequisite courses. The effective date is 20 days after filing as adopted with the Texas Register.

SUMMARY OF COMMENTS AND RESPONSES: The public comment period on the proposal began August 2, 2024, and ended at 5:00 p.m. on September 3, 2024. The SBOE also provided an opportunity for registered oral and written comments at its September 2024 meeting in accordance with the SBOE board operating policies and procedures. Following is a summary of the public comments received and corresponding responses.

Comment. One teacher and three administrators recommended maintaining the current course titles for §130.136, Business Information Management I, and §130.137, Business Information Management II, since the proposed new course names could cause confusion.

Response. The SBOE disagrees and has determined that the proposed new course titles are appropriate and better reflect the content and level of the courses.

Comment. One administrator stated that the proposed new course titles, Foundations of Business Communication and Technologies and Business Communication and Technologies, for Business Information Management I and II, respectively, do not reflect the Texas Essential Knowledge and Skills for the courses, which focus on application software.

Response. The SBOE disagrees and has determined that the proposed new course titles appropriately reflect the content and level of the courses.

Comment. Two administrators stated that the proposed amendments to certain course titles are necessary but are incomplete as they only address four courses in two career clusters. The commenter explained that there are more course titles with "I" and "II" used to designate two levels of related content rather than to indicate the level of a course within a program of study.

Response. The SBOE agrees that changes to CTE course titles are necessary and took action to adopt the proposed amendments to certain course titles as proposed. The SBOE has also determined that additional updates to CTE course titles may be necessary in the future to better reflect the level of the courses within program(s) of study.

Comment. One administrator stated that there are currently only two CTE courses that include the word "foundations" in their titles, while other course titles include "essentials," "fundamentals," "introduction," and "basic." The commenter recommended consistently using "foundations" and "advanced" respectively as replacements for "I" and "II" in CTE course titles.

Response. The SBOE disagrees that the term "foundations" is the only term that should be used in the titles of introductory level courses and has determined that terms such as "essentials," "fundamentals," "introduction," and "basic" may also be appropriate. The SBOE also disagrees that "I" and "II" should be replaced in all CTE courses and has determined that they are appropriate for Level 2 and Level 3 courses in a program of study.

STATUTORY AUTHORITY. The amendment is adopted under Texas Education Code (TEC), §7.102(c)(4), which requires the State Board of Education (SBOE) to establish curriculum and graduation requirements; TEC, §28.002(a), which identifies the subjects of the required curriculum; and TEC, §28.002(c), which requires the SBOE to identify by rule the essential knowledge and skills of each subject in the required curriculum that all students should be able to demonstrate and that will be used in evaluating instructional materials and addressed on the state assessment instruments.

CROSS REFERENCE TO STATUTE. The amendments implement Texas Education Code, §7.102(c)(4) and §28.002(a) and (c).

<rule>

§130.30. Agricultural Laboratory and Field Experience (One Credit), Adopted 2015.

- (a) General requirements. This course is recommended for students in Grades 11 and 12 as a corequisite course for students participating in a coherent sequence of career and technical education courses in the Agriculture, Food, and Natural Resources or Energy career clusters. This course provides an enhancement opportunity for students to develop the additional skills necessary to pursue industry certification.
 - (1) Recommended prerequisite: a minimum of one credit from a course in the Agriculture, Food, and Natural Resources or Energy career clusters.
 - (2) Corequisite: this course must be taken concurrently with a corequisite course from the Agriculture, Food, and Natural Resources or Energy career clusters and may not be taken as a stand-alone course. The following courses are permitted as corequisites:
 - (A) Agribusiness Management and Marketing;
 - (B) Livestock Production;
 - (C) Veterinary Medical Applications;
 - (D) Food Technology and Safety;
 - (E) Food Processing;
 - (F) Wildlife, Fisheries, and Ecology Management;
 - (G) Forestry and Woodland Ecosystems;
 - (H) Range Ecology and Management;
 - (I) Floral Design;
 - (J) Horticultural Science;
 - (K) Greenhouse Operation and Production;
 - (L) Agricultural Mechanics and Metal Technologies;
 - (M) Agricultural Structures Design and Fabrication;
 - (N) Agricultural Equipment Design and Fabrication;

- (O) Agricultural Power Systems;
 - (P) Oil and Gas Production I;
 - (Q) Oil and Gas Production II;
 - (R) Energy and Natural Resource Technology; and
 - (S) Advanced Energy and Natural Resource Technology.
- (3) Districts are encouraged to offer this lab in a consecutive block with the corequisite course to allow students sufficient time to master the content of both courses. Students shall be awarded one credit for successful completion of this course.
- (b) 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 Agriculture, Food, and Natural Resources Career Cluster focuses on the production, processing, marketing, distribution, financing, and development of agricultural commodities and resources, including food, fiber, wood products, natural resources, horticulture, and other plant and animal products/resources.
 - (3) Agricultural Laboratory and Field Experience is designed to provide students a laboratory and/or field experience opportunity. To prepare for careers in agriculture, food, and natural resources, students must acquire knowledge and skills that meet entry requirements and industry expectations. To prepare for success, students need opportunities to learn, reinforce, apply, and transfer academic knowledge and technical skills in a variety of settings.
 - (4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
 - (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.
- (c) Knowledge and skills.
- (1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
 - (A) investigate career development and entrepreneurship opportunities in agriculture, food, and natural resources;
 - (B) apply competencies related to resources, information, and interpersonal skills;
 - (C) practice personal and occupational health and safety practices in the workplace;
 - (D) examine employer expectations and exhibit appropriate work habits;
 - (E) develop good characteristics of citizenship, including advocacy, stewardship, and community leadership; and
 - (F) pursue appropriate licensing, certification, and credentialing requirements.
 - (2) The student uses technology to research a project. The student is expected to:
 - (A) effectively use search engines, databases, and other digital electronic tools to locate information;
 - (B) evaluate quality, accuracy, completeness, reliability, and currency of information from any source;
 - (C) prepare, organize, present, and apply independent research; and

- (D) accept constructive criticism and revise personal views when warranted by valid evidence.
- (3) The student develops an elevated aptitude for the essential knowledge and skills listed for the corequisite course. The student is expected to:
- (A) demonstrate deeper understanding of the corequisite course;
 - (B) develop mastery of hands-on skills at an industry-accepted standard; and
 - (C) exhibit progress toward achieving industry-recognized documentation of specific expertise in an agriculture, food, and natural resources field or skill.

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STATUTORY AUTHORITY. The amendments are adopted under Texas Education Code (TEC), §7.102(c)(4), which requires the State Board of Education (SBOE) to establish curriculum and graduation requirements; TEC, §28.002(a), which identifies the subjects of the required curriculum; and TEC, §28.002(c), which requires the SBOE to identify by rule the essential knowledge and skills of each subject in the required curriculum that all students should be able to demonstrate and that will be used in evaluating instructional materials and addressed on the state assessment instruments.

CROSS REFERENCE TO STATUTE. The amendments implement Texas Education Code, §7.102(c)(4) and §28.002(a) and (c).

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§130.136. Foundations of Business Communication and Technologies (One Credit), Adopted 2015.

- (a) General requirements. This course is recommended for students in Grades 9-12. Recommended prerequisite: Touch Systems Data Entry. Recommended corequisite: Business Lab. Students shall be awarded one credit for successful completion of this course.
- (b) 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 Business Management and Administration Career Cluster focuses on careers in planning, organizing, directing, and evaluating business functions essential to efficient and productive business operations.
 - (3) In Foundations of Business Communication and Technologies, students implement personal and interpersonal skills to strengthen individual performance in the workplace and in society and make a successful transition to the workforce and postsecondary education. Students apply technical skills to address business applications of emerging technologies, create word-processing documents, develop a spreadsheet, formulate a database, and make an electronic presentation using appropriate software.
 - (4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
 - (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.
- (c) Knowledge and skills.
 - (1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
 - (A) communicate effectively with others using oral and written skills;
 - (B) demonstrate collaboration skills through teamwork;
 - (C) demonstrate professionalism by conducting oneself in a manner appropriate for the profession and workplace;
 - (D) demonstrate a positive, productive work ethic by performing assigned tasks as directed;
 - (E) comply with all applicable rules, laws, and regulations; and
 - (F) demonstrate time-management skills by prioritizing tasks, following schedules, and tending to goal-relevant activities in a way that uses time wisely and optimizes efficiency and results.

- (2) The student coordinates information management and business management to aid in business planning. The student is expected to:
 - (A) explain the strategic role of information systems and information communication technology within an organization;
 - (B) determine risks and rewards of developing a strategic role for information systems and information communication technology; and
 - (C) integrate information systems planning with business planning.
- (3) The student enhances usability of systems operations to support business strategies and operations. The student is expected to:
 - (A) identify the management information requirements and business needs of an organization; and
 - (B) explain issues involved in designing and developing systems for different environments.
- (4) The student analyzes available software packages for use in business settings. The student is expected to:
 - (A) determine equipment and supplies needed;
 - (B) establish equipment and supplies maintenance systems;
 - (C) schedule equipment maintenance;
 - (D) use equipment and supplies maintenance procedures; and
 - (E) use critical-thinking skills to troubleshoot equipment and software issues.
- (5) The student uses the computer's operating system to execute work responsibilities. The student is expected to:
 - (A) move files in the computer operating system;
 - (B) create directories; and
 - (C) save files in various formats such as plain text, PDF, rich text format, and older versions of word-processing software.
- (6) The student applies word-processing technology. The student is expected to:
 - (A) identify customary styles of business documents;
 - (B) improve touch-system skills using the keyboard and keypad to input data;
 - (C) use hardware and software needed to produce documents to address different computer applications;
 - (D) demonstrate writing techniques by generating ideas and gathering information relevant to the topic and purpose while maintaining accurate records of outside sources;
 - (E) produce business documents, including business letters, resumes, research papers, and newsletters;
 - (F) edit a variety of written documents;
 - (G) insert and edit objects such as tables, graphics, hyperlinks, headers, and footers into a document;
 - (H) prepare and distribute personalized correspondence using mail merge; and
 - (I) use online word-processing technologies to create, edit, and share documents.
- (7) The student identifies database software to create databases that facilitate business decision making. The student is expected to:

- (A) explain the principles of data analysis;
 - (B) explain the nature of tools that can be used to access information in the database system;
 - (C) choose appropriate software;
 - (D) define fields and type of data;
 - (E) create database structure;
 - (F) define relationships of tables;
 - (G) analyze company data requirements; and
 - (H) design a database to meet business requirements.
- (8) The student applies data entry techniques to enter information in databases. The student is expected to:
- (A) access information in the database system;
 - (B) build data in a data warehouse;
 - (C) enter and edit data into database tables and database forms for easy data entry; and
 - (D) import and export databases.
- (9) The student uses commands to retrieve data and create reports from databases. The student is expected to:
- (A) retrieve data from tables and queries;
 - (B) formulate queries; and
 - (C) create and print reports.
- (10) The student applies data mining methods to acquire pertinent information for business decision making. The student is expected to:
- (A) discuss the nature of data mining;
 - (B) describe data mining tools;
 - (C) demonstrate basic data mining techniques; and
 - (D) interpret data mining findings.
- (11) The student applies spreadsheet technology. The student is expected to:
- (A) perform mathematical processes, including percentages and decimals, order of operations principle, estimation, and prediction of patterns of data;
 - (B) formulate and produce solutions to a variety of business problems such as budgets, payroll, inventory, invoices, balance sheets, profit-loss statements, and conversion of foreign currencies;
 - (C) create charts, graphs, and infographics using spreadsheet data; and
 - (D) use online spreadsheet technologies to create, edit, and share documents.
- (12) The student applies presentation management technology. The student is expected to:
- (A) identify the guidelines for using graphics, fonts, and special effects in presentations;
 - (B) analyze the effectiveness of multimedia presentations;
 - (C) determine the appropriate technology to create and deliver an effective presentation;
 - (D) save documents in various formats such as template, video, and PDF to share or transport electronically;

- (E) deliver an effective presentation; and
 - (F) use online presentation management technologies to create, edit, transport, and share documents.
- (13) The student applies desktop publishing technology. The student is expected to:
- (A) identify technologies available for desktop publishing;
 - (B) identify customary standards and styles of desktop publishing; and
 - (C) create desktop publications importing text and graphics.
- (14) The student uses a variety of software applications. The student is expected to integrate multiple learned software applications to efficiently accomplish workplace tasks.

§130.137. Business Communication and Technologies (One Credit), Adopted 2015.

- (a) General requirements. This course is recommended for students in Grades 10-12. Prerequisite: Foundations of Business Communication and Technologies. Recommended Prerequisite: Touch System Data Entry. Recommended corequisite: Business Lab. Students shall be awarded one credit for successful completion of this course.
- (b) 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 Business Management and Administration Career Cluster focuses on careers in planning, organizing, directing, and evaluating business functions essential to efficient and productive business operations.
 - (3) In Business Communication and Technologies, students implement personal and interpersonal skills to strengthen individual performance in the workplace and in society and make a successful transition to the workforce or postsecondary education. Students apply technical skills to address business applications of emerging technologies, create complex word-processing documents, develop sophisticated spreadsheets using charts and graphs, and make an electronic presentation using appropriate multimedia software.
 - (4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
 - (5) Statements that contain the word "including" reference content that must be mastered, while those that contain the phrase "such as" are intended as possible illustrative samples.
- (c) Knowledge and skills.
- (1) The student demonstrates professional standards/employability skills required by business and industry. The student is expected to:
 - (A) communicate effectively with others using oral and written skills;
 - (B) demonstrate collaboration skills through teamwork;
 - (C) demonstrate professionalism by conducting oneself in a manner appropriate for the profession and workplace;
 - (D) demonstrate a positive, productive work ethic by performing assigned tasks as directed;
 - (E) show integrity by choosing the ethical course of action and comply with all applicable rules, laws, and regulations; and
 - (F) demonstrate time-management skills by prioritizing tasks, following schedules, and tending to goal-relevant activities in a way that uses time wisely and optimizes efficiency and results.

- (2) The student demonstrates project management processes to conduct a business project using emerging technologies. The student is expected to:
 - (A) initiate a project;
 - (B) plan a project;
 - (C) execute a project;
 - (D) monitor and control a project; and
 - (E) close a business project.
- (3) The student demonstrates the use of the concepts, strategies, and systems for obtaining and conveying ideas and information to enhance communication in a diverse workplace. The student is expected to:
 - (A) employ verbal and active listening skills when obtaining and conveying information;
 - (B) record information needed to present a report on a given topic and use items such as tables of contents, indexes, tabs, footnotes, endnotes, captions, and/or building blocks;
 - (C) write business correspondence using advanced word processing features such as templates and forms; mail merge, including letters, labels, and envelopes; and document protection and security that convey information effectively using correct grammar, spelling, punctuation, and capitalization;
 - (D) use online word processing technologies to create, edit, and share documents;
 - (E) communicate with relevant parties such as coworkers and customers by interpreting verbal and nonverbal behaviors;
 - (F) apply strategies for communicating about issues in dealing with a diverse workforce such as sexual harassment and cultural differences; and
 - (G) demonstrate the ability to communicate and resolve conflicts within a diverse workforce.
- (4) The student creates, evaluates, and uses information resources to accomplish specific occupational tasks. The student is expected to:
 - (A) create and interpret items such as tables, charts, infographics, and figures to accomplish specific occupational tasks;
 - (B) use resources such as informational texts, Internet websites, and technical materials to review and apply information sources for occupational tasks;
 - (C) evaluate the reliability of information from sources such as informational texts, Internet websites, and technical materials and resources; and
 - (D) reference sources of information.
- (5) The student develops and delivers formal and informal presentations using appropriate media to engage and inform audiences. The student is expected to:
 - (A) prepare oral presentations to provide information for specific purposes and audiences;
 - (B) identify support materials that will enhance an oral presentation;
 - (C) prepare support materials that will enhance an oral presentation;
 - (D) deliver an oral presentation that sustains listeners' attention;
 - (E) align presentation strategies to the intended audience;
 - (F) implement multimedia strategies for presentations; and
 - (G) use online presentation management technologies to create, edit, transport, and share documents.

- (6) The student demonstrates public relations skills to increase internal and external customer satisfaction. The student is expected to communicate effectively when developing positive customer relationships.
- (7) The student designs solutions to mathematical business problems using advanced spreadsheet technologies. The student is expected to:
 - (A) recognize and apply spreadsheet items such as lookup tables, what-if and built-in functions, macros, and advanced charts, graphs, and functions; and
 - (B) create and interpret financial statements such as comparisons and projections, predictions and forecasts, trend analyses, and charts and graphs.
- (8) The student follows procedures of advanced data management. The student is expected to:
 - (A) design a database to solve business problems; and
 - (B) use advanced functions of database management such as updating queries, creating formulas, using built-in formulas, and creating custom format reports.
- (9) The student documents technical knowledge and skills. The student is expected to:
 - (A) prepare a professional electronic portfolio that includes information such as:
 - (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) sample letter of application;
 - (vi) abstract of key points of accomplishments;
 - (vii) resume;
 - (viii) samples of work; and
 - (ix) evaluation from a teacher; and
 - (B) present the portfolio to interested stakeholders.

§130.138. Business Lab (One Credit), Adopted 2015.

- (a) General requirements. This course is recommended for students in Grades 9-12 as a corequisite course for students participating in a coherent sequence of career and technical education courses in the Business Management and Administration Career Cluster. This course provides an enhancement opportunity for students to develop the additional skills necessary to pursue industry certification. Corequisite: any course in the Business Management and Administration Career Cluster. Recommended corequisite: Foundations of Business Communication and Technologies or Business Communication and Technologies. This course must be taken concurrently with a corequisite course from the Business Management and Administration Career Cluster and may not be taken as a stand-alone course. Districts are encouraged to offer this lab in a consecutive block with the corequisite course to allow students sufficient time to master the content of both courses. Students shall be awarded one credit for successful completion of this course.
- (b) 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 Business Management and Administration Career Cluster focuses on careers in planning, organizing, directing, and evaluating business functions essential to efficient and productive business operations.
 - (3) Business Lab is designed to provide students an opportunity to further enhance skills of previously studied knowledge and skills and may be used as an extension of Foundations of Business Communication and Technologies or Business Communication and Technologies; it is a recommended corequisite course and may not be offered as a stand-alone course. Students implement personal and interpersonal skills to strengthen individual performance in the workplace and in society and to make a successful transition to the workforce or postsecondary education. Students apply technical skills to address business applications of emerging technologies. Students develop a foundation in the economic, financial, technological, international, social, and ethical aspects of business to become competent consumers, employees, and entrepreneurs. Students enhance reading, writing, computing, communication, and reasoning skills and apply them to the business environment. Students incorporate a broad base of knowledge that includes the legal, managerial, marketing, financial, ethical, and international dimensions of business to make appropriate business decisions.
 - (4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
 - (5) Statements that contain the word "including" reference content that must be mastered, while those that contain the phrase "such as" are intended as possible illustrative samples.
- (c) Knowledge and skills.
- (1) The student demonstrates professional standards/employability skills required by business and industry. The student is expected to:
 - (A) communicate effectively with others using oral and written skills;
 - (B) demonstrate collaboration skills through teamwork;
 - (C) demonstrate professionalism by conducting oneself in a manner appropriate for the profession and workplace;
 - (D) demonstrate a positive, productive work ethic by performing assigned tasks as directed;
 - (E) comply with all applicable rules, laws, and regulations;
 - (F) demonstrate time-management skills by prioritizing tasks, following schedules, and tending to goal-relevant activities in a way that uses time wisely and optimizes efficiency and results; and
 - (G) pursue appropriate licensing, certification, and/or credentialing requirements relevant to the business field.
 - (2) The student develops an elevated aptitude for the essential skills listed for the recommended corequisite course(s). The student is expected to:
 - (A) demonstrate deeper understanding of related course requirements;
 - (B) develop mastery of hands-on skills at an industry accepted standard; and
 - (C) exhibit progress toward achieving industry recognized documentation of specific expertise in a business field or skill.

§130.143. Practicum in Business Management (Two Credits), Adopted 2015.

- (a) General requirements. This course is recommended for students in Grades 11 and 12. Recommended prerequisites: Touch System Data Entry and Business Management or Business Communication and Technologies. Students shall be awarded two credits 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.

(b) 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 Business Management and Administration Career Cluster focuses on careers in planning, organizing, directing, and evaluating business functions essential to efficient and productive business operations.
- (3) Practicum in Business Management is designed to give students supervised practical application of previously studied knowledge and skills. Practicum experiences occur in a paid or unpaid arrangement and a variety of locations appropriate to the nature and level of experience. Students implement personal and interpersonal skills to strengthen individual performance in the workplace and in society and to make a successful transition to the workforce or postsecondary education. Students apply technical skills to address business applications of emerging technologies. Students develop a foundation in the economic, financial, technological, international, social, and ethical aspects of business to become competent consumers, employees, and entrepreneurs. Students enhance reading, writing, computing, communication, and reasoning skills and apply them to the business environment. Students incorporate a broad base of knowledge that includes the legal, managerial, marketing, financial, ethical, and international dimensions of business to make appropriate business decisions.
- (4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
- (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.

(c) Knowledge and skills.

- (1) The student demonstrates professional standards/employability skills required by business and industry. The student is expected to:
 - (A) communicate effectively with others using oral and written skills;
 - (B) demonstrate collaboration skills through teamwork;
 - (C) demonstrate professionalism by conducting oneself in a manner appropriate for the profession and workplace;
 - (D) demonstrate a positive, productive work ethic by performing assigned tasks as directed;
 - (E) comply with all applicable rules, laws, and regulations; and
 - (F) demonstrate time-management skills by prioritizing tasks, following schedules, and tending to goal-relevant activities in a way that uses time wisely and optimizes efficiency and results.
- (2) The student identifies and implements employability skills to gain a position in a company. The student is expected to:
 - (A) assess personal marketability;
 - (B) practice job-search strategies, including:
 - (i) write a letter of application;
 - (ii) prepare a resume;
 - (iii) use networking techniques to identify employment opportunities; and
 - (iv) complete a job application;
 - (C) demonstrate proper interview techniques and professional dress and appearance;

- (D) interview for a job, performing proper interview techniques and modeling professional dress and appearance;
 - (E) practice appropriate follow-up etiquette procedures, including:
 - (i) write a thank you note; and
 - (ii) write a follow-up letter after a job interview;
 - (F) identify skills and attributes necessary for professional advancement;
 - (G) evaluate and compare employment options such as salaries, benefits, and prerequisites;
 - (H) identify and rank tangible and intangible rewards of work; and
 - (I) identify employment opportunities and complete job search procedures such as job applications and W-4.
- (3) The student demonstrates professional standards as required by business and industry. The student is expected to:
- (A) adhere to policies and procedures;
 - (B) demonstrate positive work behaviors and attitudes, including punctuality, time-management, initiative, and cooperation;
 - (C) apply ethical reasoning to a variety of situations in order to make ethical decisions; and
 - (D) complete tasks with the highest standards to ensure quality products and services.
- (4) The student develops and demonstrates skills for success in the workplace. The student is expected to:
- (A) explain the importance of and model appropriate dress, hygiene, and demeanor for the work assignment;
 - (B) exhibit productive work habits and attitudes, including accepting constructive criticism; and
 - (C) prioritize work to fulfill responsibilities, meet deadlines, and complete tasks with the highest standards to ensure quality products and services.
- (5) The student applies principles of effective interpersonal skills. The student is expected to:
- (A) demonstrate professional qualities, including positive attitude, loyalty, and diplomacy;
 - (B) identify and demonstrate skills needed to maintain effective work relations with relevant parties such as colleagues and customers;
 - (C) demonstrate a respect for different workplace cultures and individuals from different cultures, genders, and backgrounds;
 - (D) understand rights and responsibilities concerning sexual harassment in the workplace;
 - (E) apply tact in handling criticism and disagreement or disappointment, accept constructive criticism, and revise personal views when valid evidence warrants;
 - (F) explain the concepts of integrity and confidentiality as related to the office environment; and
 - (G) demonstrate methods for implementing and improving customer satisfaction.
- (6) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:
- (A) analyze leadership in relation to trust, positive attitude, integrity, and willingness to accept key responsibilities in a work situation;
 - (B) demonstrate teamwork skills through working cooperatively with others to achieve goals;

- (C) demonstrate teamwork processes that promote team building, consensus, continuous improvement, respect for the opinions of others, cooperation, adaptability, and conflict resolution;
 - (D) demonstrate responsibility for shared group and individual work tasks; and
 - (E) establish and maintain effective working relationships by:
 - (i) demonstrating interpersonal skills;
 - (ii) using positive interpersonal skills to work cooperatively with others;
 - (iii) negotiating effectively to arrive at decisions; and
 - (iv) demonstrating sensitivity to and value for diversity.
- (7) The student facilitates internal and external office communications to support work activities. The student is expected to:
- (A) record messages accurately, legibly, and completely;
 - (B) deliver messages to the appropriate person or department;
 - (C) coordinate arrangements for participants;
 - (D) follow calling and login procedures; and
 - (E) troubleshoot any problems.
- (8) The student abides by risk-management policies and procedures for technology to minimize loss. The student is expected to:
- (A) adhere to technology safety and security policies such as acceptable use policy and web page policies;
 - (B) apply ergonomic techniques to technology tasks;
 - (C) adhere to laws pertaining to computer crime, fraud, and abuse;
 - (D) follow procedures used to restart and recover from situations such as system failure and virus infection;
 - (E) follow policies to prevent loss of data integrity; and
 - (F) adhere to the organization's policies for technology use.
- (9) The student uses information technology tools to manage and perform work responsibilities. The student is expected to:
- (A) demonstrate advanced web search skills;
 - (B) demonstrate advanced word-processing skills by:
 - (i) identifying customary styles of business documents such as memoranda, letters, emails, and reports;
 - (ii) inputting data using the touch system;
 - (iii) demonstrating basic writing techniques such as correct memorandum format, informal or formal style, and direct or indirect layout;
 - (iv) applying correct grammar, spelling, punctuation, and other English mechanics; and
 - (v) using references and preparing notations;
 - (C) apply advanced presentation applications;
 - (D) demonstrate advanced spreadsheet applications by:

- (i) entering labels and values into spreadsheet cells;
 - (ii) formatting labels and values;
 - (iii) preparing tables, graphs, infographics and graphics;
 - (iv) developing formulas and entering appropriate functions; and
 - (v) verifying formulas and functions with sample values;
 - (E) construct advanced database applications;
 - (F) perform scheduling functions electronically to facilitate on-time, prompt completion of work activities by:
 - (i) creating a calendar or schedule;
 - (ii) maintaining an appointment calendar;
 - (iii) verifying appointments;
 - (iv) coordinating travel arrangements;
 - (v) setting up meeting arrangements; and
 - (vi) disseminating meeting information to appropriate persons; and
 - (G) enter data without error.
- (10) The student manages personal finances to achieve financial goals. The student is expected to:
- (A) develop a budget based on personal financial goals;
 - (B) interpret a pay stub;
 - (C) read and reconcile bank statements;
 - (D) maintain financial records;
 - (E) demonstrate the wise use of credit;
 - (F) validate a credit history;
 - (G) protect against identity theft; and
 - (H) prepare personal income tax forms, including the 1040E.
- (11) The student establishes procedures to maintain equipment and supplies. The student is expected to:
- (A) determine equipment needed;
 - (B) determine supplies needed;
 - (C) establish equipment and supplies maintenance systems;
 - (D) schedule equipment maintenance; and
 - (E) use equipment and supplies maintenance procedures.
- (12) The student applies concepts of critical thinking and problem solving. The student is expected to:
- (A) analyze elements of a problem to develop creative and innovative solutions;
 - (B) critically analyze information to determine value to the problem-solving task;
 - (C) compare and contrast alternatives using a variety of problem-solving and critical-thinking skills; and
 - (D) conduct technical research to gather information necessary for decision making.

§130.144. Extended Practicum in Business Management (One Credit), Adopted 2015.

- (a) General requirements. This course is recommended for students in Grades 11 and 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 Business Management and Administration Career Cluster.
Recommended prerequisites: Touch System Data Entry and Business Management or Business Communication and Technologies. Corequisite: Practicum in Business Management. This course must be taken concurrently with Practicum in Business Management 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.
- (b) 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 Business Management and Administration Career Cluster focuses on careers in planning, organizing, directing, and evaluating business functions essential to efficient and productive business operations.
 - (3) Extended Practicum in Business Management is designed to give students supervised practical application of previously studied knowledge and skills. Practicum experiences occur in a paid or unpaid arrangement and a variety of locations appropriate to the nature and level of experience. Students implement personal and interpersonal skills to strengthen individual performance in the workplace and in society and to make a successful transition to the workforce or postsecondary education. Students apply technical skills to address business applications of emerging technologies. Students develop a foundation in the economic, financial, technological, international, social, and ethical aspects of business to become competent consumers, employees, and entrepreneurs. Students enhance reading, writing, computing, communication, and reasoning skills and apply them to the business environment. Students incorporate a broad base of knowledge that includes the legal, managerial, marketing, financial, ethical, and international dimensions of business to make appropriate business decisions.
 - (4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
 - (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.
- (c) Knowledge and 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 business management;
 - (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 self-discipline, integrity, customer service, work ethic, and adaptability with increased fluency;
 - (D) complete tasks with the highest standards to ensure quality products and services;
 - (E) employ teamwork and conflict-management skills to achieve collective goals 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 applies professional communications strategies. The student is expected to:
 - (A) demonstrate proper use of written, verbal, and visual communication techniques with increased proficiency;
 - (B) apply active listening skills to obtain and clarify information;
 - (C) create and deliver formal and informal presentations effectively;
 - (D) analyze, interpret, and effectively communicate information; and
 - (E) exhibit public relations skills to maintain internal and external customer/client satisfaction.
- (3) The student implements advanced problem-solving methods. The student is expected to:
 - (A) employ critical-thinking skills independently and in groups with increased fluency to solve problems and make decisions;
 - (B) apply critical-thinking strategies with increased fluency to develop solutions using appropriate technologies and resources;
 - (C) conduct technical research to gather information necessary for decision making; and
 - (D) analyze elements of a problem to develop creative and innovative solutions.
- (4) The student understands and applies proper safety and security techniques in the workplace. The student is expected to:
 - (A) understand and consistently follow workplace safety rules and regulations;
 - (B) adhere to technology safety and security policies such as acceptable use policy and web page policies; and
 - (C) follow policies to prevent loss of data integrity.
- (5) The student understands the professional, ethical, and legal responsibilities in business management. The student is expected to:
 - (A) demonstrate a positive, productive work ethic by performing assigned tasks as directed;
 - (B) describe and practice ethical and legal responsibilities associated with business management;
 - (C) show integrity by choosing the ethical course of action when making decisions; and
 - (D) comply with all applicable rules, laws, and regulations in a consistent manner.
- (6) The student participates in a business management experience. The student is expected to:
 - (A) conduct, document, and evaluate learning activities in a supervised business management experience;
 - (B) develop advanced technical knowledge and skills related to the student's occupational objective;
 - (C) facilitate internal and external office communications to support work activities;
 - (D) demonstrate appropriate use of information technology tools to manage and perform work responsibilities;
 - (E) create customary styles of business documents such as memoranda, letters, emails, and reports, as appropriate;
 - (F) perform scheduling functions electronically to facilitate on-time, prompt completion of work activities;
 - (G) demonstrate growth of technical skill competencies;

- (H) evaluate strengths and weaknesses in technical skill proficiency; and
- (I) collect representative work samples.

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STATUTORY AUTHORITY. The amendments are adopted under Texas Education Code (TEC), §7.102(c)(4), which requires the State Board of Education (SBOE) to establish curriculum and graduation requirements; TEC, §28.002(a), which identifies the subjects of the required curriculum; and TEC, §28.002(c), which requires the SBOE to identify by rule the essential knowledge and skills of each subject in the required curriculum that all students should be able to demonstrate and that will be used in evaluating instructional materials and addressed on the state assessment instruments.

CROSS REFERENCE TO STATUTE. The amendments implement Texas Education Code, §7.102(c)(4) and §28.002(a) and (c).

<rule>

§130.445. Introduction to Small Engine Technology (One Credit), Adopted 2015.

- (a) General requirements. This course is recommended for students in Grades 9-12. Students shall be awarded one credit for successful completion of this course.
- (b) 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 Transportation, Distribution, and Logistics Career Cluster focuses on planning, management, and movement of people, materials, and goods by road, pipeline, air, rail, and water and related professional support services such as transportation infrastructure planning and management, logistics services, mobile equipment, and facility maintenance.
 - (3) Introduction to Small Engine Technology includes knowledge of the function and maintenance of the systems and components of all types of small engines such as outdoor power equipment, motorcycles, generators, and irrigation engines. This course is designed to provide training for employment in the small engine technology industry. Instruction includes the repair and service of cooling, air, fuel, lubricating, electrical, ignition, and mechanical systems. In addition, the student will receive instruction in safety, academic, and leadership skills as well as career opportunities.
 - (4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
 - (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.
- (c) Knowledge and skills.
 - (1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
 - (A) identify career development and entrepreneurship opportunities in the small engine technology industry;
 - (B) identify careers in the small engine technology industry;
 - (C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the small engine technology industry;
 - (D) discuss certification opportunities;
 - (E) demonstrate skills and knowledge related to personal and occupational health and safety in the workplace;
 - (F) discuss response plans to emergency situations;

- (G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills; and
 - (H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities.
- (2) The student demonstrates appropriate personal and communication skills. The student is expected to:
- (A) describe and demonstrate ethical and legal responsibilities for appropriate workplace conduct;
 - (B) demonstrate proper etiquette and behavior;
 - (C) demonstrate appropriate personal appearance and hygiene;
 - (D) practice written and oral communication skills and employ effective listening skills;
 - (E) employ technical writing and preparation skills; and
 - (F) demonstrate effective speaking skills through prepared and extemporaneous oral presentations.
- (3) The student describes the historical, current, and future significance of the small engine technology industry. The student is expected to:
- (A) describe emerging technologies and their impact on the small engine technology industry;
 - (B) identify issues affecting the small engine technology industry related to employment, safety, and environmental issues;
 - (C) discuss regulations and laws and their impact on the small engine technology industry; and
 - (D) read appropriate written material to stay abreast of current issues impacting the small engine technology industry.
- (4) The student participates in opportunities for leadership development and personal growth. The student is expected to:
- (A) participate in the planning and development of leadership and skill development activities such as conducting effective meetings, team building activities, and strategic planning; and
 - (B) use resources available through an organization such as a career and technical student organization to develop employability skills.
- (5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:
- (A) perform preventative maintenance schedule plans and systems to keep facility, tools, and equipment operating safely and properly;
 - (B) use the preventative maintenance schedule of the facility, tools, and equipment to determine repair or replacement needs;
 - (C) complete repair orders and paperwork related to the small engine technology industry to properly document work needed or completed;
 - (D) estimate parts and labor costs on repair orders for small engine repair; and
 - (E) locate, read, and interpret service repair information such as small engine schematics, charts, and service-repair manuals and bulletins.
- (6) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:

- (A) develop project proposals;
 - (B) develop and maintain records appropriate to the small engine technology industry;
 - (C) describe mathematical formulas used to perform engine calculations such as calculating cylinder volume, engine displacement, combustion chamber volume, compressed head gasket volume, piston and deck height, piston dish volume, dome volume, cylinder volume, compression ratio, and horsepower;
 - (D) describe mathematical formulas used to perform electrical calculations such as calculating electrical resistance, current, and voltage in engines; and
 - (E) apply Ohm's law to small engine electrical circuits using a digital multimeter.
- (7) The student uses information technology resources specific to the small engine technology industry to access, manage, integrate, and create information. The student is expected to:
- (A) use personal management software such as email and Internet applications and word-processing, database, spreadsheet, presentation, collaborative, groupware, and virtual meeting software;
 - (B) discuss Geographic Information Systems and Global Positioning Systems applications; and
 - (C) use computer-based equipment.
- (8) The student demonstrates an understanding of technical knowledge and skills of small engine technology. The student is expected to:
- (A) identify the use and application of small engines and their components;
 - (B) identify the components of electrical-electronic systems;
 - (C) demonstrate awareness of engine designs, components, and applications;
 - (D) identify and use engine measuring tools and test equipment;
 - (E) use tools used in the operation, maintenance, and repair of small engines;
 - (F) compare and contrast the characteristics of two- and four-cycle engines; and
 - (G) identify and discuss the functions of the major small engine components.
- (9) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:
- (A) troubleshoot and repair small engines;
 - (B) assess the proper fuel mixtures and analyze the efficiency of various fuels used in small engines;
 - (C) distinguish between valve arrangement positions and analyze valve timing with respect to crankshaft rotation;
 - (D) perform preventative maintenance and service engine lubrication, cooling, starting, fuel, and ignition systems and associated fluids and filters;
 - (E) perform routine installations, inspections, adjustments, and maintenance on small engines using testing tools and equipment;
 - (F) demonstrate knowledge of electrical testing tools and equipment commonly used in small engine maintenance;
 - (G) perform measurements using precision instruments;
 - (H) inspect and measure small engine parts for wear tolerances;

- (I) explain the relationship between an electric current and magnetic fields in ignition, charging, and starting systems; and
- (J) analyze the effects of heating and cooling on small engines.

§130.446. Small Engine Technology (Two Credits), Adopted 2015.

- (a) General requirements. This course is recommended for students in Grades 10-12. Prerequisite: Introduction to Small Engine Technology. Students shall be awarded two credits for successful completion of this course.
- (b) 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 Transportation, Distribution, and Logistics Career Cluster focuses on planning, management, and movement of people, materials, and goods by road, pipeline, air, rail, and water and related professional support services such as transportation infrastructure planning and management, logistics services, mobile equipment, and facility maintenance.
 - (3) Small Engine Technology includes advanced knowledge of the function, diagnosis, and service of the systems and components of all types of small engines such as outdoor power equipment, motorcycles, generators, and irrigation engines. This course is designed to provide hands-on and practical application for employment in the small engine technology industry. Instruction includes the repair and service of cooling, air, fuel, lubricating, electrical, ignition, and mechanical systems and small engine overhauls. In addition, students will receive instruction in safety, academic, and leadership skills as well as career opportunities.
 - (4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
 - (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.
- (c) Knowledge and skills.
 - (1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
 - (A) identify career development and entrepreneurship opportunities in the small engine technology industry;
 - (B) identify careers in the small engine technology industry;
 - (C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the small engine technology industry;
 - (D) discuss certification opportunities;
 - (E) demonstrate skills and knowledge of personal and occupational health and safety in the workplace;
 - (F) discuss response plans to emergency situations;
 - (G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills;
 - (H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities;
 - (I) prepare a resume; and

- (J) demonstrate job interview skills.
- (2) The student demonstrates appropriate personal and communication skills. The student is expected to:
- (A) describe, demonstrate, and apply ethical and legal responsibilities for appropriate workplace conduct;
 - (B) demonstrate proper etiquette and behavior;
 - (C) demonstrate appropriate personal appearance and hygiene;
 - (D) demonstrate effective written and oral communication skills and employ effective listening skills;
 - (E) demonstrate advanced technical writing and preparation skills; and
 - (F) demonstrate effective speaking skills through prepared and extemporaneous oral presentations.
- (3) The student participates in opportunities for leadership development and personal growth. The student is expected to:
- (A) participate in the planning and development of leadership and skill development activities such as conducting effective meetings, team building activities, and strategic planning;
 - (B) use resources available through an organizations such as a career and technical student organizations to develop employability skills; and
 - (C) record individual progress to document achievements.
- (4) The student describes the historical, current, and future significance of the small engine technology industry. The student is expected to:
- (A) describe emerging technologies and their impact on the small engine technology industry;
 - (B) compare and contrast issues affecting the small engine technology industry related to employment, safety, environmental, and regulatory issues; and
 - (C) describe local and global market conditions and practices that impact the application and need of the small engine technology industry.
- (5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:
- (A) develop, evaluate, and perform preventative maintenance plans and systems to keep facility, tools, and equipment operating safely and properly;
 - (B) complete repair orders and paperwork related to the small engine technology industry to properly document work needed or completed such as ensuring proper customer communication and authorization;
 - (C) estimate parts and labor costs on repair orders for small engine repair;
 - (D) describe common business management principles such as technician productivity, shop efficiency, and profit margins; and
 - (E) locate, read, and interpret service repair information such as small engine schematics, charts, and technical bulletins.
- (6) The student applies appropriate research methods to small engine technology topics. The student is expected to:
- (A) use a variety of resources to research, trouble shoot, and diagnose concerns and failures; and

- (B) describe the application of the scientific method of research to small engine technology such as identifying a problem, establishing a procedure, performing direct and indirect observation, collecting and interpreting data, and drawing conclusions by verifying the complaint, determining the related symptoms, analyzing the symptoms, isolating the trouble, correcting the trouble, and checking for proper operation.
- (7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:
- (A) develop project proposals;
 - (B) develop and maintain records appropriate to the small engine technology industry;
 - (C) collect and organize data in graphs, tables, and charts;
 - (D) analyze and interpret data from graphs, tables, and charts;
 - (E) use mathematical formulas to perform engine calculations such as calculating cylinder volume, engine performance and enhancement, engine displacement, combustion chamber volume, compressed head gasket volume, piston and deck height, piston dish volume, dome volume, cylinder volume, compression ratio, and horsepower;
 - (F) use mathematical formulas to perform electrical calculations such as calculating and measuring electrical resistance, current, and voltage in engines;
 - (G) apply Ohm's law to small engine electrical circuits using a digital multimeter; and
 - (H) apply electrical principles to diagnose and repair small engine components such as generators, electric motors, power supplies, electronic amplifiers, relays, and circuits.
- (8) The student uses information technology tools specific to the small engine technology industry to access, manage, integrate, and create information. The student is expected to:
- (A) use personal management software such as email and Internet applications and word-processing, database, spreadsheet, presentation, collaborative, groupware, and virtual meeting software;
 - (B) discuss Geographic Information Systems and Global Positioning Systems applications; and
 - (C) use other computer-based equipment.
- (9) The student demonstrates advanced technical knowledge and skills of small engine technology. The student is expected to:
- (A) demonstrate the use and application of small engines and components;
 - (B) demonstrate the components of electrical-electronic systems;
 - (C) demonstrate knowledge of engine designs, components, and applications; and
 - (D) demonstrate the correct use of engine measuring tools and test equipment.
- (10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:
- (A) troubleshoot and repair small engines;
 - (B) perform preventative maintenance on small engines;
 - (C) assess the proper fuel mixtures and analyze the efficiency of various fuels used in small engines;
 - (D) distinguish between valve arrangement positions and analyze valve timing with respect to crankshaft rotation;

- (E) perform preventative maintenance and service engine lubrication, cooling, starting, fuel, and ignition systems and associated fluids and filters;
- (F) perform routine installations, inspections, adjustments, and maintenance on small engine testing tools and equipment;
- (G) demonstrate knowledge of electrical testing tools and equipment commonly used in small engine maintenance such as digital multimeters;
- (H) perform measurements using precision instruments such as micrometers, dial indicators, and Vernier calipers;
- (I) inspect and measure small engine parts for wear tolerances and compare to specifications;
- (J) demonstrate the relationship between an electric current and magnetic fields in ignition, starting, and charging systems with the use of test equipment;
- (K) analyze the effects of heating and cooling on small engines;
- (L) explain the thermophysical properties of fluids commonly used in small engine systems;
- (M) explain the laws of thermodynamics;
- (N) explain torque, horsepower, and heat energy transfer in small engines;
- (O) calculate speed and acceleration in small engines; and
- (P) compare and contrast efficiency of various engine sizes and types.