Report Regarding Progress of Increasing the Number of Courses Approved for Career and Technical Education (CTE) and Technology Applications

A Report to the 84th Texas Legislature from the Texas Education Agency

January 1, 2015

Submitted to the Governor, Lieutenant Governor, Speaker of the House of Representatives, and the members of the 84th Texas Legislature

STAFF

Texas Education Agency

Michael Williams
Commissioner of Education

Lizzette C. González Reynolds
Chief Deputy Commissioner

Policy and Programs

Michael Berry
Deputy Commissioner

Department of Standards and Programs

Monica Martinez
Associate Commissioner

Shelly Ramos
Curriculum Division Director

House Bill (HB) 5 and HB 2201, passed by the 83rd Texas Legislature, 2013, amended Chapter 28 of the Texas Education Code by adding Section 28.00222 to read as follows:

> **Increase in Advanced Technology and Career-Related Courses.**
> (a) **[2 Versions: As added by Acts 2013, 83rd Leg., ch. 211]** Not later than September 1, 2014, the State Board of Education shall ensure that at least six advanced career and technology education or technology applications courses, including courses in personal financial literacy consistent with Section 28.0021 and in statistics, are approved to satisfy a fourth credit in mathematics.
>
> (a) **[2 Versions: As added by Acts 2013, 83rd Leg., ch. 214]** Not later than September 1, 2014, the State Board of Education shall ensure that at least six advanced career and technology education or technology applications courses, including a course in personal financial literacy that is consistent with Section 28.0021, are approved to satisfy a fourth credit in mathematics required for high school graduation.
>
> (b) Not later than January 1, 2015, the commissioner shall review and report to the governor, the lieutenant governor, the speaker of the house of representatives, and the presiding officer of each standing committee of the legislature with primary responsibility over public primary and secondary education regarding the progress of increasing the number of courses approved for the career and technology education or technology applications curriculum. The commissioner shall include in the report a detailed description of any new courses, including instructional materials and required equipment, if any.
>
> (c) This section expires September 1, 2015.

The 80th Texas Legislature, 2007, passed HB 3485 to add TEC, §28.0022, requiring the agency to establish a panel to review and recommend revisions to the career and technical education (CTE) curriculum. House Bill 3485 required the panel to make recommendations to the State Board of Education (SBOE) not later than November 1, 2008, as necessary to increase the academic rigor of the CTE curriculum under TEC, §28.002(a)(2)(F). In 2008, Texas Essential Knowledge and Skills (TEKS) review committees were convened to review all CTE TEKS, consider the review panel recommendations, and make recommendations for revisions to the CTE TEKS. The committees were asked to review over 600 high school courses to determine which courses were obsolete and should be removed, which courses should be revised, and whether there were new courses that should be added. The end result was a recommendation that the SBOE adopt just over 190 new and revised courses to replace the original 600 courses. The SBOE adopted revised CTE TEKS in July 2009.

In January 2010, the SBOE adopted amendments to the Texas Administrative Code (TAC), Title 19, Chapter 74, Curriculum Requirements, Subchapter E, Graduation Requirements, Beginning with School Year 2004-2005, and Subchapter F, Graduation Requirements, Beginning with School Year 2007-2008. The amendments added three CTE courses as options for students on the Recommended High School Program (RHSP) to satisfy the fourth mathematics credit requirement: Mathematical Applications in Agriculture, Food, & Natural Resources; Engineering Mathematics; and Statistics and Risk Management. The amendments also added six CTE courses as options for students on the RHSP and the Distinguished Achievement Program (DAP) to satisfy the fourth science credit requirement: Engineering Design and Problem Solving; Advanced Animal Science; Advanced Biotechnology; Advanced Plant and Soil Science; Food Science; and Forensic Science.

In July 2013, the SBOE adopted amendments to 19 TAC Chapter 74, Curriculum Requirements, Subchapter F, Graduation Requirements, Beginning with School Year 2007-2008, and Subchapter G, Graduation Requirements, Beginning with School Year 2012-2013. These amendments added two technology applications courses, Robotics Programming and Design and Discrete Mathematics for Computer Science, and one CTE course, Digital Electronics, to satisfy the fourth mathematics credit requirement for the RHSP and DAP and to satisfy a third mathematics credit requirement for the Minimum High School Program (MHSP).

The 83rd Texas Legislature, Regular Session, 2013, passed HB 5, amending the TEC, §28.025, to transition from the three current high school graduation programs to one foundation high school program with endorsement options to increase flexibility for students. House Bill 5 gives the SBOE the authority to identify advanced courses related to the new graduation program, identify the curriculum requirements for the endorsements, and determine the requirements for performance acknowledgments related to the new graduation program. Students who enter grade 9 in the 2014-2015 school year or later must meet the requirements of the foundation high school program. Beginning with the 2014-2015 school year, any student who is in high school but who entered grade 9 prior to the 2014-2015 school year must be given the choice to remain on the MHSP, RHSP, or DAP or switch to the foundation high school program.

Requirements of the new foundation high school program include the following:

- Four credits in English language arts including English I, English II, English III, and an advanced English course
- Three credits in mathematics including Algebra I, Geometry, and an advanced mathematics course
- Three credits in science including biology; either IPC, chemistry, or physics; and an additional advanced science course
- Three credits in social studies including U.S. History, one-half credit in U.S. Government, one-half credit in economics, and world geography or world history
- Two credits in the same language in a language other than English or two credits in computer science
- One credit in fine arts
- One credit in physical education
- Five elective credits

In January 2014, the SBOE adopted revisions to 19 TAC Chapter 74, Curriculum Requirements, Subchapter B, Graduation Requirements, to repeal graduation requirements that are no longer needed and to add new rules for the foundation high school graduation program, as required by HB 5. Under the new foundation high school program a student may satisfy an advanced mathematics credit requirement by successfully completing one of the following CTE courses:

- Mathematical Applications in Agriculture, Food, and Natural Resources
- Digital Electronics
- Engineering Mathematics
- Statistics and Risk Management

A student may satisfy an advanced mathematics credit requirement by successfully completing one of the following technology applications courses:

- Discrete Mathematics for Computer Science
- Robotics Programming and Design

The Statistics and Risk Management course satisfies the requirement for a statistics course.

The SBOE is currently in the process of reviewing and revising the TEKS for CTE. Applications for appointment to CTE TEKS review committees were accepted by the TEA from October 2013

through January 10, 2014. Nominations for CTE TEKS review committees were made in spring 2014 and committee members were notified of their appointments in May 2014. The CTE TEKS review committees convened in Austin in June 2014 to begin work on draft recommendations for the TEKS. The committees met again in July 2014 to complete their initial draft recommendations. Math and science educators were also in attendance at the July meeting to provide content expertise to the CTE TEKS review committees in the revision and development of TEKS for courses that may satisfy a math or science credit. In September 2014, the first draft recommendations were posted to the TEA website for informal feedback, and TEA shared the draft recommendations with numerous stakeholders, including professional organizations and educators. At the September 2014 SBOE meeting, one representative from each CTE TEKS review committee provided invited testimony to the Committee on Instruction. In October 2014, the CTE TEKS review committees met for a third time to continue work to finalize their recommendations for revisions to the CTE TEKS. The recommendations may be accessed on the TEA website at http://tea.texas.gov/Curriculum_and_Instructional_Programs/Curriculum_Standards/Career_and_Technical_Education_Texas_Essential_Knowledge_and_Skills/.

TEKS review committees have recommended several additional CTE courses as options to satisfy an advanced mathematics credit requirement. In order to satisfy the requirement for a course in personal financial literacy, the TEKS review committee has recommended a new courses titled Financial Mathematics. The SBOE will consider recommendations for additional CTE courses to satisfy an advanced mathematics credit requirement in conjunction with the adoption of revised TEKS for CTE in 2015.

The final recommendations from the CTE TEKS review committees for 19 TAC Chapter 127, Texas Essential Knowledge and Skills for Career Development, Subchapter A, Middle School, and Subchapter B, High School, and 19 TAC, Chapter 130, Texas Essential Knowledge and Skills for Career and Technical Education, Subchapter C, Arts A/V Technology, and Communications, Subchapter D, Business Management and Administration, Subchapter E, Education and Training, Subchapter F, Finance, Subchapter I, Hospitality and Tourism, Subchapter J, Human Services, Subchapter M, Manufacturing, and Subchapter N, Marketing, were presented to the SBOE in a discussion item at the November 2014 SBOE meeting. These recommendations will be considered by the SBOE for first reading and filing authorization at the February 2015 meeting and, following the official public comment period, are scheduled to be adopted by the SBOE as final at the April 2015 meeting.

The final recommendations from the CTE TEKS review committees for 19 TAC, Chapter 130, Texas Essential Knowledge and Skills for Career and Technical Education, Subchapter A, Agriculture, Food, and Natural Resources, Subchapter B, Architecture and Construction, Subchapter G, Government and Public Administration, Subchapter H, Health Science, Subchapter K, Information Technology, Subchapter L, Law, Public Safety, Corrections, and Security, Subchapter O, Science, Technology, Engineering, and Mathematics, and Subchapter P, Transportation, Distribution, and Logistics will be presented to the SBOE in a discussion item at the February 2015 SBOE meeting. These recommendations will be considered by the SBOE for first reading and filing authorization at the April 2015 meeting and, following the official public comment period, are scheduled to be adopted by the SBOE as final at the July 2015 meeting.

A summary of new courses that have been recommended by the TEKS review committees including courses recommended as options to satisfy specific graduation credit requirements is provided on page5 of this report.

The SBOE is scheduled to issue Proclamation 2017 at its April 2015 meeting. This proclamation is expected to include a call for instructional materials aligned to the revised CTE TEKS that will be adopted in 2015.

Summary of New and Reorganized Courses

Chapter 127. Career Development

Subchapter B. High School

Reorganized Courses

Career Preparation I Foundation and Career Preparation I Application - The committee has recommended to divide the Career Preparation I course into two courses.

Career Preparation II Foundation and Career Preparation II Application - The committee has recommended to divide the Career Preparation II course into two courses.

New Course

*** Applied Mathematics for Technical Professionals** - The committee has recommended this new course to satisfy a mathematics credit requirement. This course uses problem solving situations, hands-on activities, and technology to extend mathematical thinking and engage reasoning. Connections with mathematics and the workplace are explored. Using mathematics and hands-on activities will allow the modeling, exploration, and development of abstract concepts applicable to technical careers.

Chapter 130. Career and Technical Education

Subchapter A. Agriculture, Food and Natural Resources

Reorganized Course

Landscape Design and Management - This course, previously titled Landscape Design and Turf Grass Management, was reorganized to focus exclusively on landscape management. The knowledge and skills statements related to turf and grass management were removed and placed into a new course.

New Courses

Oil and Gas Production I - The committee has recommended Oil and Gas Production I as a new course. The course has been designed to develop skills, abilities, and safety habits associated with oil and gas production. Studies also include components, systems, and equipment, associated with oil and gas wells. This course was developed from an existing innovative course.

Oil and Gas Production II - This course has been recommended as an advanced oil and gas course. Knowledge and skills will focus on the specific requirements for entry into post-secondary education and employment in the oil industry. Topics covered include research of petroleum economics, environmental issues, health and safety concerns, and various energy sources. The course was designed to allow students to prepare for industry certification and was developed from an existing innovative course.

Turf Grass Management - The committee has recommended this new course in order to develop knowledge and skills related to the techniques and practices of turf grass management. Included are topics such as environmental design, grass identification, common pests and pathogens of grass, safety, use and maintenance of equipment, and business operations.

Greenhouse Operations and Production - This new course has been recommended in order to develop an understanding of greenhouse production techniques and practices. Knowledge and skills included in this course will enable students to classify plants, select and maintain greenhouse structures, and operate the environmental control systems used in a modern greenhouse.

Agricultural Equipment Design and Fabrication - The committee has recommended this new course in order to allow learners to attain knowledge and skills related to agricultural equipment design and fabrication. The course focuses on advanced design and fabrication techniques and includes topics on career opportunities and industry expectations related to the design and fabrication of agricultural equipment.

Agricultural Laboratory and Field Experience - This new course has been recommended by the committee in order to provide extended learning experiences in a wide range of topics related to the agriculture industry. The course is designed for concurrent enrollment with other Agriculture, Food and Natural Resources courses in order to provide opportunities for learning outside the classroom.

Subchapter B. Architecture and Construction

Reorganized Courses

Principles of Architecture - The committee has recommended that the Principles of Architecture and Construction course be divided into two courses, Principles of Architecture and Principles of Construction.

Principles of Construction - The committee has recommended this course as an introduction to construction or craft skilled areas for high school. The course addresses construction safety, construction math, and common hand and power tools. In addition, this course provides communication and employability skills to assist the student in obtaining and maintaining employment.

New Courses

Construction Technology Practicum - The committee has recommended this as a new course to challenge students with the application of gained knowledge and skills from Construction Technology I and II. In many cases the student would be allowed to work at a job (paid or unpaid) outside of school, or be involved in local projects the school has approved for the class.

Masonry Technology I - The committee has recommended this new course to cover information and techniques in basic masonry and safety precautions. The course introduces the materials and techniques used in modern masonry. In addition, training in safety and best practices used in the masonry industry are covered.

Masonry Technology II - The committee has recommended this as a new course to address advanced techniques used in masonry. The course introduces the mathematical concepts used in masonry and the application of those concepts. In this course students will use masonry units in the installation of concrete products.

Practicum in Masonry - The committee has recommended this new course to provide students with classroom technical instruction or work based learning experiences. This course addresses safety and career opportunities in addition to work ethics and job-related study in the classroom. Trade and industrial education provides the knowledge, skills, and technologies required for employment in masonry construction.

Course for Mathematics Credit

*** Piping and Plumbing Technology II** - This is an existing CTE course that the committee has recommended to satisfy a mathematics credit requirement.

Subchapter C. Arts, Audio/Video Technology, and Communications

Reorganized Courses

Audio Video Production I Lab - The committee has recommended this course as a required co-requisite for Audio Video Production I, which is an existing CTE course.

Animation I Lab - The committee has recommended this course as a required co-requisite for Animation I, which is an existing CTE course.

Animation II Lab - The committee has recommended this course as a required co-requisite for Animation II, which is an existing CTE course.

Audio Video Production II Lab - The committee has recommended this course as a required co-requisite for Audio Video Production II, which is an existing CTE course.

Commercial Photography I Lab - The committee has recommended this course as a required co-requisite for Commercial Photography I, which is an existing CTE course.

Commercial Photography II Lab - The committee has recommended this course as a required co-requisite for Commercial Photography II, which is an existing CTE course.

Fashion Design I Lab - The committee has recommended this course as a required co-requisite for Fashion Design I, which is an existing CTE course.

Fashion Design II Lab - The committee has recommended this course as a required co-requisite for Fashion Design II, which is an existing CTE course.

Graphic Design and Illustration I Lab - The committee has recommended this course as a required co-requisite to Graphic Design and Illustration I, which is an existing CTE course.

Graphic Design and Illustration II Lab - The committee has recommended this course as a required co-requisite for Graphic Design and Illustration II, which is an existing CTE course.

Printing and Imaging Technology I Lab - The committee has recommended this course as a required co-requisite for Printing and Imaging Technology I, which is an existing CTE course.

Printing and Imaging Technology II Lab - The committee has recommended this course as a required co-requisite for Printing and Imaging Technology II, which is an existing CTE course.

*** Animation I Lab** - This is a reorganized course that the committee has recommended to satisfy the fine arts credit requirement.

*** Animation II Lab** - This is a reorganized course that the committee has recommended to satisfy the fine arts credit requirement.

*** Commercial Photography I Lab** - This is a reorganized course that the committee has recommended to satisfy the fine arts credit requirement.

*** Commercial Photography II Lab** - This is a reorganized course that the committee has recommended to satisfy the fine arts credit requirement.

*** Fashion Design I Lab** - This is a reorganized course that the committee has recommended to satisfy the fine arts credit requirement.

*** Fashion Design II Lab** - This is a reorganized course that the committee has recommended to satisfy the fine arts credit requirement.

*** Graphic Design and Illustration I Lab** - This is a reorganized course that the committee has recommended to satisfy the fine arts credit requirement.

*** Graphic Design and Illustration II Lab** - This is a reorganized course that the committee has recommended to satisfy the fine arts credit requirement.

*** Printing and Imaging Technology I Lab** - This is a reorganized course that the committee has recommended to satisfy the fine arts credit requirement.

*** Printing and Imaging Technology II Lab** - This is a reorganized course that the committee has recommended to satisfy the fine arts credit requirement.

New Courses

Digital Audio Technology I - The committee has recommended this as a new course to provide students interested in audio production careers such as audio for radio and television broadcasting, audio for video and film, audio for animation and game design, music production and live sound, additional opportunities and skill sets. Students will be expected to develop an understanding of the audio industry with a technical emphasis on production and critical listening skills. This course was developed from an existing innovative course.

Digital Audio Technology II - The committee has recommended this as a new course to provide students interested in audio production careers with continued opportunities in fields such as audio for radio and television broadcasting, audio for video and film, audio for animation and game design, music production and live sound, additional opportunities and skill sets. Students will be expected to develop an understanding of the audio industry with a technical emphasis on production and critical listening skills. This course was developed from an existing innovative course.

Practicum in Animation - The committee has recommended this as a new course to provide students with an understanding that careers in animation span all aspects of the arts, A/V technology and communication industry. The course builds upon the concepts taught in Animation II and co-requisite Animation II Lab and develops advanced technical knowledge and skills needed for success in the Arts, Audio/Video Technology, and Communications. Students will be expected to develop an increasing understanding of the industry with a focus on applying pre-production, production, and post-production animation products in a professional environment. Instruction may be delivered through lab-based classroom experiences or career preparation opportunities.

Practicum in Commercial Photography - The committee has recommended this new course to provide students with an understanding that careers in commercial photography span all aspects of the industry from setting up a shot to delivering products in a competitive market. In addition to developing advanced technical knowledge and skills needed for success in the Arts, Audio/Video Technology, and Communications field, students will be expected to develop an advanced technical understanding of the commercial photography industry with a focus on producing, promoting, and presenting professional quality photographs.

Video Game Design - The committee has recommended this new course to provide students with opportunities to explore one of the largest industries in the global marketplace and the new emerging careers it provides in the field of technology. Students will learn gaming, computerized gaming, evolution of gaming, artistic aspects of perspective, design, and animation, and technical concepts of collision theory and programming logic. Students will participate in a simulation of real video game design while developing technical proficiency in constructing an original game design. This course was developed from an existing innovative course

Courses for Fine Arts Credit

*** Animation I** - This is an existing CTE course that the committee has recommended to satisfy the fine arts credit requirement.

*** Animation II** - This is an existing CTE course that the committee has recommended to satisfy the fine arts credit requirement.

*** Commercial Photography I** - This is an existing CTE course that the committee has recommended to satisfy the fine arts credit requirement.

*** Commercial Photography II** - This is an existing CTE course that the committee has recommended to satisfy the fine arts credit requirement.

*** Graphic Design and Illustration I** - This is an existing CTE course that the committee has recommended to satisfy the fine arts credit requirement.

*** Graphic Design and Illustration II** - This is an existing CTE course that the committee has recommended to satisfy the fine arts credit requirement.

*** Printing and Imaging Technology I** - This is an existing CTE course that the committee has recommended to satisfy the fine arts credit requirement.

*** Printing and Imaging Technology II** - This is an existing CTE course that the committee has recommended to satisfy the fine arts credit requirement.

Subchapter D. Business Management and Administration

New Course

Business Lab - The committee has recommended this new course to further enhance skills of previously studied knowledge and skills in Business Information Management I or II. This lab course provides additional skill development for students pursuing industry certifications. The course is recommended as a co-requisite course and may not be used alone.

Subchapter E. Education and Training

No new or reorganized courses.

Subchapter F. Finance

New Courses

*** Financial Mathematics** - The committee has recommended this new course to satisfy a mathematics credit requirement. This course addresses personal money management and the application of critical-thinking skills to personal financial decisions based on current and projected economic factors.

*** Advanced Accounting II** - The committee has recommended this new course to satisfy a mathematics credit requirement. This course provides opportunities for students to use problem-solving, language and communication, and reasoning skills to make connections within and outside mathematics. Students will use multiple representations, technology, and modeling to formulate, interpret, and communicate financial information for use in management decision making.

Subchapter G. Government and Public Administration

No new or reorganized courses.

Subchapter H. Health Science

New Courses

Health Informatics - The committee has recommended this new course designed to meet the demands of rapidly growing area of health care information and data. Studies include electronic medical records, patient monitoring systems, and data base management as it relates to the health care industry.

Pharmacology - This new course has been recommended by the committee to prepare students for entry level employment as pharmacy technicians. Topics of study include chemical agents, therapeutics agents, and human body systems.

Health Science Clinical - The committee has recommended this new course to provide for the development of advanced knowledge and skills related to a wide variety of health careers. The course will provide hands-on experiences that encourage continued knowledge and skills development. The course is intended for concurrent enrollment with the existing Health Science course.

*** Mathematics for Medical Professionals** - The committee has recommended Mathematics for Medical Professionals as a new course that will satisfy a mathematics credit requirement. The course content consists of high school level mathematics concepts and their applications to health science professions. Embedded in the course are concepts related to statistics, probability, algebra, geometry, and finance. The mathematical concepts are presented as they apply to the health care industry. This course was developed from an existing innovative course.

Subchapter I. Hospitality and Tourism

New Course

Advanced Culinary Arts - The committee has recommended this new course, which is a combination of two existing innovative courses. The course extends content and enhances skills introduced in Culinary Arts. Through in-depth instruction of current industry-driven standards, students will prepare for success in obtaining industry certifications, immediate employment, or higher education.

Subchapter J. Human Services

New Courses

Esthetician Specialist - This course was developed from an existing innovative course. The committee has recommended this course to address job specific occupational skills required for licensure. Instruction includes advanced training in professional standards/employability skills, Texas Department of Licensing and Regulation (TDLR) rules and regulations, use of tools, equipment, technologies and materials, and practical skills.

Eyelash Extension Specialist - The committee has recommended this new course to address job specific occupational skills required for licensure. Instruction includes advanced training in professional standards/employability skills, TDLR rules and regulations, use of tools, equipment, technologies and materials, and practical skills related to eyelash extensions.

Hair Braiding Certificate - The committee has recommended this new course to address job specific occupational skills required for licensure. Instruction includes advanced training in professional standards/employability skills, TDLR rules and regulations, use of tools, equipment, technologies and materials, and practical skills related to hair braiding.

Hair Weaving Specialty - The committee has recommended this new course to provide content to address job specific occupational skills required for issuance of a hair braiding certificate. Instruction includes content about hair weaving, wefts and extensions, as well as the study of infectious disease and proper sanitation practices.

Manicure Specialist - This course was developed from an existing innovative course. The committee has recommended this new course to address job specific occupational skills required for licensure. Instruction includes advanced training in professional standards/employability skills, TDLR rules and regulations, use of tools, equipment, technologies and materials, and practical skills related to manicuring.

*** Principles of Cosmetology Design and Color Theory** - The committee has recommended this new course to satisfy the fine arts credit requirement. Students will develop knowledge and skills regarding cosmetology design elements such as form, line, texture, structure, and illusion or depth. This course may qualify for contact hours towards earning a cosmetology operator license.

Subchapter K. Information Technology

Reorganized Courses

Computer Maintenance Lab - The committee has recommended that this course be a required co-requisite to Computer Maintenance, which is an existing CTE course.

Networking Lab - The committee has recommended that this course be a required co-requisite to Networking, which is an existing CTE course.

New Course

Mobile Application Development - The committee has recommended this new course to foster student creativity and innovation by presenting opportunities to design, implement, and deliver meaningful projects using mobile computing devices and web-delivered applications. Students will gain an understanding of the principles of mobile application development through the study of development platforms, programming languages, and software design standards. Students will learn digital citizenship by researching current laws and regulations and by practicing integrity and respect.

Subchapter L. Law, Public Safety, Corrections and Security

Reorganized Course

Forensic Science - The committee has recommended the removal of knowledge and skills statements that relate to crime scene / criminal investigations. These skills will be included in a new course recommended by the committee, Criminal Investigations. The Forensic Science course currently meets a science credit requirement and the committee is recommending that remain unchanged.

New Course

Criminal Investigation - The committee has recommended this new course to provide knowledge and skills related to the profession of criminal investigations. Topics included in the course are basic functions of criminal investigations, procedures, terminology, investigative procedures, crime scene processing, evidence collection, fingerprinting, and courtroom presentation. Students will collect and analyze evidence through case studies and simulated crime scenes such as fingerprint analysis, bodily fluids, hairs, fibers, shoe and tire impressions, bite marks, drugs, tool marks, and digital evidence.

Subchapter M. Manufacturing

Reorganized Courses

Precision Metal Manufacturing II Lab - The committee has recommended this course as a required co-requisite for Precision Metal Manufacturing II, which is an existing CTE course.

Welding II Lab - The committee has recommended this course as a required co-requisite for Welding II, which is an existing CTE course.

New Courses

Diversified Manufacturing I - The committee has recommended this new course to provide students the opportunity to understand the process of mass production by using a wide variety of materials and manufacturing techniques. Knowledge about career opportunities, requirements, and expectations and the development of skills are addressed to prepare students for workplace success.

Diversified Manufacturing II - The committee has recommended this new course to provide students with advanced knowledge and skills needed to program and operate computer numerical control (CNC) equipment in a computer aided manufacturing (CAM) lab. Students will investigate emerging and innovative applications used in manufacturing and manufacture products using appropriate systems, tools, and equipment.

Introduction to Welding - The committee has recommended this new course to introduce welding technology with an emphasis on basic welding laboratory principles and operating procedures. Topics include industrial safety and health practices, hand-tool and power machine use, measurement, laboratory operating procedures, welding power sources, welding careers, and welding codes and standards. The technologies required for employment and advancement in the welding industry are addressed. Students will reinforce, apply, and transfer knowledge and skills though the integration of academics to a variety of settings and problems.

Manufacturing Engineering Technology I - The committee has recommended this new course to prepare students for success in the global economy by allowing students to reinforce, apply, and transfer academic knowledge and skills to a variety of interesting and relevant activities and problems in a manufacturing setting. Students will use gained knowledge and skills in the application, design, production, and assessment of products, services, and systems.

Course for Mathematics Credit

*** Manufacturing Engineering Technology II** - This is an existing CTE course that the committee has recommended to satisfy a mathematics credit requirement.

Subchapter N. Marketing

Reorganized Course

Practicum in Marketing I - This course as recommended by the committee is a reorganization of the course previously titled Marketing Dynamics.

New Course

Social Media Marketing - The committee is recommending this new course in order to provide instruction related to the use of social media as a marketing tool. The course will investigate how the marketing community measures success in the new world of social media and will provide knowledge and skills related to managing a successful social media presence for an organization; techniques for gaining customer and consumer buy-in to achieve marketing goals; and, how to properly select the social media platforms to engage consumers. This course was developed from an existing innovative course.

Subchapter O. Science, Technology, Engineering, and Mathematics

New Courses

Projects Management and Systems Engineering - The committee has recommended this new course to provide students with the opportunity to demonstrate knowledge and applications of Engineering Systems and Project Management. System Engineering is the study of engineered or technical systems, which are made, produced or modified by humans and is designed to meet certain functional purposes or objectives. Students will participate in team projects in various roles while managing a project.

*** Robotics II** - The committee has recommended that this course satisfy a mathematics credit requirement. The committee has recommended this new course to provide students with the opportunity to explore artificial intelligence and programming in the robotic and automation industry. Through implementation of the design process, students will transfer academic skills to component designs in a project-based environment. Students will build prototypes and use software to test their designs.

*** Biotechnology II** - The committee has recommended that this course satisfy a science credit requirement. The committee has recommended this new course to provide students with rigorous scientific components in bioengineering in order to apply problem identification, investigation design, data collection, data analysis, formulation, and presentation of a conclusion. This course prepares students for entry-level employment as a lab technician.

Subchapter P. Transportation, Distribution and Logistics

Reorganized Courses

Principles of Transportation Systems - The committee has recommended that the existing course titled Principles of Transportation, Distribution and Logistics be divided into two separate courses.

Principles of Distribution and Logistics - The committee has recommended that the existing course titled Principles of Transportation, Distribution and Logistics be divided into two separate courses.

Advanced Automotive Technology II-2 - The committee has recommended this course as a two-credit version of the course currently known as Advanced Automotive Technology.

Advanced Automotive Technology II-3 - The committee has recommended this course as a three-credit version of the course currently known as Advanced Automotive Technology.

Practicum in Transportation Systems - The committee has recommended that the existing course titled Practicum in Transportation, Distribution and Logistics be divided into two separate courses.

Practicum in Distribution and Logistics - The committee has recommended that the existing course titled Practicum in Transportation, Distribution and Logistics be divided into two separate courses.

New Courses

Introduction to Transportation Technology - This new course has been recommended by the committee in order to provide knowledge of the major automotive systems as well as the principles of diagnosing and servicing these systems. Transportation Technology includes applicable safety and environmental rules and regulations, knowledge and skills related to the repair, maintenance, and diagnosis of transportation systems. The course is designed to reinforce, apply, and transfer academic knowledge and skills to a variety of interesting and relevant activities, problems, and settings. Additional topics include safety, tool identification, proper tool use, and employability.

Automotive Basics I - This new course has been recommended by the committee to provide knowledge of the major automotive systems and the principles of diagnosing and servicing these systems. Topics include safety, proper tool use and an understanding of the major components of a vehicle.

Automotive Basics 2 - This course has been recommended by the committee to provide an advanced level of knowledge and skills related to automotive systems. The focus of this course is to teach safety, tool identification, proper tool use, and employability as well as the theory of operation of automotive vehicle systems and associated repair practices.

Introduction to Aircraft Technology - The committee has recommended this new course designed to teach the theory of operation of aircraft airframes, power plants, and avionics

systems and associated maintenance and repair practices. Systems include the electrical, electronic, hydraulic, pneumatic, airframe, mechanical, and power plant components of aircraft.

Basic Collision Repair and Refinishing - This new course has been recommended by the committee in order to teach the concepts and theory of systems related to automotive collision repair and refinishing. Knowledge and skills in the course include industry processes, technologies, and materials used in the reconstruction and alteration of vehicles.

Diesel Equipment Technology I - The committee has recommended this course in order to provide instruction related to diesel technology. Knowledge and skills incorporated into this course provide a solid foundation for careers related to the function, diagnosis, and service of diesel systems.

Diesel Equipment Technology II - The committee has recommended this course in order to provide advanced instruction related to diesel technology. This course provides opportunities for students to apply both academic and technical knowledge related to diesel technology.