Peach County School District
Career Technical and Agricultural Education

Career Clusters
Pathways to College and Career Readiness
CURRICULUM GUIDE

2020 - 2021
Introduction

Peach County high School’s Career Clusters allow students to choose an area of interest in high school from the clusters listed below. Students take classes tailored to their cluster, which helps them navigate their way to greater success – no matter what they choose to do after high school graduation. Each cluster includes multiple career pathways. The aim of the program is to show students the relevance of what they’re learning in the classroom, whether they want to attend a two-year college, a four-year university or go straight into the world of work.

1. Agriculture, Food and Natural Resources
2. Education and Training
3. Finance
4. Government and Public Administration
5. Health Science
6. Information Technology
7. Science, Technology, Engineering, Mathematics
8. Transportation, Distribution and Logistics
Overview

Career Clusters
Career Clusters are broad occupational groupings based on a set of common knowledge and skills required for a specific career. Career Clusters provide opportunities for all students regardless of their career goals and interests.

Career Pathways
Career Pathways are a sub-grouping of occupations and career specialties used as an organizing tool for curriculum design and instruction. Career pathways are grouped based on their requirements for a set of common knowledge and skills for career success.

Program of Study
A Program of Study is a sequence of instruction (based on recommended standards, and knowledge and skills) This sequence of instruction provides preparation for a career.

Individualized Graduation Plan
An IGP includes a program of study and learning that represents a mapped academic plan reflecting a student’s unique set of interests, needs, learning goals, and graduation requirements. It goes beyond the “four-year plan” by recording the student’s connections to the larger community including examples of community service and volunteerism; membership in community organizations, participation in leadership activities outside of school; involvement in job shadowing, mentorships, and/or apprenticeships; and the pursuit of skill development through hobbies, athletics, and fine arts.

Career Pathway Benefits
- Provide a framework for seamless education. They are the core of workforce and economic development in our state.
- Promote the connection between education and workforce/economic development
- Provide a seamless transition from high school to college
- Focus on high skill, high demand, and high wage careers
- Increase emphasis on attainment of a technical skill proficiency, degree/credential
Agriculture, Food, and Natural Resources

Cluster Description
The Agriculture, Food, & Natural Resources Career Cluster includes the production, processing, marketing, financing, distribution, and development of agricultural commodities and resources. These commodities include food, fiber, wood products, natural resources, horticulture, and other plant and animal products/resources.

**Click here to view the Agriculture, Food and Natural Resources Performance Standards.**

Pathways

Plant and Landscape Systems
02.47100 Basic Ag Science
01.46100 General Horticulture
01.47000 Nursery & Landscape

Companion Animal Systems
02.47100 Basic Ag Science
02.42100 Animal Science & Biotechnology
02.42300 Small Animal Care

Agriculture Mechanics Systems
02.47100 Basic Ag Science
01.42100 Ag Mechanics Technology I
01.42100 Ag Mechanics Technology II

Career and Technical Student Organization (CTSO)

FFA http://www.ffa.org
The FFA is a national organization dedicated to preparing members for leadership and careers in the science, business and technology of agriculture. Local, state and national activities and award programs provide opportunities to apply knowledge and skills acquired through agriculture education.
Agriculture, Food, and Natural Resources

Plant and Landscape Systems

A career in plant and landscape systems offers a variety of job opportunities in the fields of education, research, golf and sports turf, landscape design, parks and gardens, public service, production management, and sales and marketing. Some jobs available include landscape designer, greenhouse manager, golf course superintendent, plant breeder, florist, agricultural chemical researcher and garden center owner.

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<tr>
<td>Level 3</td>
<td>Nursery &amp; Landscape</td>
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*Levels 1, 2, and 3 are required for pathway completion.

**Course Descriptions**

**02.47100 Basic Agriculture Science**
Grades 9-11
This course is designed as the foundational course for all Agriculture, Food & Natural Resources Pathways. The course introduces the major areas of scientific agricultural production and research; presents problem solving lessons and introductory skills and knowledge in agricultural science and agri-related technologies. Classroom and laboratory activities are supplemented through supervised agricultural experiences and leadership programs and activities. This course is the prerequisite for all AFNR pathways and is intended for students in grades 9-10.

**01.46100 General Horticulture and Plant Science**
Grades 9-12
This course is designed as an introduction for the Horticulture-Plant Science Pathway Program of Study. The course introduces the major concepts of plant and horticulture science. Classroom and laboratory activities are supplemented through supervised agricultural experiences and leadership programs and activities.

**01.47000 Nursery and Landscape**
Grades 10-12
This course is designed to provide students with the basic skills and knowledge utilized by the green industry in nursery production and management and landscape design and management. Classroom and laboratory activities are supplemented through supervised agricultural experiences and leadership programs and activities.

**Possible Student Pathway Credentialing Opportunities:**

NOCTI- Plant Systems
Agriculture, Food, and Natural Resources

Companion Animal Systems

Companion animals are a large part of the animal care industry. There are many services and career opportunities in this career pathway area. Veterinarians care for the health of animals and work to improve public health. They diagnose, treat, and research medical conditions and diseases of pets, livestock, and other animals. Veterinary technologists and technicians perform medical tests under the supervision of a licensed veterinarian to help diagnose the illnesses and injuries of animals. Veterinary assistants and laboratory animal caretakers look after animals in laboratories, animal hospitals, and clinics. They care for the well-being of animals by performing routine tasks under the supervision of veterinarians, scientists, and veterinary technologists and technicians. Animal care and service workers provide care for animals. They feed, water, groom, bathe, and exercise pets and other nonfarm animals. Job tasks vary by position and place of work.

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02.42100 Animal Science & Biotechnology Grades 10-12
This course is designed to introduce students to the scientific principles that underlie the breeding and husbandry of agricultural animals, and the production, processing, and distribution of agricultural animal products. This course introduces scientific principles applied to the animal industry; covers reproduction, production technology, processing, and distribution of agricultural animal products. Classroom and laboratory activities are supplemented through supervised agricultural experiences and leadership programs and activities.

02.42300 Small Animal Care Grades 10-12
The goal of this course is designed to provide students with skills and concepts involved with the care and management of companion animals. Classroom and laboratory activities are supplemented through supervised agricultural experiences and leadership programs and activities.
Agriculture Mechanics Systems

Because workers in the Agricultural Mechanics pathway are responsible for the efficient operation of farm machinery, opportunities in the farm equipment industry will grow as farms merge and grow larger. Agricultural and farm equipment mechanics are responsible for the maintenance, repair, and installation of machines that increase the efficiency of farming activities, such as planting, harvesting, and irrigating crops. Agricultural mechanics also service and repair smaller lawn and garden equipment operated by suburban homeowners.

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01.42100  Ag Mechanics Technology I  Grades 10-12
This laboratory course is designed to provide students with introductory level experiences in selected major areas of agricultural mechanics technology which may include wood working, agricultural structures, electrical wiring, electric arc welding, oxy/fuel cutting and welding processes, and power equipment operation and maintenance. Learning activities include information, skill development and problem solving.

01.4220  Ag Mechanics Technology II  Grades 10-12
The goal of this laboratory course is designed to offer students intermediate level experiences in selected major areas of agricultural mechanics technology which may include small engine maintenance and repair, metal fabrication, concrete construction, building construction, plumbing, electrical wiring, maintenance of agricultural machinery, equipment and tractors and soil and water conservation. Learning activities include information, skill development and problem solving.
Cluster Description
Educational services are the second largest industry, accounting for about 13 million jobs. The educational services industry includes a variety of institutions that offer academic education, vocational or career and technical instruction and other education and training to millions of students each year. Institutions include elementary, middle and secondary schools, universities, colleges, professional schools, community or junior colleges and career and technical institutes.

**Click here to view the Education and Training Performance Standards.**

Pathways
Teaching as a Profession
13.01100 Examining the Teaching Profession
13.01200 Contemporary Issues in Education
13.01300 Teaching as a Profession Practicum

Career and Technical Student Organization (CTSO)

FCCLA http://www.fcclainc.org
Family, Career and Community Leaders of America, Inc. (FCCLA) is a nonprofit national career and technical student organization for young men and women in family and consumer sciences education in public and private school through grade 12.
Teaching as a Profession

This pathway includes broad introductory coverage of teaching as a profession, public school organization, planning and delivery of instruction, creation and maintenance of learning environment, standards, teaching and learning in multicultural settings, mainstream education of students with exceptionalities, "at risk" students, family and community partnerships, school law, and educational philosophies.

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**Course Descriptions**

**13.01100  Examining the Teaching Profession  Grades 9-11**

The Examining the Teaching Profession is the foundational course under the Teaching as a Profession pathway and prepares students for future positions in the field of education. Teaching as a Profession students study, apply, and practice the use of current technologies, effective teaching and learning strategies, the creation of an effective learning environment, the creation of instructional opportunities for diverse learners and students with special needs, and plan instruction based on knowledge of subject matter, students, community, and curriculum performance standards.

**13.01200  Modern Issues in Education  Grades 10--12**

We take a look at all the issues surrounding education, past and present, and use classroom discussions and debates to express our thoughts and opinions on the current education landscape.

**13.01300  Teaching as a Profession Practicum  Grades 11-12**

This course is a mini-student teaching experience where you get to teach in classrooms in the Peach County School District, while completing a college ready portfolio. Students must have daily transportation to the host school.

**Possible Student Pathway Credentialing Opportunities:**

NOCTI Teaching as a Profession Assessment
Finance

Cluster Description
The Finance Career Cluster focuses on money management, including planning, investing, and spending. Students will gain career development skills for the finance world with opportunities that expand beyond basic business skills into financial literacy, banking, investing, insurance, and risk management.

**Click here to view the Finance Performance Standards.**

Pathway

Financial Services
- 07.44130 Introduction to Business & Technology
- 07.42600 Financial Literacy
- 07.43100 Banking, Investing, and Insurance

Career and Technical Student Organization (CTSO):

FBLA http://fbla-pbl.org
Future Business Leaders of America-Phi Beta Lambda is a nonprofit education association of students preparing for careers in business and business-related fields. The FBLA Mission is to bring business and education together in a positive working relationship through innovative leadership and career development programs.
Financial Services

This pathway prepares students to plan, manage, and analyze the financial and monetary aspects and performance of business enterprises, banking institutions, or other organizations. Includes instruction in financial instruments; capital planning; funds acquisition; asset and debt management; budgeting; financial analysis; and investments and portfolio management.

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Course Descriptions

**07.44130   Introduction to Business & Technology**    Grades 9-11
Introduction to Business & Technology is the foundational course for Business and Technology, Entrepreneurship, and Human Resources Management pathways. The course provides an overview of business and technology skills required for today's business environment. Knowledge of business principles, the impact of financial decisions, and technology proficiencies demanded by business combine to establish the elements of this course. Emphasis is placed on developing proficient fundamental computer skills required for all career pathways. Students will learn essentials for working in a business environment, managing a business, and owning a business.

**07.42600   Financial Literacy**    Grades 10-12
This course specifically designed for high school students to understand the importance of the financial world, including planning and managing money wisely. Areas of study taught through application in personal finance include sources of income, budgeting, banking, consumer credit, credit laws and rights, personal bankruptcy, insurance, spending, taxes, investment strategies, savings accounts, mutual funds and the stock market, buying a vehicle, and living independently. Based on the hands-on skills and knowledge applied in this course, students will develop financial goals, and create realistic and measurable objectives. Students enrolled in this course should have successfully completed Introduction to Business & Technology.

**07.43100   Banking, Investing, and Insurance**    Grades 9-12
Explore the financial world as students dive into the main areas of financial services, including banking, investing, and insurance. Basics of banking and credit include a brief history of money and banking, negotiable instruments, creation of credit, and the function of banks. Methods for measuring the financial performance of financial institutions are analyzed. Students will be introduced to a variety of investment options and learn to determine the appropriate options for an investment goal. By analyzing financial reports and employing other tools to predict growth rates and return on investment, students will develop strategies to produce financial growth strategies for a business.

Possible Student Pathway Credentialing Opportunities:

- NOCTI Financial & Investment Planning and w!se Financial Literacy Certification Test
Government & Public Administration

Cluster Description
The Government & Public Administration Career Cluster includes the planning and performing of government management and administrative functions at local, state, and federal levels. Careers are available in national security, foreign service, revenue, and regulations. The goal of the Junior Reserve Officer Training Corps (JROTC) is to provide secondary school students the opportunity to become better informed, responsible citizens through a military environment. Sixty percent of the curriculum focuses on development of academic areas including United States military history, national security, meteorology, astronomy, aerospace vehicles and environment (aircraft, rocketry satellite, and spacecraft) Management, communications, survival, navigation, and physical fitness. Forty percent of class time is spent in developing leadership skills and military courtesies and customs.

**Click here to view the Government and Public Administration Performance Standards.**

Pathways

**JROTC - Navy**

- 28.02200 Naval Science I Introduction to NJROTC
- 28.02300 Naval Science II Maritime History
- 28.02400 Naval Science II Nautical Science
- 28.02500 Naval Science III Naval Knowledge
- 28.02600 Naval Science III Naval Orientation and Skills
- 28.02700 Naval Science IV Naval Leadership and Ethics
- 28.02800 Naval Science IV Effective Communications

**JROTC - Navy**

The Navy JROTC (NJROTC) curriculum emphasizes citizenship and leadership development, as well as maritime heritage, the significance of sea power, and naval topics such as the fundamentals of naval operations, seamanship, navigation and meteorology. Classroom instruction is augmented throughout the year by community service activities, drill competition, field meets, visits to naval activities, marksmanship training, and other military training.

Students will:
- Develop an appreciation of the ethical values and principles that underlie good citizenship which include integrity, responsibility and respect.
- Expand the ability to think logically and to communicate effectively both orally and in writing.
- Develop a better understanding of "patriotism" and what it means to be an American.
- Become more informed about the importance of first aid, physical conditioning, proper diet and nutrition.
- Engage in activities that foster pride, self-respect, confidence, self-discipline and the desire to do one's best.

No military obligation is incurred by participation in the program, though all students are expected to wear the uniform (issued free) once a week. Students are expected to participate in field training activities and community/school service projects. Successful graduates of this program can earn scholarships to a college or university. Entry-level active military pay is increased if a student has had at least two years of high school ROTC.
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<td>Naval Science I Cadet Field Manual</td>
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<td>Naval Science IV Effective Communications</td>
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**Course Descriptions**

28.02100 Naval Science I Cadet Field Manual

The purpose of this course is to combine all information on military drill and ceremonies, uniform regulations, physical fitness, orienteering, principles of health, first aid, survival, leadership, and communications. Minimum performance requirements of this course are in accordance with current Chief of Naval Education Training Instruction, NAVEDTRA 37128. The performance standards in this course are based on the performance standards identified in the curriculum for the United States Navy Junior Reserve Officer Training Corps. Successful completion of three courses of credit will qualify the student for advanced placement in a college ROTC program or accelerated promotion in the military service.

28.02200 Naval Science I Introduction to NJROTC

The purpose of this course is to help students understand the missions, goals, and opportunities available as members of the NJROTC program. This course will also introduce students to the basic principles of leadership, which combined with the many opportunities for practical experience in the NJROTC program will prepare them for leadership roles in school and upon graduation. Students will gain an understanding of our nation, our values, traditions, heritage, respect for our laws, as well as becoming involved, responsible citizens. Minimum performance requirements of this course are in accordance with current Chief of Naval Education Training Instruction, NAVEDTRA 37128.

28.02300 Naval Science II Maritime History

The purpose of this course is to build on the general introduction provided in Naval Science I, to further develop the traits of citizenship and leadership in students, introduce cadets to the maritime history of the world and the United States from the American Revolution through the present time. The material includes Bosnia, the demise of the Soviet Union, and the September 11, 2001 terrorists’ attack upon the United States. Minimum performance requirements of this course are in accordance with current Chief of Naval Education Training Instruction, NAVEDTRA 37128.

28.02400 Naval Science II Nautical Science

The purpose of this course is to introduce the various nautical sciences through classroom work and some laboratory time. The development of core skills that students should master is integrated throughout the course and includes geography, oceanography, astronomy, physical science, meteorology, and weather. Minimum performance requirements of this course are in accordance with current Chief of Naval Education Training Instruction, NAVEDTRA 37128.

28.02500 Naval Science III Naval Knowledge

The purpose of this course is to further the foundation in citizenship and leadership established in Naval Science One and Two and to expound upon the virtues of the United States citizenship with knowledge of uses of the world’s waterways through the viewpoint of National power and International law. Minimum performance requirements of this course are in accordance with current Chief of Naval Education Training Instruction, NAVEDTRA 37128.
28.02600  Naval Science III Naval Orientation and Skills
The purpose of this course is to further the foundation in citizenship and leadership established in Naval Science One and Two and to provide classroom and practical application in Naval and Ship Organization. Minimum performance requirements of this course are in accordance with current Chief of Naval Education Training Instruction, NAVEDTRA 37128.

28.02700  Naval Science IV Naval Leadership and Ethics
The purpose of this course is to take a more in-depth look at what leadership is and to learn how to maximize leadership abilities. More importantly, this course will assist the student in adding the polish necessary to be a truly effective leader in the NJROTC unit, school, community, and in life. Minimum performance requirements of this course are in accordance with current Chief of Naval Education Training Instruction, NAVEDTRA 37128.

28.02800  Naval Science IV Effective Communications
The purpose of this course is to teach the students the techniques of effective communication, which is one of the most important skills that a good leader must develop in order to be successful. Minimum performance requirements of this course are in accordance with current Chief of Naval Education Training Instruction, NAVEDTRA 37128.
**Health Science**

*Cluster Description*
The Health Science Career Cluster includes planning, managing, and providing services in therapeutics, diagnostics, health informatics, support areas, and biotechnology research and development.

**Click here to view the Health Science Performance Standards.**

*Pathways*

**Therapeutic Services/Patient Care**
25.52100 Introduction to Healthcare Science
25.44000 Essentials of Healthcare
25.43600 Patient Care Fundamentals

**Therapeutic Services/Emergency Medical Responder**
25.52100 Introduction to Healthcare Science
25.44000 Essentials of Healthcare
25.45000 Emergency Medical Responder

**HOSA**  [http://www.hosa.org](http://www.hosa.org)
HOSA is a national student organization endorsed by the U.S. Department of Education and the Health Science Technology Education Division of ACTE. HOSA's two-fold mission is to promote career opportunities in the health care industry and to enhance the delivery of quality health care to all people. HOSA's goal is to encourage all health occupations instructors and students to join and be actively involved in the HSTE-HOSA Partnership.
Students wishing to pursue a career in the area of Therapeutic Services will receive initial exposure to the fundamental principles, practices, and essential skills used Allied Health and Medicine. This pathway includes both classroom instruction and hands-on laboratory experiences in the development of skills required Allied Health and Medicine. Areas of study include career planning, legal and professional ethics, medical terminology, documentation, communication skills, human relations, medical asepsis/infection control, vital signs, cardiopulmonary resuscitation, and first aid.

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**Course Descriptions**

**25.52100 Introduction to Healthcare Science** Grades 9-11
Introduction to Healthcare Science is the foundational course for all Health Science pathways and is a prerequisite for all other Healthcare Science pathway courses. This course will enable students to receive initial exposure to the many Healthcare Science careers as well as employability, communication, and technology skills necessary in the healthcare industry. The concepts of human growth and development, interaction with patients and family members, health, wellness, and preventative care are evaluated, as well as the legal, ethical responsibilities of today’s healthcare provider. Fundamental healthcare skills development is initiated including microbiology, basic life support and first aid.

**25.44000 Essentials of Healthcare** Grades 10--12
The Essentials of Healthcare is a medical-focused anatomy course addressing the physiology of each body system, along with the investigation of common diseases, disorders and emerging diseases. The prevention of disease and the diagnosis and treatment that might be utilized are addressed, along with medical terminology related to each system.

**25.43600 Patient Care Fundamentals** Grade 12
This course is designed to provide students interested in the careers that involve patient care with entry level skills most commonly associated with the career Nursing Assistant. Successful completion of the Georgia Registry Examination allows students to seek employment in the state of Georgia as a Certified Nurse Assistant.

**Possible Student Pathway Credentialing Opportunities:**
National Health Science Assessment - National Consortium for Health Science Education (NCHSE)
Website: [http://www.healthscienceconsortium.org/assessment](http://www.healthscienceconsortium.org/assessment)
Allied Health & Medicine

This Allied Health Program will introduce students to routine medical and nursing-related services for patients. Students in this program will explore employment opportunities in hospitals, clinics, HMOs, assisted-living and nursing homes, home health care agencies and physicians' offices.

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25.43700 Allied Health and Medicine Grades 11-12
This course is designed to offer students (preferably upper classmen - juniors or seniors) the opportunity to become effective and efficient multi-skilled healthcare providers as they develop a working knowledge of various allied health opportunities. Students focusing on a career path in the healthcare field may apply classroom/lab knowledge and skills in the clinical setting as they participate in direct or simulated client care.

Possible Student Pathway Credentialing Opportunities:
National Health Science Assessment - National Consortium for Health Science Education (NCHSE)
Website: http://www.healthscienceconsortium.org/assessment
Cluster Description
How is technology used to solve business problems and communicate solutions? Business and Technology is designed to prepare students with the knowledge and skills to be an asset to the collaborative, global, and innovative business world of today and tomorrow. Mastery use of spreadsheets and the ability to apply leadership skills to make informed business decisions will be a highlight of this course for students.

Pathway
Business and Technology

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<td>07.44130</td>
<td>Introduction to Business and Technology</td>
<td>Grades 9 - 11</td>
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Career and Technical Student Organization (CTSO):

FBLA http://fbla-pbl.org
Future Business Leaders of America-Phi Beta Lambda is a nonprofit education association of students preparing for careers in business and business-related fields. The FBLA Mission is to bring business and education together in a positive working relationship through innovative leadership and career development programs.
Business and Technology

Computer and communication skills are a must in today’s technology-driven world. How can you make yourself more marketable? Why should you choose the Business and Technology Pathway? Business and Technology Pathway courses will give you many opportunities to gain in-depth knowledge of computer technology and software that are part of a desired workforce skill-set. You need to have this pathway on your schedule.

<table>
<thead>
<tr>
<th>Level</th>
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<td>07.44130</td>
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<td>BMA-BT</td>
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<tr>
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<td>Business Communications</td>
<td>07.45100</td>
<td>BMA-BC</td>
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</table>

*Levels 1, 2, and 3 are required for pathway completion.

**Course Descriptions**

**07.44130 Introduction to Business and Technology**  Grades 9-11
Introductory course that covers all the main points of the business pathways. Upon completion, you will choose either the Business & Technology Pathway or Finance pathway.

**07.44100 Business and Technology**  Grades 10—12
Learn how to use technology to enhance and create professional presentations that include images and videos. Create Digital resources to use within projects in the course and outside this course such as Images, Documents, and videos. Earn a Microsoft Office certification that will help you get a job.

**07.45100 Business Communications**  Grades 11-12
The number one request of employers seeking employable candidates is the ability to communicate. This course will give you the confidence and knowledge you need to communicate effectively. With the use of digital recordings and projects students will build confidence in communicating with others.

**Possible Student Pathway Credentialing Opportunities:**
Microsoft Office Specialist (MOS) in MS Word, PowerPoint, Excel, and Access
**Cluster Description**
The Science, Technology, Engineering, Mathematics Career Cluster means planning, managing, and providing scientific research and professional and technical services.

**Click here to view the Science, Technology, Engineering and Mathematics Performance Standards.**

**Pathways**
Engineering and Technology
21.42500 Foundations of Engineering and Technology
21.47100 Engineering Concepts
21.47200 Engineering Applications

**Career and Technical Student Organization (CTSO)**

TSA  http://www.tsaweb.org
Technology Student Association (TSA) is a national, non-profit organization for students with an interest in technology. TSA members learn problem-solving, decision-making, critical thinking and leadership skills as they relate to design, communications, power, energy, transportation, engineering, manufacturing, construction and biotechnology. TSA strives to meet the educational needs and challenges of all students in an increasingly and ever-changing technological world.
Engineering and Technology

This pathway is a sequence of courses which, when combined with traditional mathematics and science courses in high school, introduces students to the scope, rigor and discipline of engineering. This pathway will introduce students to the field of engineering technology. Students will solve problems using common engineering practices. Students will be acquainted with the major fields of engineering and with the diverse functions engineers and technologists perform. Students will be familiar with the paths and certifications that can lead to careers in engineering and engineering technology. Students will understand and demonstrate communication skills necessary in the field of engineering. They will employ an individual and team approach while solving engineering problems.

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<tr>
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<td>Foundations of Engineering and Technology</td>
<td>21.42500</td>
<td>STEM-FET</td>
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<tr>
<td>Level 2</td>
<td>Engineering Concepts</td>
<td>21.47100</td>
<td>STEM-EC</td>
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<td>Level 3</td>
<td>Engineering Applications</td>
<td>21.47200</td>
<td>STEM-EA</td>
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Course Descriptions

21.42500  Foundations of Engineering and Technology  Grades 9-11
The Foundations of Engineering and Technology is the introductory course for the Engineering and Technology Education pathways. This STEM driven course provides the students with an overview of engineering and technology including the different methods used in the engineering design process developing fundamental technology and engineering literacy. Students will demonstrate the skills and knowledge they have learned through various project based activities while using an engineering design process to successfully master the “E” in STEM.

21.47100  Engineering Concepts  Grades 9–12
Engineering Concepts is the second course in the Engineering and Technology Pathway. Students will learn to design technical solutions to engineering problems using a whole systems approach to engineering design. Students will demonstrate the application of mathematical tools, teamwork, and communications skills in solving various design challenges, while maintaining a safe work environment. The prerequisite for this course is Foundations of Engineering and Technology.

21.47200  Engineering Applications  Grades 10-12
Engineering Applications is the third course in the Engineering and Technology Pathway. Students will apply their knowledge of Science, Technology, Engineering, and Math (STEM) to develop solutions to technological problems. Solutions will be developed using a combination of engineering software and prototype production processes. Students will use market research, cost benefit analysis, and an understanding of the design cycle to create and present design, marketing, and business plans for their solutions. A capstone project will allow students to demonstrate their depth of knowledge of the engineering design process and prepare them for future opportunities in the field of engineering. The prerequisite for this course is Engineering Concepts.

Possible Student Pathway Credentialing Opportunities:
NOCTI Engineering Assessment and SkillsUSA Engineering Technology Skills Connect Assessment
**Cluster Description**
The Transportation, Distribution & Logistics Career Cluster encompasses planning, managing, and moving people, materials, and goods by road, pipeline, air, rail, and water, and also includes other related professional and technical support services.

**Click here to view the Transportation, Distribution and Logistics Performance Standards.**

**Pathways**

**Automobile Maintenance and Light Repair**
- 47.53110 Basic Maintenance and Light Repair
- 47.53210 Maintenance and Light Repair 2
- 47.53310 Maintenance and Light Repair 3

**Automotive Service Technology Pathway**  (Instructor Approval only)
- 47.43400 Automobile Service Technology 4
- 47.43500 Automobile Service Technology 5
- 47.43600 Automobile Service Technology 6
Automobile Maintenance and Light Repair

This pathway includes classroom instruction and hands-on laboratory performance of the basic tasks included in the initial training required for employment in the automotive service field as identified by the National Automotive Technicians Education Foundation (NATEF). The courses include the development of basic technical skills required in steering and suspension, electrical and electronics, brakes, and engine performance.

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<td>47.53110</td>
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<td>Maintenance and Light Repair 2</td>
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<td>Maintenance and Light Repair 3</td>
<td>47.53310</td>
<td>TDL-MLR3</td>
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*Levels 1, 2, and 3 are required for pathway completion.

Course Descriptions

47.53110 Basic Maintenance and Light Repair Grades 9-11
This course is designed as the foundational course for the Automobile Maintenance and Light Repair pathway. Students in this course will learn the basic skills needed to gain employment as a maintenance and light repair technician. Students will be exposed to courses in automotive preventative maintenance and servicing and replacing brakes, and steering and suspension components. In addition, student will learn how to do general electrical system diagnosis, learn electrical theory, perform basic tests and determine necessary action. In addition, students will learn how to evacuate and recharge air conditioning systems using the proper refrigerant.

47.53210 Maintenance and Light Repair 2 Grades 9-12
Students will learn the basic skills needed to gain employment as a maintenance and light repair technician and will expose students to automotive preventative maintenance and servicing, as well as replacing brakes, and steering and suspension components. Students will also learn general electrical system diagnosis, electrical theory, basic test requirements, and determining necessary action. In addition, students will learn how to evacuate and recharge air conditioning systems using the proper refrigerant.

47.53310 Maintenance and Light Repair 3 Grades 10-12
Building on the knowledge and skills gained in the prerequisite course, students will learn the basic skills needed to gain employment as a maintenance and light repair technician and will expose students to automotive preventative maintenance and servicing, as well as replacing brakes, and steering and suspension components. Students will also learn general electrical system diagnosis, electrical theory, basic test requirements, and determining necessary action. In addition, students will learn how to evacuate and recharge air conditioning systems using the proper refrigerant.

Possible Student Pathway Credentialing Opportunities:

ASE Student Certification
Automotive Service Technology Pathway

This pathway includes classroom instruction and hands-on laboratory performance of the basic tasks included in the initial training required for employment in the automotive service field as identified by the National Automotive Technicians Education Foundation (NATEF). The courses include the development of basic technical skills required in steering and suspension, electrical and electronics, brakes, and engine performance. (Instructor Approval Only)

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<td>TDL-AST5</td>
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Course Descriptions

47.43400 Automobile Service Technology 4 Grades 9-11
Building on the knowledge and skills gained in the prerequisite course, students will learn the basic skills needed to gain employment as a maintenance and light repair technician and will expose students to automotive preventative maintenance and servicing, as well as replacing brakes, and steering and suspension components. Students will also learn general electrical system diagnosis, electrical theory, basic test requirements, and determining necessary action. In addition, students will learn how to evacuate and recharge air conditioning systems using the proper refrigerant.

47.43500 Automobile Service Technology 5 Grades 9–12
Building on the knowledge and skills gained in the prerequisite course, students will learn the basic skills needed to gain employment as a maintenance and light repair technician and will expose students to automotive preventative maintenance and servicing, as well as replacing brakes, and steering and suspension components. Students will also learn general electrical system diagnosis, electrical theory, basic test requirements, and determining necessary action. In addition, students will learn how to evacuate and recharge air conditioning systems using the proper refrigerant.

47.43600 Automobile Service Technology 6 Grades 10–12
Building on the knowledge and skills gained in the prerequisite course, students will learn the basic skills needed to gain employment as a maintenance and light repair technician and will expose students to automotive preventative maintenance and servicing, as well as replacing brakes, and steering and suspension components. Students will also learn general electrical system diagnosis, electrical theory, basic test requirements, and determining necessary action. In addition, students will learn how to evacuate and recharge air conditioning systems using the proper refrigerant.

Possible Student Pathway Credentialing Opportunities:

ASE Student Certification
WORK-BASED LEARNING

Work-Based Learning Programs are structured educational experiences that integrate classroom learning (school-based) with productive, structured work experiences (work-based), related to a student’s career goal.

Key Components:
- School-based learning
- Work-based learning
- Connecting activities
- Work-Based Learning
- Provides paid or unpaid work experience
- Promotes a partnership between education and industry
- Integrates academic and technical instruction

Work-Based Learning provides an opportunity for juniors and seniors to start preparing for a career while still in high school. Individual programs of study in the freshman and sophomore years prepare students for a successful work-based learning experience.

Through Work-Based Learning, students are able to earn wages while learning from skilled professionals, increase career options and future employability, strengthen academic skills, experience the connection between education and real-life work skills, earn post-secondary credit while in high school and experience potential careers in the workplace.

Work-Based Learning enables employers to play an active role in shaping the quality of their future workforce. Through Work-Based Learning, employers are able to increase skill levels of potential workers, work with educators to develop curriculum based on industry standards, recruit and screen potential employers, reduce turnover of entry-level employees through the hiring of Work-Based Learning graduates and improve competitiveness in the international marketplace.

All students wishing to take a Work-Based Learning Course must first complete an application with the Work-Based Learning Coordinator.
### CAREER & TECHNICAL STUDENT ORGANIZATIONS

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<td>FFA (Future Farmer's Association)</td>
<td><a href="http://www.ffa.org">http://www.ffa.org</a></td>
<td>The FFA is a national organization dedicated to preparing members for leadership and careers in the science, business and technology of agriculture. Local, state and national activities and award programs provide opportunities to apply knowledge and skills acquired through agriculture education.</td>
</tr>
<tr>
<td>HOSA (Health Occupations Students of America)</td>
<td><a href="http://www.hosa.org">http://www.hosa.org</a></td>
<td>HOSA is a national student organization endorsed by the U.S. Department of Education and the Health Science Technology Education Division of ACTE. HOSA's two-fold mission is to promote career opportunities in the health care industry and to enhance the delivery of quality health care to all people. HOSA's goal is to encourage all health occupations instructors and students to join and be actively involved in the HSTE-HOSA Partnership.</td>
</tr>
<tr>
<td>SkillsUSA</td>
<td><a href="http://www.skillsusa.org">http://www.skillsusa.org</a></td>
<td>SkillsUSA is a national organization that provides quality education experiences for students in leadership, teamwork, citizenship and character development. It builds and reinforces self-confidence, work attitudes and communications skills. It emphasizes total quality at work, high ethical standards, superior work skills, life-long education and pride in the dignity of work. SkillsUSA also promotes understanding of the free enterprise system and involvement in community service activities.</td>
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