

Career and Technical Education Clusters

INTRODUCTION

Our Career and Technical Education (CTE) programs are aligned not only with college- and career-readiness standards, but also with the needs of area employers, industry, and labor. They provide students with a curriculum based on integrated academic and technical content and strong employability skills. And they provide work-based learning opportunities that enable students to connect what they are learning to real-life career scenarios and choices.

PRINCIPLES OF AGRICULTURE, FOOD, AND NATURAL RESOURCES

Principles of Agriculture, Food, and Natural Resources

Credit: 1.0

Grade placement: 9-12

To be prepared for careers in agriculture, food, and natural resources, students must attain academic skills and knowledge in agriculture. This course allows students to develop knowledge and skills regarding career opportunities, personal development, globalization, industry standards, details, practices, and expectations. To prepare for success, students need to have opportunities to learn, reinforce experience, apply, and transfer their knowledge and skills in a variety of settings.

Livestock Production

Grade placement: 10-12

Credit: 0.5-1.0

Prerequisite: Principles of Agriculture, Food & Natural Resources

To be prepared for careers in the field of animal science, students need to attain academic skills and knowledge, acquire knowledge and skills related to animal systems and the workplace, and develop knowledge and skills regarding career opportunities, entry requirements, and industry expectations. To prepare for success, students need opportunities to learn, reinforce, apply, and transfer their knowledge and skills in a variety of settings. Animal species to be addressed in this course may include, but are not limited to, beef cattle, dairy cattle, swine, sheep, goats, and poultry.

Small Animal Management

Grade placement: 10-12

Credit: 0.5

Required prerequisite: Principles of Agriculture, Food & Natural Resources

To be prepared for careers in the field of animal science, students need to enhance academic knowledge and skills, acquire knowledge and skills related to animal systems, and develop knowledge and skills regarding career opportunities, entry requirements, and industry expectations. To prepare for success, students need opportunities to learn, reinforce, apply, and transfer knowledge and skills in a variety of settings. Suggested small animals which may be included in the course of study include, but are not limited to, small mammals, amphibians, reptiles, avian, dogs, and cats.

Equine Science

Grade placement: 10-12

Credit: 0.5

Required prerequisite: Principles of Agriculture, Food & Natural Resources

To be prepared for careers in the field of animal science, students need to enhance academic knowledge and skills, acquire knowledge and skills related to animal systems, and develop knowledge and skills regarding career opportunities, entry requirements, and industry expectations. To prepare for success, students need opportunities to learn, reinforce, apply, and transfer their knowledge and skills in a variety of settings. Suggested animals which may be included in the course of study include, but are not limited to, horses, donkeys, and mules.

Principles and Elements of Floral Design

Grade placement: 10-12

Credit: 1.0

Recommended prerequisite(s): Principles of Agriculture, Food & Natural Resources

To be prepared for careers in floral design, students need to attain academic skills and knowledge as well as technical knowledge and skills related to horticultural systems and develop knowledge and skills regarding career opportunities, entry requirements, and industry expectations. To prepare for success, students need opportunities to learn, reinforce, apply and transfer their knowledge and skills and technologies in a variety of settings. This course is designed to develop students' ability to identify and demonstrate the principles and techniques related to floral design as well as develop an understanding of the management of floral enterprises. Through the analysis of artistic floral styles and historical periods, students develop respect for the traditions and contributions of diverse cultures. Students respond to and analyze floral designs, thus contributing to the development of lifelong skills of making informed judgments and evaluations

Landscape Design and Turf Grass Mgmt

Grade placement: 10-12

Credit: 1.0

Prerequisite: Principles and Elements of Floral Design

To be prepared for careers in horticultural systems, students need to attain academic skills and knowledge, acquire technical knowledge and skills related to horticultural systems and the workplace, and develop knowledge and skills regarding career opportunities, entry requirements, and industry expectations. To prepare for success, students need opportunities to learn, reinforce, apply, and transfer their knowledge and skills and technologies in a variety of settings. This course is designed to develop an understanding of landscape and turf grass management techniques and practices.

Horticulture Science

Grade placement: 10 -12

Credit: 1.0

Required prerequisite: Principles and Elements of Floral Design

To be prepared for careers in horticultural systems, students need to attain academic skills and knowledge, acquire technical knowledge and skills related to horticulture and the workplace, and develop knowledge and skills regarding career opportunities, entry requirements, and industry expectations. To prepare for success, students need opportunities to learn, reinforce, apply, and transfer knowledge and skills in a variety of settings. This course is designed to develop an understanding of common horticultural management practices as they relate to food and ornamental plant production.

Practicum in Agriculture, Food, and Natural Resources

Grade Placement: 11-12

Credits: 2.0

Required Prerequisite: 1.5 credits completed from the courses in the Agriculture or Horticulture Pathway prior to enrollment in the Practicum

The practicum course is a capstone experience for students participating in a coherent sequence of career and technical education courses in the Agriculture, Food, and Natural Resources cluster. The practicum is designed to give students supervised practical application of knowledge and skills. Practicum experiences can occur in a variety of locations appropriate to the nature and level of experiences such as employment, independent study, internships, assistantships, mentorships, or laboratories.

ARCHITECTURE & CONSTRUCTION

Principles of Architecture and Construction

Grade Placement: 9-12

Credit: 1.0

Principles of Architecture and Construction provides an overview to the various fields of architecture, interior design, construction science, and construction technology. Achieving proficiency in decision making and problem solving is an essential skill for career planning and lifelong learning. Students use self-knowledge, educational, and career information to set and achieve realistic career and educational goals. Job-specific, skilled training can be provided through the use of training modules to identify career goals in trade and industry areas. Safety and career opportunities are included, in addition to work ethics and job-related study in the classroom such as communications; problem solving and critical thinking; information technology applications; systems; safety, health, and environmental; leadership and teamwork; ethics and legal responsibilities; employability and career development; technical skills; introduction to hand tools; introduction to power tools; basic rigging; and reading technical drawings.

Architectural Design

Grade Placement: 10-12

Credit 1.0

Prerequisite: Principles of Architecture and Construction

Recommended prerequisites: Algebra I, Geometry

In Architectural Design, students gain knowledge and skills specific to those needed to enter a career in architecture and construction or prepare a foundation toward a postsecondary degree in architecture, construction science, drafting, interior design, and landscape architecture. Architectural design includes the knowledge of the design, design history, techniques, and tools related to the production of drawings, renderings, and scaled models for commercial or residential architectural purposes.

Construction Management

Grade Placement: 10-12

Credit 1.0

Prerequisite: Principles of Architecture and Construction

Recommended prerequisites: Algebra I, Geometry

In Construction Management, students gain knowledge and skills specific to those needed to enter the work force as carpenters or building maintenance supervisors or build a foundation toward a postsecondary degree in architecture, construction science, drafting, or engineering. Construction Management includes the knowledge of the design techniques and tools related to the management of architectural and engineering projects.

Construction Technology

Grade Placement: 10-12

Credit: 1.0

Required Prerequisite: Principles of Architecture and Construction

In Construction Technology, students gain knowledge and skills specific to those needed to enter the work force as carpenters or building maintenance supervisors or prepare for a postsecondary degree in construction management, architecture, or engineering. Students acquire knowledge and skills in safety, tool usage, building materials, codes, and framing.

Building Maintenance Technology

Grade Placement: 10-12

Credit: 1.0

Required prerequisite: Principles of Architecture and Construction

In Building Maintenance Technology, students gain knowledge and skills specific to those needed to enter the field of building maintenance as a building maintenance technician or supervisor or secure a foundation for a postsecondary degree in construction management, architecture, or engineering. Students acquire knowledge and skills in plumbing, electrical, and Heating, Ventilation, and Air Conditioning (HVAC) systems. Additionally, students learn methods for repair and installation of drywall, roof, and insulation systems.

ARTS, A/V TECHNOLOGY AND COMMUNICATIONS

Principles of Arts, Audio/Video Technology, and Communications

Grade placement: 9 - 11

Credit 1.0

Careers in the Arts, Audio/Video Technology, and Communications cluster require, in addition to creative aptitude, a strong background in computer and technology applications, a strong academic foundation, and a proficiency in oral and written communication. Within this context, students will be expected to develop an understanding of the various and multifaceted career opportunities in this cluster and the knowledge, skills, and educational requirements for those opportunities.

Digital and Interactive Media

Grade placement: 10-12

Credit: 1.0

Required prerequisite: Principles of Arts, Audio/Video Technology, and Communications

Through the study of digital and interactive media and its application in information technology, students will analyze and assess current and emerging technologies, while designing and creating multimedia projects that address customer needs and resolve a problem. Students implement personal and interpersonal skills to prepare for a rapidly evolving workplace environment. The

knowledge and skills acquired and practiced will enable students to successfully perform and interact in a technology-driven society. Students enhance reading, writing, computing, communication, and critical thinking and apply them to the information technology environment.

Graphic Design and Illustration

Grade placement: 10-12

Credit: 1.0

Required prerequisite: Principles of Arts, Audio/Video Technology, and Communications

Careers in graphic design and illustration span all aspects of the advertising and visual communications industries. Within this context, in addition to developing knowledge and skills needed for success in the Arts, Audio/Video Technology, and Communications career cluster, students will be expected to develop an understanding of the industry with a focus on fundamental elements and principles of visual art and design.

Audio/Video Production

Grade placement: 11 – 12

Credit: 1.0

Required prerequisite: Principles of Arts, Audio/Video Technology, and Communications

Careers in audio and video technology and film production span all aspects of the audio/video communications industry. In addition to developing technical knowledge and skills, students will be expected to develop an understanding of the industry with a focus on pre-production, production, and post-production audio and video activities.

Commercial Photography

Grade placement: 10-12

Credit: 1.0

Required prerequisite: Principles of Arts, Audio/Video Technology, and Communications

Careers in commercial photography require skills that span all aspects of the industry from setting up a shot to delivering products in a competitive market. Students will be expected to develop an understanding of the commercial photography industry with a focus on creating quality photographs.

Printing and Imaging Technology

Grade placement: 11-12

Credit: 1.0

Required prerequisite: Principles of Arts, Audio/Video Technology, and Communications

Careers in printing span all aspects of the industry, including prepress, press, and finishing and bindery operations. Within this context, in addition to developing technical knowledge and skills needed for success in the Arts, Audio/Video Technology, and Communications career cluster, students will be expected to develop an understanding of the printing industry with a focus on prepress and desktop publishing.

Professional Communications

Grade placement: 11 -12

Credit: 1.0

Required prerequisite: Principles of Arts, Audio/Video Technology, and Communications

Professional Communications blends written, oral, and graphic communication in a career-based environment. Careers in the global economy require individuals to be creative and have a strong background in computer and technology applications, a strong and solid academic foundation, and a proficiency in professional oral and written communication. Within this context, students will be expected to develop and expand the ability to write, read, edit, speak, listen, apply software applications, manipulate computer graphics, and conduct Internet research.

BUSINESS, MANAGEMENT AND ADMINISTRATION

Principles of Business, Marketing, and Finance

Grade placement: 9-11

Credit: 1.0

In Principles of Business, Marketing, and Finance, students gain knowledge and skills in economies and private enterprise systems, the impact of global business, marketing of goods and services, advertising, and product pricing. Students analyze the sales process and financial management principles. This course allows students to reinforce, apply, and transfer academic knowledge and skills to a variety of interesting and relevant activities, problems and settings in business, marketing, and finance.

Business Information Management I

Grade placement: 10 -12

Credit: 1.0

Required prerequisite: Principles of Business, Marketing, and Finance

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 word-processing documents, develop a spreadsheet, formulate a database, and make an electronic presentation using appropriate software.

Business Information Management II

Grade placement: 11-12

Credit: 1.0

Required prerequisite: Business Information Management I

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.

Accounting I

Grade placement: 10-12

Credit: 1.0

Required prerequisite: Principles of Business, Marketing, and Finance

Students investigate the field of accounting, including how it is impacted by industry standards as well as economic, financial, technological, international, social, legal, and ethical factors. Students reflect on this knowledge as they engage in the process of recording, classifying, summarizing, analyzing, and communicating accounting information. Students formulate and interpret financial information for use in management decision making.

Accounting II

Grade placement: 11-12

Credit: 1.0

Required prerequisite: Accounting I

Students continue the investigation of the field of accounting, including how it is impacted by industry standards as well as economic, financial, technological, international, social, legal, and ethical factors. Students reflect on this knowledge as they engage in various managerial and cost accounting activities. Students formulate and interpret financial information for use in management decision making.

Practicum in Business Management and Administration

Grade placement: 12

Credit: 2.0

Required prerequisite: 1.5 credits completed from the courses in the Business, Management pathway prior to enrollment in the Practicum.

The Practicum 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 economical, 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 have the opportunity to work in the Smart Financial Credit Union branch located on our campus.

MARKETING, SALES AND SERVICE

Principles of Business, Marketing, and Finance

Grade placement: 9-11

Credit: 1:0

In Principles of Business, Marketing, and Finance, students gain knowledge and skills in economies and private enterprise systems, the impact of global business, marketing of goods and services, advertising, and product pricing. Students analyze the sales process and financial management principles. This course allows students to reinforce, apply, and transfer academic knowledge and skills to a variety of interesting and relevant activities, problems and settings in business, marketing, and finance.

Sports and Entertainment Marketing

Grade placement: 10-12

Credit: .5-1.0

Required prerequisite: Principles of Business, Marketing, and Finance

This course will provide students with a thorough understanding of the marketing concepts and theories that apply to sports and sporting events and entertainment. The areas this course will cover include basic marketing, target marketing and segmentation, sponsorship, event marketing, promotions, sponsorship proposals, and implementation of sports and entertainment marketing plans. This course will also provide students an opportunity to develop promotional plans, sponsorship proposals, endorsement contracts, sports and entertainment marketing plans, and evaluation and management techniques.

Retailing and E-tailing

Grade placement: 10-12

Credit: .5-1.0

Required prerequisite: Principles of Business, Marketing, and Finance

Students will have the opportunity to develop skills that involve electronic media techniques necessary for a business to compete in a global economy. Students will coordinate online and off-line marketing. Students will demonstrate critical-thinking skills using decision-making models, case studies, various technologies, and business scenarios.

Entrepreneurship

Grade placement: 11 -12

Credit: .5-1.0

Required prerequisite: Principles of Business, Marketing, and Finance

Students will gain the knowledge and skills needed to become an entrepreneur. Students will learn the principles necessary to begin and operate a business. The primary focus of the course is to help students understand the process of analyzing a business opportunity, preparing a business plan, determining feasibility of an idea using research, and developing a plan to organize and promote the business and its products and services. In addition, students understand the capital required, the return on investment desired, and the potential for profit.

Career Prep in Marketing Dynamics

Grade placement: 11 – 12

Credit: 2.0

Required prerequisite: 1.5 credits completed from the courses in the Business or Marketing Pathways prior to enrollment in Career Prep. Students in Lamar’s Business Administration Magnet Program are not eligible for Career Prep.

Through course required employment, students gain knowledge and skills that help them become proficient in one or more of the marketing functional areas. Students will illustrate appropriate management and research skills to create the marketing mix. This course covers technology, communication, and customer-service skills. The practicum is designed to give students supervised practical application of previously studied knowledge and skills. Practicum experiences can occur in a variety of locations appropriate to the nature and level of experience. The practicum course is a paid experience for students participating in a coherent sequence of career and technical education courses in marketing education.

HOSPITALITY AND TOURISM

Principles of Hospitality and Tourism

Grade placement: 9-11

Credit: 1.0

The hospitality and tourism industry encompasses lodging; travel and tourism; recreation, amusements, attractions, and resorts; and restaurants and food beverage service. The hospitality and tourism industry maintains the largest national employment base in the private sector. Students use knowledge and skills that meet industry standards to function effectively in various positions within this multifaceted industry. Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.

Restaurant Management

Grade placement 10-12

Credit: 1.0

Required prerequisite: Principles of Hospitality and Tourism

This course will emphasize the principles of planning, organizing, staffing, directing, and controlling the management of a variety of food service operations. The course will provide insight into the operation of a well-run restaurant. Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.

Culinary Arts

Grade placement: 10-12

Credit: 1.0

Required prerequisites: Restaurant Management and Teacher Approval

Culinary Arts begins with the fundamentals and principles of the art of cooking and the science of baking and includes management and production skills and techniques.

Practicum in Culinary Arts

Grade placement: 11-12

Credits: 2.0

Required prerequisites: Culinary Arts and Teacher Approval

This course is a two period block that provides occupationally specific opportunities for students participating in a unique learning experience. Students in Practicum for Culinary Arts will learn marketable business, catering and technical culinary skills in Lamar's *Café M*. Students may also participate as employees in a partnership with Rice University's Culinary Program. They must apply, interview and show proficiency in performance-based assessments.

SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS

Concepts of Engineering and Technology

Grade placement: 9-10

Credit: 1.0

Concepts of Engineering and Technology provide an overview of the various fields of science, technology, engineering, and mathematics and their interrelationships. Students will use a variety of computer hardware and software applications to complete assignments and projects. Upon

completing this course, students will have an understanding of the various fields and will be able to make informed decisions regarding a coherent sequence of subsequent courses. Further, students will have worked on a design team to develop a product or system. Students will use multiple software applications to prepare and present course assignments.

Engineering Design and Presentation

Grade placement: 10-12

Credit: 1.0

Required prerequisite: Concepts of Engineering and Technology

Students enrolled in this course will demonstrate knowledge and skills of the process of design as it applies to engineering fields using multiple software applications and tools necessary to produce and present working drawings, solid model renderings, and prototypes. Students will use a variety of computer hardware and software applications to complete assignments and projects. Through implementation of the design process, students will transfer advanced academic skills to component designs. Additionally, students explore career opportunities in engineering, technology, and drafting and what is required to gain and maintain employment in these areas.

Principles of Technology

Grade placement: 11-12

Credit: 1.0

Required prerequisite: Concepts of Engineering and Technology

In Principles of Technology, students conduct field investigations, use scientific methods during investigations, and make informed decisions using critical thinking and scientific problem solving. Various systems will be described in terms of space, time, energy, and matter. Students will study a variety of topics that include laws of motion, conservation of energy, momentum, electricity, magnetism, thermodynamics, and characteristics and behavior of waves.

Robotics and Automation

Grade placement: 11-12

Credit: 1.0

Required prerequisite: Concepts of Engineering and Technology

Students enrolled in this course will demonstrate knowledge and skills necessary for the robotic and automation industry. Through implementation of the design process, students will transfer advanced academic skills to component designs in a project-based environment. Students will build prototypes or use simulation software to test their designs. Additionally, students explore career opportunities, employer expectations, and educational needs in the robotic and automation industry.