Office of Vocational Education and Workforce Development

Approval to begin the Administrative Procedures Act process: to revise *The Mississippi Secondary and Postsecondary Curriculum Frameworks*

EXECUTIVE SUMMARY

The following secondary and postsecondary curriculum frameworks are recommended for approval:

Secondary Programs

- Agricultural and Natural Resources Technology
- Aquaculture Technology
- Culinary and Related Foods Technology
- Forestry
- Outboard Marine Engine Mechanics
- Small Engine Repair

Postsecondary Programs

- Automotive Technology
- Automotive Machinist Technology
- Computer Information Systems Technology
- Court Reporting
- Dental Assisting Technology
- Drafting and Design Cluster
- EMT Basic
- Machine Tool Technology
- Marine Engine Mechanics
- Medical Billing and Coding Technology
- Paralegal Technology
- Physical Therapy Assistant
- Radiologic Technology
- Residential Carpentry
- Surgical Technology
- Tool and Die Technology
- Veterinary Technology
- Welding and Cutting Technology
- Well Construction Technology
- Work-Based Learning

Each curriculum framework follows the established format for secondary or postsecondary vocational and technical programs. Draft curricula for each program were revised and reviewed with input from local district personnel and business and industry collaborators. Approved secondary curricula will be disseminated for implementation in the 2006-2007 school year. Postsecondary curricula will be approved for implementation in the 2007-2008 school year, and must be implemented by July 1, 2008.

The *Executive Summary-Secondary Curricula Frameworks* contains the following elements for each revised secondary curricula:

- Program Description
- CIP Code and CIP Name
- Course Outline
- Curriculum Framework
  >Student Competencies
  >Suggested Student Objectives

The *Executive Summary-Postsecondary Curricula Frameworks* contains the following elements for each revised postsecondary curricula:

- Program Description
- Suggested Course Sequence
- Listing of Courses
  >Course Name
  >Course Abbreviation
  >Classification
  >Description (including recommended number of lecture and lab contact hours)
  >Pre/Corequisites

All curricula frameworks are designed to provide local programs with a foundation that can be used to develop localized instructional management plans and course syllabi. Contents of each framework are not designed to limit the content of a course, but to provide a minimum baseline of instruction, which all programs must meet. Teachers, administrators, and instructional management personnel are encouraged to expand and enhance the statewide frameworks to better meet the needs of their students.

NOTE: The Office of Vocational Education and Workforce Development has provided printed, bound executive summaries for the curriculum frameworks. The completed documents are available upon request.

FRAMEWORKS FOR VOCATIONAL-TECHNICAL PROGRAMS REVISED IN 2005-2006

SECONDARY EXECUTIVE SUMMARY

2006

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FOREWORD

Secondary vocational-technical education programs in Mississippi are faced with many challenges resulting from sweeping educational reforms at the national and state levels. Schools and teachers are increasingly being held accountable for providing true learning activities to every student in the classroom. This accountability is measured through increased requirements for mastery and attainment of competency as documented through both formative and summative assessments.

The courses in this document reflect the statutory requirements as found in Section 37-3-49, Mississippi Code of 1972, as amended (Section 37-3-46). In addition, this curriculum reflects guidelines imposed by federal and state mandates (Laws, 1988, ch. 487, §14; Laws, 1991, ch. 423, §1; Laws, 1992, ch. 519, §4 eff. from and after July 1, 1992; Carl D. Perkins Vocational Education Act III, 1998; and No Child Left Behind Act of 2001).

Each secondary vocational-technical course consists of a series of instructional units which focus on a common theme. All units have been written using a common format which includes the following components:

- Unit Number and Title
- Suggested Time on Task - An estimated number of clock hours of instruction that should be required to teach the competencies and objectives of the unit. A minimum of 140 hours of instruction is required for each Carnegie unit credit. The curriculum framework should account for approximately 75-80 percent of the time in the course.
- Competencies and Suggested Objectives
  - A competency represents a general concept or performance that students are expected to master as a requirement for satisfactorily completing a unit. Students will be expected to receive instruction on all competencies.
  - The suggested objectives represent the enabling and supporting knowledge and performances that will indicate mastery of the competency at the course level.
- Suggested Teaching Strategies - This section of each unit indicates strategies that can be used to enable students to master each competency. Emphasis has been placed on strategies which reflect active learning methodologies. Teachers should feel free to modify or enhance these suggestions based on needs of their students and resources available in order to provide optimum learning experiences for their students.
- Suggested Assessment Strategies - This section indicates strategies that can be used to measure student mastery. Examples of suggested strategies could include rubrics, class participation, reflection, and journaling. Again, teachers should feel free to modify or enhance these suggested assessment strategies based on local needs and resources.

- Integrated Academic Topics, Workplace Skills, Technology Standards, and Occupational Standards - This section identifies related academic topics as required in the Subject Area Assessment Program (SATP) in Algebra I, Biology I, English II, and U. S. History from 1877, which are integrated into the content of the unit. It also identifies the general workplace skills as identified in the Secretary's Commission on Achieving Necessary Skills (SCANS) report as being critical for all workers in the 21st Century. In addition, national technology standards and occupational skills standards associated with the competencies and suggested objectives for the unit are also identified.
- References - A list of suggested references is provided for each unit. The list includes some of the primary instructional resources that may be used to teach the competencies and suggested objectives. Again, these resources are suggested and the list may be modified or enhanced based on needs and abilities of students and on available resources.

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AGRICULTURE EDUCATION

PROGRAM DESCRIPTION

AGRICULTURAL AND NATURAL RESOURCES TECHNOLOGY

Agriculture and Natural Resources is a program to introduce the student to the broad field of agriculture and natural resources, including the production of plants and animals and the management of natural resources. The program includes instruction in the applied sciences related to plant and animal production and natural resource conservation and management, as well as introducing the student to agribusiness management practices and maintenance of facilities and equipment. Students in the program will participate in active learning exercises including integral activities of the FFA organization and supervised experiences. Students who successfully complete the competencies in this program will possess fundamental knowledge and skills that can be used to secure entry level employment or as a foundation for continuing their education.

Industry standards are adapted from the publication *Career Cluster Resources for Agriculture, Food, and Natural Resources*, developed by the National Association of State Directors of Career and Technical Education.

COURSE OUTLINE

Agriculture and Natural Resources I

Course CIP Code: To Be Assigned

Course Description: Agriculture and Natural Resources I is designed to introduce the student to fundamental concepts and principles of the modern agricultural and natural resources industry. Emphasis is placed on career and leadership skills; basic principles of plant, animal, and soil science; and basic mechanical technologies in the field. (2 - 2½ Carnegie units depending on time spent in course)

Unit	Title	Hours*
1	Orientation/Careers/Leadership	23
2	Supervised Agricultural Experience (SAE) Programs	15
3	Animal Science	30
4	Plant Science	30
5	Soil Science	30
6	Agricultural Shop Operations and Safety	75

Agriculture and Natural Resources II

Course CIP Code: To Be Assigned

Course Description: Agriculture and Natural Resources II is designed to continue the exploration of fundamental concepts and principles associated with agriculture and natural resources. Emphasis is placed on the conservation and management of natural resources, agricultural business management practices, and mechanical technologies. (2-2½ Carnegie units depending on time spent in course)

Unit	Title	Hours*
1	Orientation/Careers/Leadership/	23
2	Natural Resources (Conservation and Management)	45
3	Agricultural Business Management and Processes	45
4	Agricultural Construction	45
5	Agricultural Equipment Operation and Maintenance	45

* Number of hours is an estimation of the amount of time that should be spent in the course on the unit of instruction. One week of instruction is equal to approximately 7.5 hours.

Course Name: Agricultural and Natural Resources I
Course CIP Code: To be Assigned

Competencies and Suggested Objectives

1. Describe the scope and importance of the agriculture and natural resources industry.
    a. Identify the major areas of the agriculture and natural resources industry and describe their importance from an economic and environmental standpoint.
    b. Compare careers available in agriculture and natural resources.
    c. Analyze careers according to the factors influencing career choices
2. Identify basic safety rules and behavior.
    a. Identify safety rules and behavior for the classroom.
    b. Identify safety rules and behavior for the shop and laboratory areas.
3. Explore FFA career development events and other activities that promote student achievement.
    a. Describe the history of the FFA.
    b. Identify career development events and awards in the FFA.
4. Develop and present a three to five minute speech on an agriculture or natural resource topic.
    a. Discuss guidelines for preparing a successful speech, speech outlining, resource development, writing skills, and presentation skills.
    b. Present a three to five minute speech.
5. Apply the purposes and functions of parliamentary procedure.
    a. Identify the purpose of parliamentary procedure.
    b. Describe the methods of voting.
    c. Demonstrate how to receive and dispose of a main motion.
6. Identify the purposes, requirements, and types of the SAE programs.
    a. Explain the purposes of the SAE program.
    b. Identify the requirements of the SAE.
    c. Compare the types of SAE programs.
    d. Plan SAE activities for the coming year.
7. Maintain agriculture record keeping for the SAE.
    a. Maintain income and expense records.
    b. Prepare inventory records.
    c. Compute a net worth statement.
    d. Maintain records of supplementary and improvement activities and leadership development activities.
8. Select proper animal for specific farm enterprise or for participation in livestock shows and sales.
    a. Identify types of animals for use in a specific farm enterprise or in a livestock show or sale including beef, dairy, swine, poultry, horses, aquaculture, and other species of local interest.
    b. Describe characteristics of breeds of livestock used in a specific farm enterprise or in a livestock show or sale including beef, dairy, swine, poultry, horses, aquaculture, and other species of local interest.

9. Compare and contrast the anatomy and physiology of beef, dairy, swine, poultry, horses, aquaculture, and other species of local interest with special attention to:
    a. embryonic development
    b. digestion
    c. circulation
    d. excretion
    e. reproduction
10. Discuss nutritional requirements and rations for beef, dairy, swine, poultry, horses, aquaculture, and other species of local interest.
    a. Identify terms related to animal nutrition.
    b. Identify nutrient groups and their functions.
    c. Compare and contrast nutritional requirements for different species.
11. Explain management practices for maintaining health in beef, dairy, swine, poultry, horses, aquaculture, and other species of local interest.
    a. Examine management practices for maintaining animal health.
    b. Examine causes and preventions of disease and parasites.
    c. Investigate the economic impact of sound herd health management practices.
12. Explain procedures for managing livestock reproduction.
    a. Define terms associated with livestock reproduction.
    b. Describe periods of estrus and gestation in livestock.
    c. Read and interpret Estimated Progeny Difference (EPD).
    d. Explore new technologies in livestock reproduction such as embryo transfer, cloning, gender selection, and genetic engineering.
13. Discuss the anatomy and physiology of a plant.
    a. Describe the function and purpose of the different parts of a basic plant cell.
    b. Identify and describe the vegetative parts of a plant.
    c. Identify and describe the reproductive parts of a plant.
    d. Identify the relationship among photosynthesis, respiration, and translocation within a plant.
    e. Discuss the storage of foods within the plant.
14. Describe how plants are classified.
    a. Describe the different life cycles of plants.
    b. Classify plants according to number of cotyledons.
    c. Describe the binomial classification plant system.
    d. Identify and describe plants that are categorized as cereal crops, oil crops, fiber crops, forage and pasture crops, horticultural crops, and specialty crops.
15. Explore the processes of plant reproduction.
    a. Describe the process of seed formation including parts of a seed.
    b. Calculate germination rate for a given batch of seed.
    c. Identify the different forms of asexual reproduction including tissue culture.
16. Explore plant nutrition.
    a. Differentiate among primary, secondary, and micro plant nutrients required for proper plant growth.
    b. Describe the functions of the primary plant nutrients.
    c. Examine the analysis of a complete fertilizer.
    d. Investigate the relationship of soil pH to soil nutrient availability.

e. Demonstrate the procedure to take a soil sample for fertility testing.
f. Perform a nutritional and pH analysis of a soil.
g. Calculate fertilizer needed for a specific application.

17. Describe plant pests and their control.
    a. Identify common plant insects.
    b. Identify common weeds.
    c. Identify common plant diseases.
    d. Discuss and illustrate the different methods of pest control.
    e. Explore the concept of integrated pest management.
18. Discuss the factors that affect soil formation and texture.
    a. Identify and discuss the factors that affect soil formation including weather, slope, and drainage.
    b. Identify the components of a soil.
    c. Identify the common layers of a soil profile.
    d. Classify soil texture by sand, silt, and clay content.
19. Contrast types of soil erosion and controls.
    a. Identify the different types of soil erosion.
    b. Identify different practices that can be used to control erosion.
    c. Apply erosion control practices to given situations.
20. Apply the land classification system.
    a. Identify factors that determine the capability class of land as related to erosion and highest potential use.
    b. Classify a given location according to its highest potential use.
21. Evaluate a given location for a home site.
    a. Identify factors that should be evaluated in selecting a home site.
    b. Classify a given location using home site selection criteria.
22. Identify safety procedures and safety devices for the agricultural workplace.
    a. Describe procedures for maintaining a clean and safe workplace environment.
    b. Demonstrate safe use of all protective devices.
23. Apply general safety rules pertaining to hand and stationary power tools.
    a. Demonstrate rules for hand tools including basic operation, danger points, and observer safety.
    b. Demonstrate rules for power tools including basic operation, danger point, observer safety and electrical safety.
24. Explain the relationship between volts, amps, and watts.
    a. Describe the applications of volts, amps and watts.
    b. Perform basic calculations of Ohm’s law using volts, amps, and watts.
25. Describe the safety issues and devices associated with electricity.
    a. Discuss the causes of electrical accidents including short circuits, overloads, improper insulation, and presence of moisture.
    b. Demonstrate procedures for preventing electrical accidents such as use of proper tools, disconnecting of power when working on circuits (lockout-tagout), proper grounding and safety devices, and proper working environment.
    c. Discuss the use of breakers, fuses, ground fault connector interrupters and control switches in electrical safety.

26. Identify and use electrical tools and materials.
    a. Demonstrate use of the voltmeter, amp meter, pliers, screwdriver, wire cutters, and wire strippers.
    b. Demonstrate the installation of wires, insulation materials, control devices, overload devices, and conduit.
27. Identify common equipment and tools used in welding.
    a. Identify major types of welders including the shield metal arc welding (SMAW), gas metal arc welding (GMAW), and gas tungsten arc welding (GTAW).
    b. Identify tools and equipment used with each type of welding.
28. Apply safety precautions used in welding.
    a. Describe eye protection, proper apparel, ventilation, and materials handling procedures.
    b. Demonstrate the use of eye protection, proper apparel, and materials handling procedures.
29. Describe different welding supplies used in welding.
    a. Identify low hydrogen, mild steel and alloy welding electrodes.
    b. Identify the different types of gases involved in the SMAW process.
30. Compare the different types of welds.
    a. Identify the bead, groove, and fillet weld.
    b. Identify the different types of weld joints including T, lap, corner, edge, and butt.
31. Perform various welding techniques.
    a. Perform welding techniques including start, stop, and restart, pad construction, and flat butt construction.
    b. Utilize various welding equipment including SMAW, GMAW, and GTAW.
32. Apply safety procedures for using oxyacetylene equipment.
    a. Identify parts of the oxyacetylene welding and cutting equipment.
    b. Discuss and demonstrate safety procedures of use of oxyacetylene equipment.
33. Identify the different types of oxyacetylene flames.
    a. Compare neutral, oxidizing, and carburizing flames.
    b. Describe applications of the three different types of oxyacetylene flames.
34. Assemble and operate oxyacetylene welding and cutting equipment.
    a. Setup equipment for cutting operations to include selecting the proper tip and setting regulator pressures.
    b. Practice the “pushing the puddle” procedure for heat control in welding.
    c. Make a cut in mild steel.
35. Examine the major parts and function of a small engine.
    a. Identify the major systems of a small gasoline engine to include ignition, air intake, lubrication, power train, cooling, exhaust, and fuel systems. Identification will include the purpose or function of each component.
    b. Identify and demonstrate the use of hand tools and diagnostic instruments.
    c. Trace events in the intake, compression, power, and exhaust strokes of a four cycle small engine.
    d. Trace events in the intake-compression and power-exhaust strokes of a two cycle small engine.
    e. Compare differences in two- and four-stroke cycle engines to indicate absence or presence of oil sump, mixed fuel, and labeling indicating stroke type.

36. Perform preventive maintenance and troubleshooting on a small engine.
    a. Service a crankcase breather, air cleaner, carburetor, governor, starter, and engine oil.
    b. Diagnose ignition, fuel, and engine control problems.

Course Name: Agricultural and Natural Resources Technology II
Course CIP Code: To be Assigned

Competencies and Suggested Objectives

1. Review safety rules and behavior.
   a. Identify safety rules and behavior for the classroom.
   b. Identify safety rules and behavior for the shop and laboratory areas.
2. Select careers in agricultural and natural resources.
   a. Compare the careers available in Agriculture and Natural Resources.
   b. Analyze careers according to the factors influencing career choices.
3. Develop an individual FFA activity plan.
   a. Identify FFA activities and programs that contribute to career advancement and individual achievement.
   b. Select and document FFA activities and programs that contribute to personal development.
4. Develop and present a three to five minute multi-media presentation on an agriculture or natural resource topic.
   a. Discuss guidelines for preparing a successful presentation preparation, resource development, writing skills, and presentation skills.
   b. Present a three to five minute speech.
5. Apply the principles of leadership and personal development.
   a. Identify the principles of leadership and personal development.
   b. Demonstrate leadership and personal development.
6. Maintain Supervised Agricultural Experience records.
   a. Maintain records of income and expenses related to SAE activities.
   b. Maintain records of skills learned through SAE.
   c. Maintain other records associated with SAE supplementary projects (improvement projects, community service projects, etc.).
7. Explore the basic concepts of natural resource conservation and management.
   a. Classify renewable and non-renewable natural resources.
   b. Discuss the concept of sustainability as related to natural resources and the environment.
8. Explore issues related to agriculture and the environment.
   a. Discuss the concept of an environment and how the environment affects the quality of life.
   b. Discuss agricultural issues that affect the environment.
   c. Describe agricultural practices and policies designed to protect and enhance the environment.
   d. Discuss issues related to disposal of waste products in agriculture.
9. Explore issues related to air and water quality and conservation/preservation.
   a. Discuss the sources of water and potential threats to each source.
   b. Discuss sources of air pollution and precautions that can be taken to reduce or prevent pollution.
   c. Explore ways in which agricultural enterprises protect and enhance air and water quality.

10. Explore concepts and practices related to wildlife conservation and management.
    a. Create a diagram illustrating the interrelationships among the soil, plants, animals, and humans.
    b. Discuss the concept of a food web.
    c. Identify and discuss conservation and management of wildlife.
    d. Research a given species of wildlife to determine habitat and management practices.
11. Explore basic principles of agricultural economics and marketing.
    a. Describe and contrast the types of business organizations.
    b. Differentiate between wholesale and retail marketing.
    c. Identify factors that influence pricing including the law of supply and demand and consumer characteristics.
12. Discuss principles of agricultural finance and credit.
    a. Compare sources of agricultural credit.
    b. Discuss the importance of a personal and business credit rating.
    c. Discuss other banking services for agriculture.
13. Discuss taxes, insurance, and business law related to agriculture.
    a. Describe the forms and practices associated with income tax preparation.
    b. Identify insurance needs for an agricultural business.
    c. Discuss essential elements of a contract and other common business agreements and laws.
14. Explore principles of property acquisition and transfer.
    a. Discuss principles of property acquisition and transfer.
    b. Apply legal land descriptions.
    c. Discuss principles and practices related to land surveys.
15. Explore the use of geographic information systems (GIS) in agricultural enterprises.
    a. Identify components of an agricultural GIS system.
    b. Explore the principles and applications of precision farming operations.
16. Select and demonstrate proper equipment for a specific construction job.
    a. Identify tools and equipment for a specific job.
    b. Select and use hand and power tools safely and properly.
    c. Demonstrate mathematical concepts in measurement.
17. Develop a bill of materials for a specific job.
    a. Compare dimensions, kind, and amount of materials needed.
    b. Explain the use of wood, metal fasteners, wire, concrete, and roofing materials.
    c. Design a structure to include justification, size of structure, materials needed, and cost.
18. Identify the different roof types and materials used in roof construction.
    a. Describe and illustrate the construction and applications of gable, flat, and gambrel roofs.
    b. Describe the use of various roofing materials to include tin, wood, tar, asphalt, and fiberglass shingles.
19. Lay out and cut common rafters.
    a. Demonstrate procedure to lay out common rafters.
    b. Design models or patterns to lay out and cut common rafters and/or doorsteps.

20. Construct various types of foundations, walls supports, and roof structures.
    a. Identify the parts and terms of structural members of a building (foundation, walls, ceilings, etc.).
    b. Identify structural problems and preventions.
    c. Describe slab and conventional foundations.
    d. Plan foundations for frame buildings and forms for concrete slab buildings.
    e. Construct framing and wall support.
21. Inspect and maintain agricultural equipment.
    a. Describe procedures for inspecting coolant, engine oil, tire pressure, hydraulic fluid, gear oil, and air filter.
    b. Perform operation and maintenance checks on agricultural equipment according to manufacturer's specifications.
22. Repair agricultural machinery and equipment.
    a. Assess parts to repair or replace parts based on manufacturer's specifications and observation.
    b. Perform maintenance for required parts, reassemble, adjust, and test.
23. Perform reconditioning of agricultural machinery and equipment.
    a. Recondition agricultural machinery and equipment.
    b. Paint agricultural machinery and equipment.
24. Perform welds with shielded metal arc welding (SMAW) equipment.
    a. Fabricate a single v-groove butt welding in the horizontal position.
    b. Fabricate a single v-groove butt weld in the vertical up position.
25. Perform welds with gas metal arc welding (GMAW) equipment.
    a. Fabricate a single v-groove butt weld in the horizontal position.
    b. Fabricate a single v-groove butt weld in the vertical up position.
26. Cut metal with plasma arc cutter.
    a. Identify safety rules and practices associated with a plasma arc cutter.
    b. Identify parts and functions of a plasma arc cutter.
    c. Demonstrate setup of plasma arc cutter.
    d. Operate a plasma arc cutter to make cuts in steel.

PROGRAM DESCRIPTION

AQUACULTURE

Aquaculture is an instructional program designed to prepare students to enter occupations related to the field. Upon completion of the two-year program, graduates may become employed at the entry level or further pursue the field through the postsecondary program. The concepts taught in this program include aquatic animals and plants, basic water management, hatchery and culture methods, and aquatic farm management.

Industry standards were adapted from the publication *Career Cluster Resources for Agriculture, Food, and Natural Resources* which are copyrighted by the National Association of State Directors of Career Technical Education.

COURSE OUTLINE

Aquaculture I

Course CIP Code: 01.0303

Course Description: The first year of the aquaculture program is designed to introduce basic concepts used in aquaculture farm production and maintenance. The material emphasizes a strong science background which is taught through the application of concepts. These basic concepts provide an interesting background in the field of aquaculture. (2-2 1/2 Carnegie units depending upon time spent in the course)

Unit	Title	Hours
1	History of Aquaculture	4.5
2	Overview of Aquaculture	9.0
3	Safety	9.0
4	Animals and Plants in Aquaculture	12.0
5	Basic Water Management I	22.5
6	Hatchery I	30.0
7	Culture Methods I	22.5
8	Aquatic Health Management I	30.0
9	Aquatic Farm Management I	37.5
10	Application of General Practices of Aquaculture to Specific Species I	52.5
11	Special Topics in Aquaculture I	22.5

Aquaculture II

Course CIP Code: 01.0306

Course Description: Aquaculture II is an extension of Aquaculture I in that the course completes preparation for employment at the entry level or a continuation into the postsecondary program. This course extends the science background through the application of concepts. Units of study for this course provide a working knowledge of aquaculture farm production and maintenance and require independent performance of tasks. (2-2 1/2 Carnegie units depending upon time spent in the course)

Unit	Title	Hours
1	History and Current Status of Aquaculture	13.5
2	Safety	9.0
3	Plants and Animals in Aquaculture	12.0
4	Basic Water Management II	22.5
5	Hatchery II	45.0
6	Culture Methods II	30.0
7	Aquatic Health Management II	22.5
8	Aquatic Farm Management II	37.5
9	Application of General Practices of Aquaculture to Specific Species II	22.5
10	Aquatic Resources Management	25.0
11	Independent Research Project for Aquaculture II	6.0
12	Special Topics in Aquaculture II	22.5

Course Name: Aquaculture I
Course CIP Code: 01.0303

Competencies and Suggested Objectives

1. Comprehend the origin and development of aquaculture.
   a. Define aquaculture.
   b. Examine the relationship between fishing and aquaculture.
   c. Associate the development of aquaculture throughout history.
   d. Trace the origin of aquaculture in the United States to its current status.
2. Examine aquaculture in the present and future.
   a. Determine the current status and practices in aquaculture in the United States.
   b. Determine the current status and practices in aquaculture in other countries.
   c. Analyze the differences between aquaculture in the United States and other parts of the world.
   d. Utilize periodicals, online sources, and other references to keep abreast of current aquaculture developments.
3. Determine the driving forces of aquaculture as an industry.
   a. Discuss the factors and trends affecting aquaculture present and future.
   b. Examine the different career opportunities in aquaculture.
4. Verify safety procedures for school and classroom.
   a. Demonstrate the safety procedures as prescribed by the local school regulations.
5. Demonstrate proper procedures of first aid.
   a. Perform first aid procedures properly.
6. Describe proper safety procedures for aquaculture.
   a. Discuss general safety procedures.
   b. Demonstrate proper electrical safety procedures.
   c. Describe and discuss proper water safety.
   d. Describe and discuss the proper mechanical safety procedures.
   e. Describe and discuss the proper biological hazards.
   f. Describe and discuss the proper safety procedures related to chemical hazards.
   g. Describe and discuss the proper safety procedures related to the effects of weather to include sun, heat, and lightning.
7. Associate basic biological principles related to aquaculture.
   a. Discuss biological principles to include respiration and photosynthesis.
8. Interpret the relationship of anatomy and physiology to aquaculture.
   a. Identify the external and internal anatomy of crustaceans.
   b. Identify the external and internal anatomy of mollusks.
   c. Identify the external and internal anatomy of fish.
   d. Dissect crustaceans, mollusks, and fish.
   e. Identify the basic morphology of aquatic macroalgae, microalgae, and macrophytes.
9. Apply a working knowledge of anatomy to identify different species of fish.
   a. Develop a working knowledge of taxonomic references.
   b. Categorize various fish species according to external and internal anatomy.

10. Compare and contrast aquatic and terrestrial farm animals.
    a. Discuss the relationship of aquatic and terrestrial animals.
11. Determine characteristics in the selection of aquaculture species.
    a. List the characteristics of various aquatic species.
    b. Determine appropriate species for an aquaculture facility.
12. Investigate the ecology of aquatic plants and animals in their natural habitat.
    a. Discuss the ecology of aquatic plants and animals in their natural habitat.
    b. Evaluate the ecology of aquatic plants and animals in their natural habitat.
13. Examine chemical and physical properties of water.
    a. Define terms related to chemical and physical properties of water.
    b. Measure water quality parameters using standard industry methods.
14. Identify mechanical and biological recirculation and filtration devices and systems.
    a. Discuss and illustrate methods and equipment for maintaining water quality and correcting water quality problems.
    b. Compare types of aeration devices and systems, their function, and maintenance.
15. Demonstrate the maintenance and operation of a hatchery.
    a. Describe the sexual reproduction process in fish, crustaceans, and mollusks.
    b. Describe and operate typical hatchery equipment used in producing eggs, larvae, and juveniles of catfish and shrimp.
    c. Produce and raise artemia, mosquito fish, and minnows as live food organisms.
    d. Raise catfish and shrimp juveniles to stocking size.
    e. Manage and maintain catfish and shrimp broodstock.
    f. Prepare, enumerate, and acclimate catfish and shrimp juveniles for stocking into growout systems.
16. Recognize and operate culture methods currently in use.
    a. Define culture methods.
    b. Discuss advantages and disadvantages of various culture methods.
    c. Select appropriate culture methods based on species and locale.
    d. Construct aquaculture cages.
    e. Stock, manage, sample, feed, and harvest trout from a cage culture system.
    f. Stock, manage, sample, feed, and harvest various species of fish and shrimp from ponds and raceways.
    g. Describe and discuss minor culture systems.
17. Discuss aquatic health management practices.
    a. Define and identify disease processes.
    b. Recognize the role of stress factors.
    c. Recognize signs of disease problems.
    d. List symptoms and causes of selected major diseases.
18. Examine the role of nutrition in aquatic species.
    a. Compare and contrast the major types of aquatic feed.
    b. Explore ingredients typically used in aquatic feed.
    c. Calculate feed rates and conversions.
19. Identify the principles of sound farm management.
    a. Outline obstacles other than those related to water quality or fish disease.
    b. Observe and perform processing, storage, and package of final product.
    c. Maintain equipment and facilities.

d. Recognize and utilize parts, tools, and methods used in PVC plumbing.
e. Discuss various marketing strategies.
f. Comprehend the importance of maintaining aquaculture records.
g. List informational sources of assistance.

20. Examine culture and management requirements specific to individual species.
    a. List and discuss the characteristics related specifically to the culture of catfish, crawfish, trout, tilapia, hybrid bass, baitfish, prawns, tropicals, ornamentals, bluegills, largemouth bass, and flounder.
    b. Identify minor aquaculture crops.
    c. Raise and care for catfish, crawfish, trout, tilapia, hybrid bass, baitfish, prawns, tropicals, ornamentals, bluegills, largemouth bass, and flounder.
21. Investigate new and emerging technologies, practices, trends, and issues associated with aquaculture.
    a. Prepare a report on a new and emerging technology associated with aquaculture.
    b. Prepare a report on a current trend or issue associated with aquaculture.
22. Demonstrate related academic skills and workplace skills associated with aquaculture.
    a. Complete a cooperative project (paper, presentation, or demonstration) associated with an academic subject and aquaculture.
    b. Practice human relations skills (team participation, client/customer service, leadership, negotiation, working with culturally diverse groups, etc.) related to aquaculture.
    c. Research work ethics and employer expectations of employees in aquaculture.
23. Examine trends and changes related to aquaculture and global economic factors.
    a. Define and discuss the concept of global economics and competition.
    b. Describe global economic factors and competition as related to aquaculture.
24. Explore the opportunities for aquaculturists in design, construction, and maintenance of ornamental fish ponds.
    a. Investigate and critique existing ornamental fish ponds.
    b. Design an ornamental fish pond.

Course Name: Aquaculture II
Course CIP Code: 01.0306

Competencies and Suggested Objectives

1. Comprehend the history and current status of aquaculture.
   a. Trace the origin of aquaculture to its current status.
   b. Describe and discuss recent developments in aquaculture and relate them to future prospects.
2. Examine career opportunities in aquaculture and related fields.
   a. Research the career opportunities in aquaculture and related fields.
   b. Discuss the skills needed for a career in aquaculture.
3. Verify safety procedures for school and classroom.
   a. Demonstrate the safety procedures as prescribed by the local school regulations.
4. Demonstrate proper procedures of first aid.
   a. Perform first aid procedures properly.
5. Review proper safety procedures for aquaculture.
   a. Discuss general safety procedures.
   b. Demonstrate proper electrical safety procedures.
   c. Review and discuss proper water safety.
   d. Review and discuss the proper mechanical safety procedures.
   e. Review and discuss the proper safety procedures related to biological hazards.
   f. Review and discuss the proper safety procedures related to chemical hazards.
   g. Review and discuss the proper safety procedures related to the effects of weather to include sun, heat, and lightning.
6. Review basic biological principles related to aquaculture.
   a. Discuss the basic biological principles related to aquaculture.
   b. Discuss the basic principles of genetics as related to aquaculture.
7. Examine the relationship between the anatomy and physiology of aquatic organisms to the environment in which they live.
   a. Review and identify the internal and external structure of fish.
   b. Review and identify the internal and external structure of crustaceans.
   c. Review and identify the internal and external structure of mollusks.
   d. Dissect fish, mollusks, and crustaceans.
   e. Examine the morphology of aquatic plants.
8. Review aquatic and terrestrial farm animals.
   a. Discuss the relationship of aquatic and terrestrial farm animals.
9. Review characteristics used in the selection of aquaculture species.
   a. List desirable characteristics of the “ideal” aquaculture species.
   b. Choose potential aquaculture crops for a variety of environmental, economic, and topographic criteria.
10. Interpret chemical and physical properties of water.
    a. Review terms related to chemical and physical properties of water.
    b. Measure water quality parameters using standard industry methods, determine effects of various factors on quality, and recommend corrective measures for poor quality.

c. Discuss the effects of weather, biomass, soil, chemicals, and feeding on water quality.
d. Maintain accurate records on water quality parameters in all types of production systems.

11. Review identification of mechanical and biological recirculation and filtration devices and systems.
    a. Review and illustrate methods and equipment for maintaining water quality and predicting and correcting water quality problems.
    b. Review comparison of types of aeration devices and systems, their function, and maintenance procedures.
12. Maintain and operate a hatchery.
    a. Review the sexual reproduction process in fish, crustaceans, and mollusks.
    b. Operate typical hatchery equipment used in producing eggs, larvae, and juveniles of catfish, shrimp, bass, and tilapia.
    c. Produce and raise artemia and other live food sources.
    d. Raise catfish, shrimp, bass, and tilapia juveniles to stocking size.
    e. Manage and maintain broodstock of catfish, shrimp, crawfish, bass, oyster, etc.
    f. Prepare, enumerate, and acclimate catfish, shrimp, bass, tilapia, crawfish, ornamentals, and oyster juveniles for stocking into growout systems.
    g. Hatch and attempt to rear fry and juveniles of one ornamental fish, one bait fish, and one marine species.
    h. Maintain, clean, and repair hatchery equipment.
13. Recognize and operate culture methods currently in use.
    a. Review definition of culture methods.
    b. Review advantages and disadvantages of various culture methods.
    c. Review selection of appropriate culture methods based on species and locale.
    d. Construct culture systems.
    e. Stock, manage, sample, feed, and harvest appropriate species from culture system constructed in objective d.
    f. Review minor culture systems.
    g. Stock, sample, manage, feed, and harvest fish from ponds.
    h. Comprehend the role of biofiltration in aeration in aquaculture.
14. Review aquatic health management practices.
    a. Review definitions and identity of disease processes.
    b. Review the role of stress factors.
    c. Review signs of disease problems.
    d. List and identify symptoms and causes of selected major diseases.
    e. Review treatment options.
    f. Calculate and administer treatment levels.
15. Examine the role of nutrition in aquatic species.
    a. Review definitions and identifications of the digestive system.
    b. Explore the role of proteins, carbohydrates, fats, vitamins, and minerals.
    c. Review the major types of aquatic feed.
    d. Explore and analyze ingredients typically used in aquatic feed.
    e. Review the calculation of feed rates and conversions.

f. Conduct a scientific nutrition study on cultured fish using student-formulated feed.

16. Demonstrate the principles of sound farm management.
    a. Determine obstacles other than those related to water quality or fish disease.
    b. Review processing, storage, and package of final product.
    c. Simulate various marketing strategies.
    d. Comprehend the importance of maintaining aquaculture records.
    e. Interpret regulations and permits in aquaculture.
    f. List informational sources of assistance as a continuation of Aquaculture I.
    g. Prepare a species profile on a chosen or assigned aquaculture species.
    h. Describe and design recreational aquaculture facilities.
    i. Describe transportation methods for aquaculture crops.
17. Review and implement culture and management requirements specific to individual species.
    a. List and observe the characteristics related specifically to the culture of catfish, crawfish, trout, tilapia, hybrid bass, bait fish, prawns, tropicals, ornamentals, oysters, sturgeons, paddlefish, flounder, clams, and redfish.
    b. Review minor aquaculture crops.
    c. Care for, maintain, and observe representative living specimens of as many aquaculture species as possible as a continuation of Aquaculture I.
18. Discuss principles of fish and wildlife ecology.
    a. Examine how fish and wildlife relate to each other and to their nonliving environment.
    b. Identify endangered species, the causes for endangerment, and the role of the aquaculture industry in preserving those species.
19. Trace the history of natural resource management as related to aquaculture.
    a. Examine the history and basic principles of natural resource management.
    b. Explore issues and techniques involved in management of aquatic resources.
    c. Comprehend the role of aquaculture in natural resource management.
20. Examine the basic principles of pond and lake management.
    a. List and discuss requirements for maintaining good sport fishing conditions in ponds and lakes.
    b. Sample a pond and make specific management recommendations to the owner for maintenance or improvement of sport fishing.
21. Classify freshwater and saltwater fish species in Mississippi.
    a. Recognize all major fish families in Mississippi.
22. Practice farm pond management.
    a. Discuss farm pond management practices.
    b. Perform appropriate sampling techniques.
    c. Evaluate results of sampling.
    d. Make management recommendations.
23. Propose, conduct, and report on a basic aquaculture research project.
    a. Identify an aquaculture research project for approval.
    b. Conduct the approved project utilizing appropriate research procedures.
    c. Present results of the project as an oral report.

24. Investigate new and emerging technologies, practices, trends, and issues associated with aquaculture.
    a. Prepare a report on a new and emerging technology associated with Aquaculture.
    b. Prepare a report on a current trend or issue associated with aquaculture.
25. Complete school-to-careers activities related to aquaculture.
    a. Investigate educational opportunities related to aquaculture at the postsecondary level.
    b. Describe the role of trade organizations, associations, and unions as related to aquaculture.
26. Demonstrate related academic skills and workplace skills associated with Aquaculture.
    a. Complete a cooperative project (paper, presentation, or demonstration) associated with an academic subject and aquaculture.
    b. Practice human relations skills (team participation, client/customer service, leadership, negotiation, working with culturally diverse groups, etc.) related to aquaculture.
    c. Research work ethics and employer expectations of employees in aquaculture.
27. Examine trends and changes related to aquaculture and global economic factors.
    a. Define and discuss the concept of global economics and competition.
    b. Describe global economic factors and competition as related to aquaculture.

PROGRAM DESCRIPTION

FORESTRY

Forestry is an instructional program designed to prepare students to enter occupations related to the field of forestry. The first year topics include Exploring the World of Forestry; Leadership/FFA Activities; Forest Safety; Tree Growth and Stand Development; Dendrology; Forest Surveying and Mapping; Legal Land Descriptions; Tree and Log Measurements; and Introduction to Timber Cruising. The second year instruction focuses on Identifying Forests and Forest Products; Employability Skills/FFA Activities; Forest Management Practices; Advanced Timber Cruising; Timber Marketing; Timber Harvesting; Reforestation; Forest Fire Management; and Forest Insects and Diseases. Graduates may become employed at the entry level or pursue careers in Forestry, Agriculture, Agribusiness, or Natural Resources Education in postsecondary or higher education.

Industry standards are adapted from the publication *Career Cluster Resources for Agriculture, Food, and Natural Resources*, developed by the National Association of State Directors of Career and Technical Education.

COURSE OUTLINE

Forestry I

Course CIP Code: 03.0401

Course Description: Forestry I is designed to introduce the student to the forest industry and forestry careers in Mississippi. The course provides instruction on forest careers and leadership, forest safety, tree growth and development, dendrology, surveying and mapping, and tree and log measurements. Emphasis is placed on the scientific and technical principles of modern forest management. (2-2½ Carnegie units depending on time spent in course.)

Unit	Title	Hours
1	Exploring the World of Forestry	7.5
2	Leadership/FFA Activities	7.5
3	Forest Safety	15
4	Tree Growth and Stand Development	7.5
5	Dendrology	30
6	Forest Surveying and Mapping	37.5
7	Legal Land Descriptions	30
8	Tree and Log Measurements	37.5
9	Introduction to Timber Cruising	45

Forestry II

Course CIP Code: 03.0490

Course Description: Forestry II is a continuation of Forestry I with additional emphasis on forest management, timber cruising, marketing and harvesting methods, reforestation, fire management, and forest pests. Emphasis is placed on scientific and technical priniciples. (2-2½ Carnegie units depending on time spent in course)

Unit	Title	Hours
1	Identifying Forests and Forest Products	7.5
2	Employability Skills/FFA Activities	7.5
3	Forest Management Practices	45
4	Advanced Timber Cruising	52.5
5	Timber Marketing	15
6	Timber Harvesting	15
7	Reforestation	22.5
8	Forest Fire Management	22.5
9	Forest Insects and Diseases	22.5

Course Name: Forestry I
Course CIP Code: 03.0401

Competencies and Suggested Objectives

1. Explain the importance of forestry.
    a. Describe the elements of a forest community, including trees, plants, shrubs, soil, water, and animal life.
    b. Describe the importance of trees and forests, including products, employment, climate, air quality, erosion, and recreation.
    c. Describe the amount of forested land worldwide and in the United States, including acres of forest land and acres of commercial land within the local county or regional area.
    d. Describe the history of forestry, including the importance of forestry to the South and to Mississippi.
    e. Describe the importance of forests in the South, including growing season, timber inventory, and economic impact.
    f. Describe resources considered in multiple
2. Explain careers in the field of forestry.
    a. Identify the careers available in the field of forestry.
    b. Describe educational requirements, job opportunities, duties, and responsibilities for professional, technical, and forestry workers.
3. Explain the impact of federal and state regulations on forestry operations.
    a. Examine the impact of federal regulations on forest operations.
    b. Examine the impact of state regulations on forest operations.
4. Explain the benefits of FFA participation.
    a. Identify FFA organizational activities that promote and recognize achievements in forestry, including career development events, personal development seminars, leadership conferences, national and international exchange programs, education experience with industry, and personal and community development programs.
    b. Identify the benefits of FFA participation to an individual and to the forestry industry, including personal growth and development, exposure to the forestry industry environment, and multicultural experiences.
    c. Identify opportunities for members in the FFA organization, including personal development, personal recognition, career exploration, and self-expression.
5. Demonstrate group leadership skills.
    a. Develop and present a 3-5 minute speech on a forestry topic, including guidelines for preparing a successful speech, speech outlining, resource development, writing skills, and presentation skills.
    b. Describe the purposes and functions of parliamentary procedure, including the ability to conduct a meeting, methods of voting, motions and their handling, and officer positions and functions.
6. Explain forest safety practices.
    a. Describe first aid and first aid equipment used in forestry work.
    b. Describe job site safety practices, including the hazards, carelessness, safety equipment, safety regulations, and prevention of accidents.

   c. Explain the impact of federal and state safety regulations (such as OSHA) on forestry operations.
7. Describe forest environmental hazards, including heat, cold, plants, insects, wildlife, and topographical hazards.
   a. Identify characteristics of forest insects and wildlife.
   b. Explain signs and symptoms of exposure to insects and wildlife.
8. Demonstrate forest safety practices.
   a. Apply safety practices to environmental, wildlife, and topographical hazards.
   b. Apply job site safety practices.
   c. Discuss types and frequency of forest accidents.
9. Explain tree physiology.
   a. Describe the main parts of a tree, including trunk, crown, and roots along with their functions.
   b. Describe tree respiration and photosynthesis, including respiration, transfer of water, minerals, nutrients, and production of food.
   c. Describe environmental and biological factors that affect tree growth, including temperature, moisture, light, air, soil, tolerance, and hardiness.
   d. Describe the methods of tree reproduction, including sprouts, seeds, and suckers.
   e. Identify characteristics of tree growth, including height and diameter growth.
10. Explain forest stand development.
   a. Identify stands according to classifications, including age, size, and composition.
   b. Identify trees according to crown classes.
11. Explain applications of tissue culture, cloning, and other advances in biotechnology to forestry.
   a. Describe applications of tissue culture, cloning, and other advances in biotechnology to forestry.
12. Explain the tree classification system.
   a. Identify nomenclature and taxonomy terms.
   b. Identify common name and/or binomial name of trees.
13. Identify trees by characteristics.
   a. Describe identifying characteristics of trees, including fruit, leaves, twigs, bark, and tree form.
   b. Collect leaves and/or bark samples of species found locally.
14. Explain concepts of forest surveying.
   a. Define terms, including bearings, acre, azimuths, chaining, boundary lines, angles, surveying, traversing, latitude, and longitude.
   b. Describe the importance of surveying to forestry, including timber sales, land measurement, boundary marking, and mapping.
   c. Identify characteristics of a forest survey, including use of compass, measuring distances, and mapping.
   d. Identify surveying tools, including compass, chain, plumb bob, and range pole.
   e. Label parts of a compass, including magnetic needle, pivot point, housing graduated degrees, and sighting mirror.
   f. Identify and calculate compass measurements and symbols, including azimuths, bearings, and degrees.

15. Perform forestry surveying and mapping techniques.
    a. Determine the number of paces per chain using common pacing techniques.
    b. Perform compass, pacing, and chaining skills, including completing a traverse of a selected area.
    c. Utilize new technologies for forest surveying and mapping to include GPS and GIS and remote sensing.
16. Calculate acreage of forest tracts.
    a. Determine acres from remote sensing.
    b. Determine acres from a traverse.
17. Describe the United States Public Land Survey System.
    a. Explain and identify the principal meridians, baselines, and initial points used in Mississippi, including location of these lines on a map.
    b. Define legal land description terms, including bearing, blaze, contour, elevation, legend, plot, sea level, topographic map and corner markers.
    c. Explain reasons and importance for land location in forestry, including retrace, location, and layout of boundaries.
18. Identify information found on maps.
    a. Interpret information from and demonstrate use of ownership maps.
    b. Interpret information from and demonstrate use of topographic maps.
19. Apply principles of legal land description.
    a. Write, read, and locate parcels of land using legal land descriptions.
    b. Observe the records of timber and land deeds.
20. Explain tree measurement techniques.
    a. Define terms, including board feet, basal area, cord, diameter at breast height (DBH), diameter, diameter inside bark (DIB), diameter outside bark (DOB), form class, one thousand board feet (MBF), merchantable height, sawlog, sawtimber, and sticks.
    b. Identify tools used in taking tree measurements and associate them with uses, including D-tape, tree stick, tree calipers, wedge prism, clinometer, and increment borer.
    c. Classify DBH measurements into the correct diameter classes, including one- and two-inch classes.
    d. Demonstrate the correct location of DBH measurements, including trees on level ground, slopes, leaning, forking, and deformed.
    e. Identify merchantable height, including heights for sawtimber, pulpwood, and specialty products.
    f. Distinguish among the major log rules, including Doyle, Scribner, and International log rules.
    g. Draw tally symbols, including dot-tally method.
21. Perform volume measurement of standing timber and sawlogs.
    a. Determine the volume of standing timber, including volume computation from DBH and height measurements and basal area.
    b. Calculate the net volume of logs, including measuring length and DIB at small end of log to obtain volume and weight scaling of logs for volume.
    c. Calculate the volume of standing timber using traditional methods and computer software.

22. Describe procedures for cruising timber.
    a. Discuss terms associated with cruising, including basal area, board foot, bole, circumference, cord, cull, cunit, diameter at breast height (DBH), dendrometer, diameter, DIB, DOB, form class, hypsometer, MBF, merchantable height, sawlog, sawtimber, sticks, taper, and whorl.
    b. Describe reasons for conducting a cruise, including management and procurement.
    c. Describe factors that determine cruise intensity, including acreage, species, timber density, value, and purpose of cruise.
23. Perform timber cruising.
    a. Describe cruising techniques.
    b. Perform a cruise and volume calculation using traditional methods and computer software.

Course Name: Forestry II
Course CIP Code: 03.0490

Competencies and Suggested Objectives

1. Apply procedures to identify forest types.
   a. Define terms associated with forest types.
   b. Distinguish between softwoods and hardwoods, including all characteristics of hardwoods and softwoods.
   c. Identify forest regions of the United States on a map, including Pacific Coast, Rocky Mountains, Northern, Central Hardwood, Southern, and Tropical.
   d. Identify the principal species associated with the forest regions of Mississippi, including oak-pine, oak-gum-cypress, oak-hickory, loblolly-shortleaf, and longleaf-slash.
2. Apply procedures to identify the physical properties of wood.
   a. Identify the physical properties of wood according to wood uses, including specific gravity, grain, strength, stiffness, bending, hardness, toughness, ability to be stained, and chemical properties.
   b. Describe Mississippi wood products according to their importance to the state and local economy, including sawlogs, pulpwood products, poles and posts, veneer, furniture products, miscellaneous, and by-products.
   c. Describe the role of recycling in the forest products industry, including impact on forest management and harvesting practices.
3. Develop employability skills.
   a. Discuss employability traits.
   b. Prepare a computerized resume containing essential information including personal information, education, and employment experience using correct grammar, spelling, and punctuation.
   c. Complete job application forms including correct grammar, spelling, and punctuation.
   d. Explain procedures for job interviews using correct job etiquette.
   e. Demonstrate the role of an applicant in a job interview using correct interview procedures.
   f. Explore job opportunities using a computerized database.
4. Identify FFA leadership activities associated with forestry.
   a. Identify FFA organizational activities that promote and recognize achievements in forestry, including personal development activities, seminars, leadership conferences, national and international exchange programs, education experience with industry, and personal and community development programs.
   b. Identify the benefits of FFA participation to an individual and to the forestry industry, including personal growth and development, exposure to the forestry industry environment, and multicultural experiences.
   c. Identify opportunities for members in the FFA organization, including personal development, personal recognition, travel, association with persons from other parts of the United States and abroad, career exploration, and self-expression.

5. Explain forest management practices.
    a. Define terms associated with forest management practices, including BMPs and SMZs, age classifications, forest management, improvement cutting, selection cutting, timber stand improvement, stand types, and wildlife management.
    b. Identify the role of forest management, including forest crops, management of stands, measurement of stands, goals and objectives of the landowner, and voluntary best management practices.
    c. Describe forest management practices, including silviculture, reproduction, harvest cuttings, fertilization, and herbicide application.
    d. Discuss BMPs and SMZs.
6. Apply forest management practices.
    a. Describe the purposes of intermediate cutting in forest management, including maximizing growth, control spacing, and removal of undesirable trees.
    b. Determine the type of intermediate cut, including pre-commercial, pulpwood, release, and salvage.
    c. Classify timber stand improvement needs, including thin overstocked stands, prescribed burning, fertilization, herbicide use, and salvage cuts.
7. Plan and conduct a timber cruise.
    a. Prepare cruise layouts, including drawing of a diagram describing a 10% sample systematic grid.
    b. Conduct timber cruises and determine tract volume and values, including 10%, 20%, and 100% samples.
    c. Discuss point sampling.
8. Explain timber marketing procedures.
    a. Define terms associated with timber marketing, including compliance, management prescriptions, offeree, and offeror.
    b. Describe marketing practices for selling at the highest return, including marking, estimating timber, determining the value of timber, and selling the timber for the highest price.
    c. Identify potential markets, including pulp-paper mills, post mill, sawmill, specialty markets, export markets, firewood sales, and distance to these markets.
    d. Describe how to determine the highest value of a timber stand, including preparing a prospectus and a timber sale contract.
9. Describe conditions of sale and harvesting of timber.
    a. Describe legal documents used in the sale and harvesting of timber, including the prospectus, timber sale contract, timber deed, and harvesting contract.
    b. Describe desirable post-harvest land conditions which may be specified in a harvesting contract.
    c. Describe logistics of transporting timber to markets, including the effect upon the price received by the producer.
10. Explain timber harvesting procedures.
    a. Define terms associated with timber harvesting, including harvesting layout, BMPs and SMZs, felling, topping, bunching, skidding, merchandising, loading, and hauling.
    b. Describe the methods of harvesting timber, including selection, seed-tree, shelterwood, clear-cut, and mechanical.

c. Identify the products of harvesting, including pulpwood, sawlogs, and specialty wood products.

11. Develop a timber harvesting plan.
    a. Identify types of harvesting equipment, including saws, fellerbunchers, pre-haulers, skidders, whole tree chippers, loaders, and hauling vehicles.
    b. Observe timber harvesting operations, including forest management practices of pulpwood and sawlogs.
    c. Describe desirable post-harvesting land conditions, including disposition of non-merchantable timber, dead trees, tree tops, soil cover, and damage caused by logging equipment.
    d. Develop a simple harvesting plan for a given tract of timber.
12. Explain reforestation practices.
    a. Define reforestation terms, including planting tools, methods of seeding, and site preparation.
    b. Identify the sources of tree seedlings, including private, state, and federal nurseries.
    c. Describe the methods of handling seedlings, including plant as soon as possible, heel in, and keep in cold storage.
    d. Describe the methods of planting, including direct seeding, hand planting, and machine planting.
    e. Describe the different types of site preparation, including roll chop, shearing, burning, chemical, piling, and bedding.
    f. Describe the types of reforestation, including artificial and natural means.
    g. Describe the economics of reforestation.
    h. Identify federal and state reforestation programs available locally.
13. Perform reforestation practices.
    a. Plant seedlings, including using all available methods.
    b. Perform a compliance check, including carrying out a standard Mississippi Forestry Commission compliance check.
14. Explain forest fire management practices.
    a. Define the terms associated with forest fires, including types of fires, behavior, fuels, controls, and weather conditions.
    b. Identify the elements of the fire triangle, including heat, fuel, and oxygen.
    c. Identify the classes of fires, including ground, surface, and crown.
    d. Identify the methods of attack, including direct and indirect.
    e. Identify firefighting tools according to their uses, including rakes, swatters, cutting tools, back pack sprayer, drip torch, and fire plows.
15. Apply forest fire management techniques.
    a. Develop a prescribed burning plan, including fire lanes, weather conditions, wind speed and direction, timber type, fuel conditions, manpower, and procedures for obtaining a burn permit.
    b. Develop a forest fire prevention plan, including fire lanes, section roads, prescribed burning, and emergency notification procedures.

16. Identify and discuss forest insects and diseases.
    a. Define the terms associated with forest insects and diseases, including wood damage, leaf eaters, wood eaters, epidemic, predator, habitat, diseases, and signs of damage.
    b. Identify insect and disease damage, including comparing the damage observed to the insect that caused the damage.
    c. Identify the insect or disease with the symptoms of damage, including leaf eaters, wood eaters, sap eaters, phloem eaters, core borers, root feeders, and terminal feeders.
17. Discuss control methods of forest insects and diseases.
    a. Describe the various methods used to control insects and diseases, including direct control and indirect control.
    b. Identify the reasons for identifying insect and disease damage, including prevention of epidemics and loss of timber volume.
    c. Describe aerial forest detection procedures, including those for insect and disease problems.

FAMILY AND CONSUMER SCIENCES

PROGRAM DESCRIPTION

CULINARY AND RELATED FOODS TECHNOLOGY

Culinary and Related Foods Technology is a two-year classroom and hands-on instructional program that prepares students for employment or continuing education in the foodservice industry. This program of study was written to incorporate the National Restaurant Associations (NRA) ProStart© Learning Objectives. Any student who successfully completes this program and the mentoring requirements of the NRA can take the National ProStart© Certificate of Achievement exam. This is a national certification program recognized throughout the food service industry.

Culinary and Related Foods Technology I is the first year of the program. Food preparation techniques covered in the first year are breakfast foods, dairy, sandwiches, salads, garnishes, fruits, and vegetables. Management skills emphasized are basic customer service, food safety and sanitation, workplace safety and security, culinary basics, equipment, nutrition, human resources, math, and controlling food cost. Mastery of the competencies listed in the food safety and sanitation unit will prepare the student to take the NRA's ServSafe© exam to become ServSafe© Food Safety certified. As of January 1, 1999, every food service establishment in Mississippi must have a full-time certified food manager employed in order to meet the FDA Food Code requirements. Students are encouraged to take this exam.

Culinary and Related Food Technology II is a continuation of the emphasis on management and food preparation. Management topics include marketing, accounting, purchasing, inventory, and advanced customer service. Food preparation techniques covered include potatoes, grains, desserts, baked goods, meat, poultry, seafood, stocks, sauces, and soups. An exploration of culinary history is also included in year two.

This program was designed to articulate to postsecondary Food Production, Hotel and Restaurant Management, and Culinary Arts.

Industry standards are based on the *National Restaurant Association ProStart© Certification and National Restaurant Association ServSafe© Certification.*

COURSE OUTLINE

Culinary and Related Foods Technology I

Course CIP Code: 20.0401

Course Description: This course provides basic instruction to prepare an individual for employment or continued education in the food industry. (2 – 2 ½ Carnegie units, depending upon time spent in the course).

Unit	Title	Hours
1	Introduction	10
2	Basic Customer Service	15
3	Food Safety and Sanitation	30
4	Workplace Safety and Security	15
5	Culinary Basics	20
6	Foodservice Equipment	15
7	Nutrition	15
8	Breakfast Foods, Dairy, and Sandwiches	25
9	Human Resources	10
10	Salads and Garnishes	25
11	Culinary Math	15
12	Fruits and Vegetables	10
13	Controlling the Cost of Food	10

Culinary and Related Foods Technology II

Course CIP Code: 20.0491

Course Description: This course is the second year of training to prepare an individual for employment or continued education in the food industry. (2 – 2 ½ Carnegie units, depending upon time spent in the course).

Unit	Title	Hours
1	Orientation	10
2	Culinary History	15
3	Potatoes and Grains	25
4	Advanced Customer Service	15
5	Desserts and Baked Goods	25
6	Culinary Marketing	15
7	Purchasing and Inventory	15
8	Meat, Poultry, and Seafood	25
9	Culinary Accounting Practices	15
10	Stocks, Sauces, and Soups	25
11	Customer Communications	10
12	Tourism	10
13	The Lodging Industry	10

Course Name: Culinary and Related Foods I
Course CIP Code: 20.0401

Competencies and Suggested Objectives

1. Identify school and program policies and procedures.
    a. Discuss the school handbook and all safety procedures for classroom and building levels.
    b. Review program policies in the classroom and the laboratory.
2. Identify career and leadership opportunities in the culinary industry.
    a. Investigate career opportunities in the culinary industry to include communication writers, food stylists, marketers, research and development, food science, sales, dietitians, food production, food processing, accounting, entrepreneurs, trainers, and grocery store and deli managers.
    b. Investigate the occupational outlook and salaries for culinary careers according to current and future trends.
    c. Discuss the difference between school and workplace environments.
    d. Explore leadership opportunities available from student youth and industry organizations.
3. Describe the importance of service to the culinary industry.
    a. Explore the elements of excellent service to include anticipating the customer's needs.
    b. Explore the elements of excellent service from the standpoint of the customer.
    c. Investigate the importance of positive attitudes and work ethics.
    d. List the qualities of successful foodservice employees.
    e. Develop a list of workplace guidelines to include attendance, teamwork, promptness, dependability, asking questions, fairness, honesty, and positive attitude.
4. Outline a plan for an effective job search.
    a. Write a cover letter.
    b. Identify a network of people who can provide information about job opportunities.
    c. Write an effective one-page resume.
    d. Complete a college and job application form.
    e. Describe how to develop a portfolio.
    f. List the steps of an effective job interview.
    g. Outline the steps to resign from a job.
5. Develop the skills necessary to provide professional customer service.
    a. State the importance of customer service.
    b. List the reasons and the ways to make a positive first impression.
    c. Describe a variety of customers that may have special needs.
    d. Distinguish between effective and ineffective communication with customers by giving examples.
    e. Explain how customer satisfaction directly affects a restaurant's success.
    f. Create job standards for servers.

6. Practice interpersonal skills.
    a. Exhibit a positive attitude.
    b. Practice teamwork.
    c. Demonstrate effective verbal and nonverbal communication skills.
    d. Apply conflict resolution skills to real-life situations.
7. Discuss the importance of food safety.
    a. List reasons why it is important to keep food safe.
    b. Describe good personal hygiene and how it affects food safety.
    c. List the steps to proper hand washing.
    d. Give examples of potentially hazardous foods.
    e. Categorize and describe the microorganisms that cause foodborne illness.
    f. Identify and list ways biological, chemical, and physical hazards can contaminate food.
    g. Identity the eight most common allergens, associated symptoms, and methods of prevention.
    h. Distinguish between situations in which contamination and cross-contamination can occur.
    i. List the conditions under which bacteria can multiply rapidly and use the letters FAT-TOM.
    j. Explain how time and temperature guidelines can reduce growth of microorganisms.
    k. Define the food temperature danger zone and list temperatures that fall within that zone.
    l. Differentiate between different types of thermometers and demonstrate how to use them.
8. Examine the importance of establishing a food safety system.
    a. List the seven major steps in a Hazard Analysis Critical Control Points (HACCP) system.
    b. Analyze a recipe and re-write it to meet HAACP guidelines.
9. Analyze the flow of food through a foodservice establishment.
    a. Compare different types of storage areas found in a foodservice operation.
    b. Outline proper procedures for receiving, storing, preparing, cooking, holding, cooling, reheating, and serving food that includes use of proper tools and equipment.
10. Maintain a clean and sanitary kitchen.
    a. Define the difference between clean and sanitary.
    b. Demonstrate procedures for cleaning and sanitizing tools and equipment.
11. Demonstrate safe work habits to prevent injuries.
    a. Discuss OSHA (Occupational Safety and Health Administration) and why it is important.
    b. Describe the Hazard Communication Standard Requirements for employers.
    c. Identify the location and purpose of Material Safety Data Sheets.
    d. Identify electrical hazards that contribute to accidental fires and shocks.
    e. Classify different types of fires and fire extinguishers to include automatic sprinklers and hood systems.
    f. Describe the ways to prevent both fire and chemical burns.

g. List hazards that contribute to injury due to slips, trips, or falls.
h. Outline proper procedures for cleaning spills on floors.
i. Demonstrate the proper use of ladders.
j. Demonstrate proper lifting and carrying procedures to avoid injury.
k. Demonstrate correct and safe use of knives including handling, walking, passing, washing, and storage.
l. Identify other hazards that can cause cuts.
m. List ways to use protective clothing and equipment to prevent injuries.

12. Explain emergency techniques and procedures.
    a. Outline proper actions to take in the event of a fire.
    b. Describe basic first aid concepts and procedures for choking, cuts, burns, falls, strains, electrical shock, and heart attack.
    c. Explain the importance of completing standard reports for accidents or illness.
    d. Describe procedures to manage robberies, natural disasters, and vandalism.
13. Demonstrate basic food preparation skills.
    a. Identify the components and functions of a standardized recipe.
    b. Recognize abbreviations.
    c. Weigh and measure ingredients with measuring devices by weight and volume.
    d. Calculate equivalent weights and measures.
    e. Convert a standardized recipe to increase and decrease yield.
    f. Use correct terminology for basic food preparation techniques.
    g. Apply mise en place through practice.
    h. Discuss different types of knives and their uses.
    i. Describe common spices and herbs and their uses.
    j. Follow a standard recipe to produce a standard product.
14. Demonstrate basic food cooking methods.
    a. Demonstrate the dry heat cooking methods.
    b. Demonstrate the moist heat cooking methods.
    c. Demonstrate the combination cooking methods.
15. Demonstrate the correct use of hand tools.
    a. Identify basic kitchen hand tools.
    b. Demonstrate proper cleaning, sanitizing, and maintenance of hand tools.
    c. Demonstrate measuring and portioning hand tools.
    d. Identify the types and sizes of pots and pans.
16. Demonstrate the safe use and maintenance of large equipment.
    a. Demonstrate how to cut and mix foods using standard kitchen equipment.
    b. Compare and contrast cooking foods using various types of steamers, broilers, grills, ranges, fryers, and ovens.
    c. Outline how to hold and serve food and beverages using equipment.
    d. Demonstrate proper cleaning, sanitizing, and maintenance of food service equipment.
17. Develop well-balanced menus.
    a. Describe a healthy diet.
    b. Identify and discuss the role of nutrients to include carbohydrates, hormones, fiber, starch, and fat.
    c. Define and discuss cholesterol and list the food in which it is found.

   d. Discuss the role of protein, water, vitamins, and minerals in the diet and identify foods that contain these nutrients.
   e. Differentiate between complete and incomplete proteins.
   f. Interpret information on a food label.
   g. Identify and describe the Recommended Dietary Allowances (RDAs) and the Food Guide Pyramid.
18. Prepare a well-balanced meal.
   a. Use the Recommended Dietary Allowances and the Food Guide Pyramid to plan meals.
   b. Use herbs and spices for traditional seasonings.
19. Demonstrate breakfast food preparation.
   a. Prepare basic breakfast food items.
   b. Prepare breakfast beverages.
   c. Evaluate prepared products.
20. Demonstrate preparation and handling of dairy products.
   a. Explain how to keep milk products safe and sanitary.
   b. Differentiate between butter and margarine.
   c. Distinguish between several types of cheeses and give examples of each.
21. Demonstrate preparation of several types of sandwiches.
   a. Give examples of different types of sandwiches.
   b. Identify the three components of a sandwich.
   c. Prepare various sandwiches.
22. Utilize employability skills.
   a. Explain how stereotypes and prejudices can negatively affect how people work together.
   b. List and demonstrate effective legal interviewing skills.
   c. Discuss the importance of having new employee orientation.
   d. Describe common elements of orientation programs.
   e. Summarize and discuss effective group and on the job training.
   f. List and apply effective techniques used in performance evaluations.
23. Prepare various types of salads.
   a. Identify types of salads.
   b. Identify types of salad greens used in salad preparation.
   c. Identify the parts of a salad.
   d. Compare and contrast types of salads served at different points in the meal.
   e. Demonstrate appropriate methods to clean salad greens.
   f. Store salads properly.
24. Identify salad dressings.
   a. Differentiate among salad dressings.
   b. Match dressings to appropriate salads.
25. Demonstrate garnishing plates.
   a. Describe the importance of a garnish.
   b. Describe common ingredients used to garnish.
   c. Design a plate garnished attractively.

26. Apply basic mathematical calculations to the culinary practices.
    a. Given a list of numbers, add, subtract, multiply, and divide using basic math operations.
    b. Given a list of fractions, decimals, whole numbers, and percentages, add, subtract, multiply, and divide.
27. Apply basic mathematical functions to weights and measures.
    a. Convert recipes from original yield to desired yield using conversion factors.
    b. Calculate recipe yields.
28. Apply basic mathematical functions to control food costs.
    a. Describe and give examples of controllable food costs, fixed costs, and variable costs related to food and labor.
    b. Given a set of numbers, calculate depreciation.
    c. Differentiate between the two categories of food purchased: perishable and nonperishable.
    d. Outline and follow basic receiving procedures.
    e. State the appropriate storage guidelines and temperatures for different perishable foods.
29. Demonstrate the preparation of fruits.
    a. Identify, describe, and demonstrate the preparation of different fruits.
    b. List and explain the USDA quality grades for fresh fruit.
    c. Demonstrate the procedures for properly storing ripe fruit.
    d. Summarize ways to prevent fruit from spoiling too quickly.
    e. Match and cook fruit based on appropriate methods.
    f. Explain how to prevent enzymatic browning of fruit.
30. Demonstrate the preparation of vegetables.
    a. Identify, describe, and demonstrate the preparation of different vegetables.
    b. List and explain the USDA quality grades for fresh vegetables.
    c. Demonstrate the procedures for properly storing ripe vegetables, roots, and tubers.
    d. Summarize ways to prevent vegetables from spoiling too quickly.
    e. Match and prepare vegetables according to appropriate methods.
31. Determine the menu selling price.
    a. Explain how the menu drives cost.
    b. Explain how the menu reflects labor costs.
    c. Determine standard portion cost.
    d. Determine selling prices using the food cost percentage method.
    e. Determine selling prices using the average check method.
    f. Determine selling prices using the contribution margin method.
    g. Determine selling prices using the straight mark-up method.
32. Apply mathematical procedures to revenue control.
    a. Calculate the average sales per customer.
    b. Calculate total sales, including tax and tip.
33. Explain and apply principles used in inventory control.
    a. Determine dollar value of inventory.
    b. Perform calculations to determine inventory.
    c. Determine daily and monthly food cost.

Course Name: Culinary and Related Foods II
Course CIP Code: 20.0491

Competencies and Suggested Objectives

1. Review school and program policies and procedures.
    a. Discuss the school handbook and all safety procedures for classroom and building levels.
    b. Review program policies in the classroom and the laboratory.
2. Update career/educational plans.
    a. Revise resume.
    b. Demonstrate effective interviewing skills.
    c. Discuss employer expectations.
3. Demonstrate effective communication skills when dealing with customers.
    a. List examples of ways to respond to and resolve customer complaints.
    b. Demonstrate the skills of effective writing.
    c. Demonstrate effective listening and speaking skills.
    d. Model proper and courteous telephone skills through demonstration.
    e. State guidelines for communicating effectively during and after a crisis.
    f. List examples of innovative ways to attract and keep customers.
    g. Demonstrate successful selling techniques.
4. Demonstrate job retention skills.
    a. Discuss diversity in the workplace.
    b. Explain a job evaluation and how it relates to career advancement and pay.
    c. Model valued professional workplace characteristics.
5. Research the creation of the modern restaurant.
    a. Trace the history of the foodservice industry and explain its relationship to world history.
    b. List famous chefs and note their major accomplishments.
6. Explore cuisines of the world.
    a. Identify global cultures and traditions related to food.
7. Explore the history of foodservice in the United States.
    a. Outline the growth of foodservice throughout the history of the United States.
    b. List historical entrepreneurs who influenced foodservice in the United States.
8. Investigate the future of foodservice.
    a. List current trends in society and explain how they influence the foodservice industry.
    b. Categorize and differentiate among the segments of the foodservice industry.
    c. Investigate and draw conclusions on the impact of future economic, technological, and social changes in the foodservice industry.
9. Select and store potatoes, grains, legumes, and pasta.
    a. Outline methods to select, receive, and store potatoes and grains.
    b. Distinguish between different types of wheat.
10. Prepare potatoes.
    a. Identify and describe various types of potatoes.
    b. Using a variety of recipes and cooking techniques, prepare potatoes.

11. Cook legumes and grains.
    a. Identify and describe the different types of grains and legumes.
    b. Using a variety of recipes and cooking techniques, prepare grains and legumes.
12. Cook pasta and dumplings.
    a. Identify and describe various types of pasta.
    b. Using a variety of recipes and cooking techniques, prepare pasta.
13. Demonstrate various types of service.
    a. Demonstrate the similarities and differences among American, French, English, Russian, and self-service styles.
    b. Describe and demonstrate tableside preparations such as carving meats and slicing desserts.
    c. Describe traditional service staff, and list the duties and responsibilities of each.
    d. Identify various server tools and the correct way to stock a service station.
    e. Dramatize ways of describing and recommending menu items to guest.
    f. Dramatize ways of effectively resolving customer complaints.
14. Demonstrate personal dining etiquette.
    a. Identify the various types of dining utensils.
    b. Demonstrate setting and clearing items properly.
15. Demonstrate the preparation of breads.
    a. Describe the function of common ingredients in baking.
    b. Identify yeast breads.
    c. Identify quick breads.
    d. Prepare quick breads and yeast breads.
16. Demonstrate the preparation of baked goods.
    a. Discuss the preparation of cakes.
    b. Discuss the preparation of cookies.
    c. Discuss the preparation of pies.
    d. Discuss the preparation of other desserts.
17. Apply marketing principles to food service.
    a. Define marketing.
    b. Describe market segmentation using demographics.
    c. Differentiate between a restaurant promotion and public relations.
18. Develop a menu.
    a. Define á la carte, table d’hote, California menu, du jour, and cycle menus.
    b. Organize the information on a menu.
    c. Write and lay out a menu.
19. Define the purchasing process.
    a. Explain the relationship between primary and intermediary sources and retailer.
    b. Explain the difference between formal and informal purchasing process.
20. Develop standard ordering procedures.
    a. Develop a specification list for items based on inventory information.
    b. Write purchase orders for items to be purchased.
21. Discuss the decisions to be made when purchasing.
    a. Explain how production records influence purchasing decisions.
    b. List the criteria for selecting appropriate suppliers.

22. Discuss the procedures for receiving, storing, and issuing foods and supplies.
    a. List proper receiving procedures.
    b. Discuss the proper storage procedures for foods and beverages.
    c. Differentiate between the periodic order and perpetual inventory methods.
23. Prepare a quality meat product.
    a. Describe various kinds of meat.
    b. Outline the federal grading systems for meat.
    c. Match various cooking methods with various forms of meat.
    d. Demonstrate proper procedure for purchasing, storing, and preparing meat.
24. Prepare a quality poultry product.
    a. Describe various kinds of poultry.
    b. Outline the federal grading systems for poultry.
    c. Match various cooking methods with various forms of poultry.
    d. Demonstrate proper procedures for purchasing, storing, and preparing poultry.
25. Prepare a quality fish/seafood product.
    a. Describe various kinds of fish/seafood.
    b. Outline the federal grading systems for fish/seafood.
    c. Demonstrate proper procedures for purchasing, storing, and preparing fish/seafood.
    d. Match various cooking methods with various forms of fish/seafood.
26. Discuss accounting procedures in food service.
    a. Explain the purpose of accounting records.
    b. Define basic accounting transactions and terms.
27. Examine income statements.
    a. Identify information and terms found on income statements.
    b. Explain how to use the information on income statements in the decision making process.
28. Examine balance sheets.
    a. Identify information and terms found on balance sheets.
    b. Explain how to use the information on a balance sheet in the decision making process.
29. Demonstrate the preparation of stocks.
    a. Identify the four essential parts of stock and the proper ingredients for each.
    b. List and explain the various types of stock and their ingredients.
    c. Demonstrate methods for preparing bones for stock.
    d. List the ways to cool stock properly.
    e. Prepare the ingredients for and cook several kinds of stock.
30. Demonstrate the preparation of soups.
    a. Identify the two basic kinds of soups and give an example of each.
    b. Explain the preparation of the basic ingredients for broth, consommé, purée, clear, and cream soups.
    c. Prepare several kinds of soups.
31. Demonstrate the preparation of sauces.
    a. Identify the grand sauces and describe other sauces made from them.
    b. List the proper ingredients for sauces.
    c. Prepare several kinds of sauces.

d. Match sauces to appropriate foods.

32. Demonstrate positive customer communications.
    a. List ways to respond to and resolve customer complaints.
    b. List and demonstrate effective writing skills.
    c. Model proper and courteous telephone skills through demonstration.
    d. State guidelines for communicating effectively during and after a crisis.
    e. Demonstrate effective listening and speaking skills.
    f. List and discuss examples of innovative ways to attract and keep customers.
    g. Demonstrate suggestive selling techniques.
33. Analyze the tourism and travel industry.
    a. Explain the role of tourism in the hospitality industry.
    b. Categorize the types of businesses that make up the tourism industry.
    c. List and discuss why people travel.
    d. List the different types of transportation and the advantages and disadvantages of each.
    e. Identify career opportunities offered by the travel and tourism industry.
    f. List and describe required customer service skills in the travel industry.
34. Analyze the lodging industry.
    a. Explain the role of lodging in the hospitality industry.
    b. Identify career opportunities offered by the travel and tourism industry.
    c. Describe the differences between leisure and business travelers.
    d. List the characteristics of lodging operations.
    e. Describe the use of forecasting and overbooking in reservations management.

TRADE, TECHNICAL, AND ENGINEERING RELATED TECHNOLOGY

PROGRAM DESCRIPTION

OUTBOARD MARINE ENGINE MECHANICS

Outboard Marine Engine Mechanics is an instructional program that provides students with basic skills related to the care, service, and repair of outboard marine engines. Students receive instruction related to safety, tools and equipment, fasteners, measurement, engine identification, basic electrical, engine principles and design cooling systems, lubrication systems, fuel and carburetor systems, shop management, mechanical remote control assembly, propeller and trim, mechanical gearcase, advanced fuel systems, advanced carburetion, ignition systems, and engine overhaul. The program also prepares students for advanced study at the postsecondary level in Marine Engine Mechanics (Gasoline). This program was written to include the Equipment & Engine Training Council's Standards for 2- & 4-Stroke Gasoline Engines.

Industry standards are based on the *Equipment & Engine Training Council, OPE Category 1, 2- and 4-Stroke Cycle Gasoline Engine Standards*.

COURSE OUTLINE

Outboard Marine Engine Mechanics I

Course CIP Code: 47.0692

Course Description: Outboard Marine Engine Mechanics I provides students with an introduction to outboard marine engines. The course includes instruction in safety, tools and equipment, fasteners, measurement, basic engine principles, maintenance, and inspection. (2-2 1/2 Carnegie units, depending upon time spent in the course)

Unit	Title	Hours
1	Safety and Orientation	10
2	Leadership and Personal Development	10
3	Tools and Equipment	15
4	Fasteners	10
5	Measurement	15
6	Engine Identification and Inspection	15
7	Basic Engine Principles and Design	25
8	Basic Electricity	15
9	Ignition Systems	15
10	Lubrication Systems	15
11	Cooling Systems	15
12	Fuel Systems (Carburetor-Type)	22
13	Special Topics in Outboard Marine Engine Mechanics I (ongoing)	22

Outboard Marine Engine Mechanics II

Course CIP Code: 47.0694

Course Description: Outboard Marine Engine Mechanics II is the exit course for the program. Students receive instruction in safety, auxiliary engine systems, mechanical remote control assemblies, propeller and trim tab systems, gearcases, advanced fuel and carburetion, advanced ignition systems, engine overhaul, and employment skills. (2-2 1/2 Carnegie units, depending upon time spent in the course)

Unit	Title	Hours
1	Safety and Orientation (Review and Reinforcement)	8
2	Advanced Leadership	10
3	Auxiliary Engine Systems	15
4	Mechanical Remote Control Assembly	12
5	Propeller and Trim Tab Systems	12
6	Mechanical Gearcase	22
7	Advanced Fuel and Carburetion	30
8	Advanced Ignition Systems	30
9	Overhaul of Two-Stroke Cycle Engine	32
10	Employability Skills	12
11	Special Topics in Outboard Marine Engine Mechanics II (ongoing)	22

Course Name: Outboard Marine Engine Mechanics I
Course CIP Code: 47.0692

Competencies and Suggested Objectives

1. Explain vocational policies, procedures, and requirements.
   a. Describe vocational policies.
   b. Describe school attendance policies.
   c. Describe the student handbook.
   d. Describe grading procedures used in the school.
2. Apply safety practices used in outboard marine engine mechanics.
   a. Define terms associated with safety.
   b. Describe and apply rules for personal and general shop safety.
   c. Describe state eye safety law.
   d. Associate the colors of the safety code with their correct application.
3. Explain procedures for working with and disposing of hazardous materials according to OSHA regulations.
   a. Define terms associated with hazardous materials.
   b. Identify categories of hazardous materials commonly found in outboard marine engine shops.
   c. Identify signal words or symbols such as “Caution,” “Warning,” and “Danger” that indicate the severity of a hazard.
   d. Describe methods for reducing hazardous waste.
   e. Identify general procedures for storing hazardous materials and wastes.
   f. Identify and describe the informational sections found on a Material Safety Data Sheet which provide guidelines for creating a safe work environment.
   g. Describe general first aid procedures in case of an accident involving hazardous materials.
   h. Identify safety equipment to be used with hazardous materials.
   i. Describe steps to follow in handling spills and waste disposal.
   j. Identify agencies to be contacted in case of an accident or for more information on hazardous materials.
4. Develop leadership in a vocational student organization (VSO).
   a. State procedures of leadership.
   b. Describe the leadership purposes of a VSO.
5. Identify personal traits and characteristics of an effective leader.
   a. Identify desirable personal qualities.
   b. Identify desirable characteristics of the personal work ethic.
6. Demonstrate the safe application and use of hand tools, power equipment, computers, and software.
   a. Identify and demonstrate the safe use of hand and power tools needed for maintenance and repair of outboard marine engines.
   b. Describe and demonstrate procedures concerning the maintenance of hand and power tools.
   c. Demonstrate the use of computer equipment and software for parts identification and estimation of repair costs.

7. Identify and describe the use of common fasteners, tools, and procedures for restoring damaged threads.
    a. Identify common fasteners including nuts, bolts, screws, and locking devices.
    b. Identify methods used to remove seized nuts and bolts.
8. Identify and safely use tools for restoring internal and external threads.
    a. Restore internal threads to specifications using thread repair device(s).
    b. Utilize torque wrenches to tighten bolts/nuts to manufacturer's specifications.
9. Identify and discuss precision measuring instruments.
    a. Identify and discuss the use of a vernier caliper.
    b. Identify and discuss the use of a feeler gauge.
    c. Identify and discuss the use of a dial indicator.
    d. Identify and discuss the use of a steel rule.
10. Demonstrate the use of precision measuring instruments.
    a. Use a plain micrometer to measure a given object to within ± .001 inch.
    b. Use a vernier caliper to measure a given object to within ± .001 inch.
    c. Use a 6" rule to measure a given object within 1/16".
11. Identify types of outboard marine engines.
    a. Identify and define terms associated with engine identification and inspection.
    b. Describe distinguishing characteristics of 2- and 4-stroke cycle engines.
12. Identify information on outboard marine engines.
    a. Collect information from the operator's instructions and/or inspection of the engine.
    b. Complete an engine identification and inspection form showing manufacturer's specifications.
    c. Locate manufacturer's specifications for repair/maintenance for specific engine.
13. Explain the principles of operation of an internal combustion engine.
    a. Define terms associated with basic engine principles and design.
    b. Describe the parts of a basic internal combustion engine cylinder unit.
    c. Discuss the sequence of steps by which an internal combustion engine converts chemical energy into rotary motion.
14. Analyze engine horsepower rating.
    a. Read and interpret an engine label.
    b. Read and interpret a manufacturer's service manual to analyze engine horsepower rating.
15. Explain the principles of 4-stroke cycle engine operation.
    a. Define terms associated with the principles of operation of a 4-stroke cycle engine.
    b. Identify and describe the functions of basic components of a 4-stroke cycle engine.
    c. Describe the operation of a 4-stroke cycle engine in relation to each stroke of the cycle.
    d. Explain the purpose of compressing fuel air mixture.
    e. Perform compression test.
16. Explain the principles of 2-stroke cycle engine operation.
    a. Define terms associated with the 2-stroke cycle engine to include piston and ported type and reed valve type.

b. Identify basic components of a 2-stroke cycle engine.
c. Describe the steps in the operation of a 2-stroke cycle.
d. Explain the purpose of compressing fuel air mixture.
e. Perform compression test.

17. Explain the principles of basic electricity.
    a. Define terms and components associated with basic electricity to include AC and DC.
    b. Describe sources of electricity including chemical and magnetic.
    c. Discuss theory, operation, charging procedures, and storage/disposal of a battery.
    d. Identify examples of conductors and insulators to include the identification of wire sizes to current loads.
    e. Identify common electrical symbols used in schematic diagrams.
    f. Identify fuses and circuit breakers.
18. Describe instruments and perform measurements of electricity.
    a. Describe instruments used in checking electrical circuits.
    b. Measure resistance using an ohmmeter in parallel and closed circuits.
    c. Check continuity of a simple circuit using an ohmmeter or test light.
    d. Measure amperage in a circuit using an ammeter.
    e. Check voltage in a circuit using a voltmeter.
19. Explain the components of an outboard marine engine ignition system.
    a. Describe the types of ignition systems.
    b. Compare and contrast components of a battery, magneto, breaker-less, and solid state ignition system (primary and secondary circuits).
    c. Describe the purpose and operation of ignition system components.
20. Service and test outboard marine engine ignition systems according to manufacturer's specifications.
    a. Remove, service, and/or replace sparkplugs.
    b. Remove and replace contact points and condenser.
    c. Test and adjust a solid state ignition system.
21. Explain the principles of lubrication and engine oils.
    a. Define terms related to lubrication systems.
    b. Describe the functions of engine oil.
    c. Describe the characteristics of appropriate engine oil.
    d. Describe factors to consider in selection and use of oils for best engine performance.
22. Perform lubrication services on outboard marine engines.
    a. Change engine oil and filter (if present).
    b. Service a crankcase breather according to manufacturer's specifications.
    c. Mix lubricant and fuel for a 2-stroke cycle engine according to manufacturer's specifications.
23. Apply procedures for preparing an outboard marine engine for storage according to manufacturer's specifications.
    a. Explain the procedures for storing.
    b. Prepare an outboard marine engine for storage.
24. Define terms and safety procedures associated with service of an air-cooled system.
    a. Define terms associated with air-cooled cooling system.

b. Discuss safety precautions when working with cooling systems.
c. Identify the components of an air-cooled system.
d. Demonstrate the cleaning and replacement of system parts according to manufacturer's specifications.

25. Service a water-cooled outboard engine system.
    a. Identify the parts of a water-cooled outboard engine cooling system.
    b. Inspect and service a water-cooled outboard engine cooling system.
26. Identify fuel and fuel systems used in outboard marine engines.
    a. Describe benefits of using unleaded fuel in most new small gas engines.
    b. Identify the components of a typical carburetor-type fuel system.
    c. Identify the different types of fuel filters.
    d. Identify the parts of a float-type carburetor.
    e. Describe functions of the carburetor.
27. Remove, service, replace, and adjust a float-type carburetor.
    a. Disassemble, clean, inspect, reassemble, and adjust a Mercury-style float-type carburetor.
    b. Disassemble, clean, inspect, reassemble, and adjust an OMC style float-type carburetor.
    c. Re-assemble and pressure test carburetor.
    d. Run, test, and adjust engine.
28. Investigate new and emerging technologies, practices, trends, and issues associated with outboard marine engine mechanics.
    a. Prepare a report on a new and emerging technology associated with outboard marine engine mechanics.
    b. Prepare a report on a current trend or issue associated with outboard marine engine mechanics.
29. Complete school-to-careers activities related to outboard marine engine mechanics.
    a. Participate in a school-to-careers activity (shadowing, mentoring, career fair, etc.) related to outboard marine engine mechanics.
    b. Investigate educational opportunities related to outboard marine engine mechanics at the postsecondary level.
    c. Describe the role of trade organizations, associations, and unions as related to outboard marine engine mechanics.
    d. Describe national standards and certification/licensing procedures related to outboard marine engine mechanics.
30. Demonstrate related academic skills and workplace skills associated with outboard marine engine mechanics.
    a. Complete a cooperative project (paper, presentation, or demonstration) associated with an academic subject and outboard marine engine mechanics.
    b. Practice human relations skills (team participation, client/customer service, leadership, negotiation, working with culturally diverse groups, etc.) related to outboard marine engine mechanics.
    c. Research work ethics and employer expectations of employees in outboard marine engine mechanics.
    d. Investigate the concepts of quality assurance as related to outboard marine engine mechanics.

Course Name: Outboard Marine Engine Mechanics II
Course CIP Code: 47.0694

Competencies and Suggested Objectives

1. Review and explain vocational policies, procedures, and requirements.
   a. Describe grading procedures used in the school.
   b. Describe vocational policies.
   c. Describe school attendance policies.
   d. Describe the student handbook.
2. Review and apply safety laws and standards used in outboard marine engine mechanics.
   a. Define terms associated with safety including accident, safety, first aid, hazardous materials, and OSHA.
   b. Apply rules for personal and general shop safety related to outboard marine engine mechanics.
   c. Describe state eye safety law, including appropriate times for wearing safety glasses.
   d. Associate the colors of the safety code with their correct application including red, green, yellow, black, white, orange, and blue.
3. Review and explain procedures for working with and disposing of hazardous materials according to OSHA regulations.
   a. Define terms associated with hazardous materials.
   b. Identify categories of hazardous materials commonly found in outboard marine engine shops.
   c. Identify signal words or symbols such as “Caution,” “Warning,” and “Danger” that indicate the severity of a hazard.
   d. Describe methods for reducing hazardous waste.
   e. Identify general procedures for storing hazardous materials and wastes.
   f. Identify and describe the informational sections found on a Material Safety Data Sheet which provide guidelines for creating a safe work environment.
   g. Describe general first aid procedures in case of an accident involving hazardous materials.
   h. Identify safety equipment to be used with hazardous materials including protection for eyes, respiratory system, body, and hands.
   i. Describe steps to follow in handling spills and waste disposal.
   j. Identify agencies to be contacted in case of an accident or for more information on hazardous materials.
4. Develop advanced leadership in a vocational student organization (VSO).
   a. State procedures of leadership.
   b. Describe the leadership purposes of a VSO.
5. Identify personal traits and characteristics.
   a. Identify desirable personal traits.
   b. Identify desirable characteristics of the personal work ethic.
6. Explain the components of outboard marine engine charging system.
   a. Identify components of the charging system and state the function(s) of each.

   b. Identify the parts of an alternator charging system.
7. Service an outboard marine engine charging system.
   a. Remove, check, and replace charging system components according to manufacturer's specifications.
8. Explain the components of outboard marine engine starting systems.
   a. Describe the types of starting systems.
   b. Identify the components of a mechanical starting system and state the function of each.
   c. Identify the components of a DC starting system and state the function of each.
9. Test/service outboard marine engine starting systems according to manufacturer's specifications.
   a. Remove, test/service, and replace a DC starter.
   b. Replace a starter rewind spring.
   c. Service a mechanical starter.
10. Test/service the electrical power trim and tilt system.
   a. Identify the parts of the electrical power trim and tilt system.
   b. Disassemble, inspect, and reassemble an electrical power trim and tilt system.
11. Identify the components of a mechanical remote control assembly.
   a. Identify the parts of the remote control assembly.
   b. Discuss their functions.
12. Service the components of a mechanical remote control assembly.
   a. Disassemble, inspect, and reassemble a mechanical remote control assembly.
   b. Install and adjust shift and throttle control cables.
13. Match the correct propeller to a given boat and motor.
   a. Identify the parts of a propeller and trim tab and discuss their functions.
   b. Identify the different types of materials used in constructing propellers and describe their properties.
   c. Match correct propeller pitch to a given boat and motor.
   d. Discuss the purposes of a trim tab.
14. Remove, inspect, and install a propeller assembly.
   a. Remove, inspect, and install a trim tab.
   b. Discuss the functions of shear pins and clip clutches.
15. Identify and discuss parts of a gearcase.
   a. Identify the parts.
   b. Describe the functions.
16. Perform basic service on a mechanical gearcase.
   a. Disassemble, inspect and service, and reassemble.
   b. Perform routine service on a mechanical gearbox.
17. Identify and explain the typical fuel and carburetion systems.
   a. Identify terms.
   b. Explain the mixture of fuel.
   c. Compare and contrast the differences between carburetor and fuel injection systems.
18. Service and analyze the fuel and carburetion systems.
   a. Describe fuel system problems which can cause loss of performance in an outboard marine engine.

b. Disassemble, inspect and service, and reassemble a vacuum fuel system.
c. Describe the operation of a venturi in a carburetor.
d. Remove, disassemble, inspect service, reassemble, install, and adjust a carburetor.
e. Analyze an engine to determine fuel system problems.

19. Explain the various ignition systems.
    a. Identify terms associated with various ignition systems.
    b. Explain the operating principles.
    c. Explain safety precautions.
20. Analyze ignition systems to determine problems.
    a. Troubleshoot an OMC capacitor discharge ignition system.
    b. Troubleshoot a Mercury alternator driven ignition (ADI) system.
21. Describe the parts of a 2-stroke cycle engine.
    a. Identify terms/parts of the piston and connecting rod assembly.
    b. Identify terms/parts of the 2-stroke cycle crankshaft assembly.
    c. Explain causes of engine problems in 2-stroke cycle engines.
22. Inspect and overhaul various 2-stroke cycle engines to manufacturer's specifications.
    a. Disassemble, inspect, and overhaul a 2-stroke cycle engine.
    b. Reassemble a 2-stroke cycle engine.
    c. Replace a short block assembly on a 2-stroke cycle engine.
    d. Run and test engine.
23. Prepare for employment.
    a. Prepare a résumé.
    b. Complete a job application form.
    c. Explain procedures for job interviews using correct job etiquette.
    d. Demonstrate the role of an applicant in a job interview using correct interview procedures.
    e. Describe job interview etiquette.
24. Apply principles of customer relations in the outboard marine engine mechanics shop.
    a. Communicate with customer and/or supervisor.
    b. Complete customer work order form.
25. Apply procedures of shop management in the outboard marine engine mechanics shop.
    a. Utilize parts identification media.
    b. Complete work records to account for parts and labor.
    c. Prepare customer bill/receipt.
26. Review and investigate careers and educational opportunities, new and emerging technologies, trends, and issues associated with outboard marine engine mechanics.
    a. Prepare a report on career and continuing educational opportunities using the Internet and/or other computerized databases (Career Center and Choices).
    b. Prepare a report on a new and emerging technology associated with outboard marine engine mechanics.
    c. Prepare a report on a current trend or issue associated with outboard marine engine mechanics.
27. Complete school-to-careers activities related to outboard marine engine mechanics.
    a. Participate in a school-to-careers activity (shadowing, mentoring, career fair, etc.) related to outboard marine engine mechanics.

b. Investigate educational opportunities related to outboard marine engine mechanics at the postsecondary level.
c. Describe national standards and certification/licensing procedures related to outboard marine engine mechanics.
d. Describe the role of trade organizations, associations, and unions as related to outboard marine engine mechanics.

28. Demonstrate related academic skills and workplace skills associated with outboard marine engine mechanics.
    a. Complete a cooperative project (paper, presentation, or demonstration) associated with an academic subject and outboard marine engine mechanics.
    b. Practice human relations skills (team participation, client/customer service, leadership, negotiation, working with culturally diverse groups, etc.) related to outboard marine engine mechanics.
    c. Research work ethics and employer expectations of employees in outboard marine engine mechanics.
    d. Investigate the concepts of quality assurance as related to outboard marine engine mechanics.
29. Examine trends and changes related to outboard marine engine mechanics and global economic factors.
    a. Define and discuss the concept of global economics and competition.
    b. Describe global economic factors and competition as related to outboard marine engine mechanics.
    c. Identify regions and other countries which compete in outboard marine engine mechanics.

PROGRAM DESCRIPTION

SMALL ENGINE REPAIR

Small Engine Repair is an instructional program that generally prepares individuals to repair small internal-combustion engines used on portable power equipment such as lawn mowers, chain saws, rotary tillers, motorcycles, and lawn and garden tractors. Students in Small Engine Repair I complete study in safety, tools and equipment, fasteners, measuring, engine identification and inspection, basic engine principles and design, lubrication systems, cooling systems, fuel systems, basic electricity, and ignition systems. Students in Small Engine Repair II complete study in safety, charging systems, starting systems, exhaust systems, overhaul of four-stroke and two-stroke cycle engines, governor systems, shop management, and troubleshooting.

The content of this curriculum framework is based on national standards as developed by the Equipment & Engine Training Council.

Industry standards are based on the *Equipment & Engine Training Council Standards for Small Engine Repair*.

COURSE OUTLINE

Small Engine Repair I

Course CIP Code: 47.0606

Course Outline: Small Engine Repair I is an instructional program that generally prepares individuals to repair small internal-combustion engines used on portable power equipment such as lawn mowers, chain saws, rotary tillers, motorcycles, and lawn and garden tractors. Students in Small Engine Repair I complete study in safety, tools and equipment, fasteners, measuring, engine identification and inspection, basic engine principles and design, lubrication systems, cooling systems, fuel systems, basic electricity, and ignition systems. (2-2½ Carnegie Units, depending upon time spent in the course)

Unit	Title	Hours
1	Safety and Orientation	10
2	Tools and Equipment	45
3	Engine Identification and Inspection	22.5
4	Basic Engine Principles and Design	22.5
5	Basic Electricity	22.5
6	Ignition Systems	22.5
7	Lubrication Systems	15
8	Cooling Systems	22.5
9	Fuel Systems (Carburetor-Type)	22.5

Small Engine Repair II

Course CIP Code: 47.0613

Course Description: Small Engine Repair is an instructional program that generally prepares individuals to repair small internal-combustion engines used on portable power equipment such as lawn mowers, chain saws, rotary tillers, motorcycles, and lawn and garden tractors. Students in Small Engine Repair II complete study in safety, charging systems, starting systems, exhaust systems, overhaul of four-stroke and two-stroke cycle engines, governor systems, shop management, and troubleshooting. (2-2½ Carnegie Units, depending upon time spent in the course)

Unit	Title	Hours
1	Safety and Orientation (Review and Reinforcement)	10
2	Charging Systems	15
3	Governor Systems	15
4	Starting Systems	15
5	Exhaust Systems	15
6	Shop Management	15
7	Employability Skills	22.5
8	Overhaul of Four-Stroke Cycle Engine	30
9	Overhaul of Two-Stroke Cycle Engine	30
10	Troubleshooting	37.5

Course Name: Small Engine Repair I
Course CIP Code: 47.0606

Competencies and Suggested Objectives

1. Describe local program and vocational/career technical center policies and procedures.
   a. Describe local program and vocational/career technical center policies and procedures including dress code, attendance, academic requirements, discipline, and transportation regulations.
2. Explore leadership skills and personal development opportunities provided students by student organizations to include SkillsUSA.
   a. Demonstrate effective teambuilding and leadership skills.
   b. Practice appropriate work ethics.
3. Describe general safety rules for working in a shop/lab and industry.
   a. Describe how to avoid on-site accidents.
   b. Explain the relationship between housekeeping and safety.
   c. Explain the importance of following all safety rules and company safety policies.
   d. Explain the importance of reporting all on-the-job injuries, accidents, and near misses.
   e. Explain the need for evacuation policies and the importance of following them.
   f. Explain the employer's substances abuse policy and how it relates to safety.
   g. Explain the safety procedures when working near pressurized or high temperature.
4. Explain procedures for working with and disposing of hazardous materials according to OSHA regulations.
   a. Define terms, categories, and symbols associated with hazardous materials.
   b. Describe and identify methods and procedures for storing materials and reducing hazardous waste.
   c. Identify and describe the informational sections found on a Material Safety Data Sheet (MSDS).
   d. Describe general first aid procedures in case of an accident involving hazardous materials.
   e. Identify safety equipment to be used with hazardous materials.
   f. Describe steps to follow in handling spills and waste disposal.
5. Explain the safe use and maintenance of tools and equipment.
   a. Identify and demonstrate the safe use of basic hand tools.
   b. Identify the tools used in overhaul of small engines.
   c. Describe procedures concerning the maintenance of hand tools.
   d. Identify and demonstrate the safe and proper use of lifting and hoisting equipment.
   e. Identify and demonstrate the safe use of power equipment.
6. Identify common fasteners and describe their use.
   a. Identify the different types of bolts, nuts, and washers and describe their appropriate uses.
   b. Identify bolts by grade, diameter, length, and thread pitch.
   c. Identify different glues and sealants and describe their appropriate use.
   d. Restore internal and external threads.

7. Apply measurement procedures used in small engine repair.
    a. Identify measuring instruments used in small engine repair.
    b. Measure the length of an object using a rule to the nearest 1/16th of an inch and 1 millimeter.
    c. Measure the inside diameter, outside diameter, and/or depth to the nearest .001 of an inch and nearest .1 millimeter, using precision measuring instruments (micrometers, calipers, and dial indicators).
8. Identify types of small engines.
    a. Define new terms associated with engine identification and inspection.
    b. Compare and contrast distinguishing characteristics of four-stroke and two-stroke cycle engines.
    c. Describe categories of information which can be determined from the operator's instructions and/or inspection of the engine.
    d. Complete an engine identification and inspection form according to manufacturer's specifications.
9. Explain the principles of operation of an internal combustion engine.
    a. Define terms associated with basic engine principles and design.
    b. Describe the parts of a basic internal combustion engine cylinder unit.
    c. Describe steps in the process by which an internal combustion engine converts chemical energy into rotary motion.
10. Analyze engine horsepower rating.
    a. Read and interpret engine label.
    b. Read and interpret manufacturer's service manual to analyze engine horsepower rating.
11. Explain the principles of four-stroke cycle engine operation.
    a. Define terms associated with the principles of operation of a four-stroke cycle engine.
    b. Identify basic components of a four-stroke cycle engine.
    c. Describe the operation of a four-stroke cycle engine as related to each stroke of the cycle.
12. Explain the principles of two-stroke cycle engine operation.
    a. Define terms associated with the two-stroke cycle engine.
    b. Identify basic components of a two-stroke cycle engine.
    c. Simulate the steps in the operation of a two-stroke cycle.
13. Describe the basic operation principles of a diesel engine.
    a. Identify and describe the sequence of operation of a four-stroke cycle diesel engine.
    b. Compare differences in diesel and gasoline engines.
14. Explain the principles of basic electricity.
    a. Define terms associated with basic electricity.
    b. Describe sources of electricity.
    c. Explain the difference between conductors and insulators.
    d. Illustrate common electrical symbols used in schematic diagrams.
    e. Compare the differences between series, parallel, and series/parallel circuits.
15. Describe instruments and perform measurements of electricity.
    a. Describe instruments used in checking electrical circuits.

b. Measure resistance, continuity, amperage, and voltage in parallel, series, and closed circuits.

16. Explain the components of a small engine ignition system.
    a. Describe the types of ignition systems.
    b. Identify components of a battery, magneto, solid state, and breaker-less ignition system (primary and secondary circuits).
    c. Interpret the purpose and operation of ignition system components.
    d. Explore trends and changes related to ignition systems.
17. Service and test small engine ignition systems.
    a. Remove, service, and/or replace sparkplugs according to manufacturer's specifications.
    b. Remove and replace contact points and condenser according to manufacturer's specifications.
    c. Test the coil, condenser, armature, and flywheel magnets according to manufacturer's specifications.
    d. Test and adjust a solid state ignition system according to manufacturer's specifications.
    e. Perform a coil power test according to manufacturer's specifications.
    f. Test condenser for leakage or short according to manufacturer's specifications.
18. Explain the principles of lubrication and engine oils.
    a. Define terms related to lubrication systems.
    b. Describe the characteristics and functions of engine oil.
    c. Examine factors to consider in selection and use of oils for best engine performance.
19. Perform lubrication services on small engines.
    a. Change engine oil and filter (if present).
    b. Service a crankcase breather according to manufacturer's specifications.
    c. Mix lubricant and fuel for a two-stroke cycle engine according to manufacturer's specifications.
20. Apply procedures for preparing a small engine for storage.
    a. Prepare a small engine for storage according to manufacturer's specifications.
21. Service an air-cooled small engine system.
    a. Define terms associated with air-cooled cooling systems.
    b. Identify components of an air-cooled engine cooling system.
    c. Remove, clean, and replace air cooling system parts according to manufacturer's specifications.
22. Service a liquid-cooled small engine system.
    a. Identify the parts of a liquid-cooled engine cooling system.
    b. Inspect and service a liquid-cooled engine cooling system.
23. Identify fuel and fuel systems used in small engines.
    a. Identify the components of a typical carburetor-type fuel system.
    b. Identify the different types of fuel filters.
    c. Identify the different types of air cleaners.
    d. Identify the parts of a float-type and diaphragm-type carburetor.
    e. Describe functions of the carburetor.
    f. Identify the components and functions of fuel injectors.

24. Remove, service, replace, and adjust an air cleaner, oil bath cleaner, float-type carburetor, and diaphragm-type carburetor.
    a. Service an air cleaner (paper element and polyurethane) according to manufacturer's specifications.
    b. Service an oil bath air cleaner according to manufacturer's specifications.
    c. Remove, service, replace, and adjust a float-type carburetor according to manufacturer's specifications.
    d. Remove, service, replace, and adjust a diaphragm-type carburetor according to manufacturer's specifications.

Course Name: Small Engine Repair II
Course CIP Code: 47.0613

Competencies and Suggested Objectives

1. Describe local program and vocational/career technical center policies and procedures.
   a. Describe local program and vocational/career technical center policies and procedures including dress code, attendance, academic requirements, discipline, and transportation regulations.
2. Explore leadership skills and personal development opportunities provided students by student organizations to include SkillsUSA.
   a. Demonstrate effective teambuilding and leadership skills.
   b. Practice appropriate work ethics.
3. Review general safety rules for working in a shop/lab and industry.
   a. Describe how to avoid on-site accidents.
   b. Explain the relationship between housekeeping and safety.
   c. Explain the importance of following all safety rules and company safety policies.
   d. Explain the importance of reporting all on-the-job injuries, accidents, and near misses.
   e. Explain the need for evacuation policies and the importance of following them.
   f. Explain the employer's substances abuse policy and how it relates to safety.
   g. Explain the safety procedures when working near pressurized or high temperature.
4. Review procedures for working with and disposing of hazardous materials according to OSHA regulations.
   a. Define terms, categories, and symbols associated with hazardous materials.
   b. Describe and identify methods and procedures for storing materials and reducing hazardous waste.
   c. Identify and describe the informational sections found on a Material Safety Data Sheet (MSDS).
   d. Describe general first aid procedures in case of an accident involving hazardous materials.
   e. Identify safety equipment to be used with hazardous materials.
   f. Describe steps to follow in handling spills and waste disposal.
5. Explain the components of small engine charging systems.
   a. Identify components of the charging system and state the function(s) of each.
6. Service a small engine charging system.
   a. Remove, check, and replace an alternator according to manufacturer's specifications.
7. Explain governor systems used in small engines.
   a. Describe purposes of the governor system.
   b. Identify components of an air vane governor system and state the purpose of each.
   c. Identify components of a mechanical governor system and state the purpose of each.

8. Inspect, adjust, and repair small engine governor systems.
    a. Inspect, adjust, and repair an air vane governor according to manufacturer's specifications.
    b. Inspect, adjust, and repair a mechanical governor with internal flyweights according to manufacturer's specifications.
    c. Service small engine controls according to manufacturer's specifications.
9. Explain the components of small engine starting systems.
    a. Describe the types of starting systems.
    b. Identify the components and functions of a mechanical starting system.
    c. Identify the components and functions of a DC starting system.
10. Test/service small engine starting systems.
    a. Remove, test/service, and replace a DC starter according to manufacturer's specifications.
    b. Replace a starter rewind spring according to manufacturer's specifications.
    c. Service the vertical pull starter according to manufacturer's specifications.
11. Explain the functions of small engine exhaust systems.
    a. Define terms associated with exhaust systems.
    b. Describe results that can occur from running a damaged or worn exhaust system.
12. Service the exhaust system on two- and four-stroke cycle engines.
    a. Remove carbon deposits from exhaust ports and muffler of a two-stroke cycle engine according to manufacturer's specifications.
    b. Replace a muffler on a small engine according to manufacturer's specifications.
13. Apply principles of customer relations in the small engine repair shop.
    a. Communicate with customer and/or supervisor to determine service requested.
    b. Complete customer work order form.
14. Apply procedures of shop management in the small engine repair shop.
    a. Utilize parts identification media.
    b. Maintain work records to account for parts and labor.
    c. Conduct product liability procedures.
    d. Prepare customer bill/receipt so that the completed product is legible, is free of mathematical error, and accurately reflects the transaction.
15. Describe employment opportunities and responsibilities.
    a. Describe employment opportunities including potential earnings, employee benefits, job availability, place of employment, working conditions, and educational requirements.
    b. Describe basic employee responsibilities.
16. Prepare for employment.
    a. Prepare a resume containing essential information.
    b. Complete a job application form using correct grammar, spelling, and punctuation.
    c. Explain five procedures for job interviews using correct job etiquette.
    d. Utilize correct interview procedures.
17. Describe the parts of a four-stroke cycle engine.
    a. Define terms associated with engine parts and overhaul.
    b. Explain causes of engine problems.
    c. Identify parts of a piston and connecting rod assembly.

d. Identify parts of the crankshaft assembly.
e. Identify parts of a valve train.

18. Inspect and overhaul the four-stroke cycle engine.
    a. Disassemble a four-stroke cycle engine according to manufacturer's specifications.
    b. Inspect and overhaul a cylinder according to manufacturer's specifications.
    c. Inspect and overhaul the piston, rings, and connecting rod according to manufacturer's specifications.
    d. Inspect and overhaul a valve assembly according to manufacturer's specifications.
    e. Reassemble a four-stroke cycle engine according to manufacturer's specifications.
    f. Replace a short block assembly on a four-stroke cycle engine according to manufacturer's specifications.
19. Describe the parts of a two-stroke cycle engine.
    a. Define terms associated with engine parts and overhaul.
    b. Explain causes of two-stroke cycle engine problems.
    c. Identify parts of the piston and connecting rod assembly.
    d. Identify parts of the two-cycle crankshaft assembly.
20. Inspect and overhaul the two-stroke cycle engine.
    a. Disassemble, inspect, and overhaul a two-stroke cycle engine according to manufacturer's specifications.
    b. Reassemble a two-stroke cycle engine according to manufacturer's specifications.
    c. Replace a short block assembly on a two-stroke cycle engine according to manufacturer's specifications.
21. Explain the requirements for small engine operation and the basic steps to troubleshooting.
    a. Review requirements for an engine to operate.
    b. Describe basic troubleshooting procedures and the order in which they need to be followed.
22. Perform troubleshooting procedures on small engine components.
    a. Troubleshoot the fuel system according to manufacturer's specifications.
    b. Troubleshoot the ignition system according to manufacturer's specifications.
    c. Troubleshoot engine compression according to manufacturer's specifications.

Appendix A: Academic Standards

Algebra I[1]

Competencies and Suggested Objective(s)

A1 Recognize, classify, and use real numbers and their properties.
- a. Describe the real number system using a diagram to show the relationships of component sets of numbers that compose the set of real numbers.
- b. Model properties and equivalence relationships of real numbers.
- c. Demonstrate and apply properties of real numbers to algebraic expressions.
- d. Perform basic operations on square roots excluding rationalizing denominators.

A2 Recognize, create, extend, and apply patterns, relations, and functions and their applications.
- a. Analyze relationships between two variables, identify domain and range, and determine whether a relation is a function.
- b. Explain and illustrate how change in one variable may result in a change in another variable.
- c. Determine the rule that describes a pattern and determine the pattern given the rule.
- d. Apply patterns to graphs and use appropriate technology.

A3 Simplify algebraic expressions, solve and graph equations, inequalities and systems in one and two variables.
- a. Solve, check, and graph linear equations and inequalities in one variable, including rational coefficients.
- b. Graph and check linear equations and inequalities in two variables.
- c. Solve and graph absolute value equations and inequalities in one variable.
- d. Use algebraic and graphical methods to solve systems of linear equations and inequalities.
- e. Translate problem-solving situations into algebraic sentences and determine solutions.

A4 Explore and communicate the characteristics and operations of polynomials.
- a. Classify polynomials and determine the degree.
- b. Add, subtract, multiply, and divide polynomial expressions.
- c. Factor polynomials using algebraic methods and geometric models.
- d. Investigate and apply real-number solutions to quadratic equations algebraically and graphically.
- e. Use convincing arguments to justify unfactorable polynomials.
- f. Apply polynomial operations to problems involving perimeter and area.

[1] *Mississippi mathematics framework—Algebra I*. (2003). Retrieved September 10, 2003, from http://marcopolo.mde.k12.ms.us/frameworks/mathematics/ma_algebra_i.html

A5 Utilize various formulas in problem-solving situations.
- a. Evaluate and apply formulas (e.g., circumference, perimeter, area, volume, Pythagorean Theorem, interest, distance, rate, and time).
- b. Reinforce formulas experimentally to verify solutions.
- c. Given a literal equation, solve for any variable of degree one.
- d. Using the appropriate formula, determine the length, midpoint, and slope of a segment in a coordinate plane.
- e. Use formulas (e.g., point-slope and slope-intercept) to write equations of lines.

A6 Communicate using the language of algebra.
- a. Recognize and demonstrate the appropriate use of terms, symbols, and notations.
- b. Distinguish between linear and non-linear equations.
- c. Translate between verbal expressions and algebraic expressions.
- d. Apply the operations of addition, subtraction, and scalar multiplication to matrices.
- e. Use scientific notation to solve problems.
- f. Use appropriate algebraic language to justify solutions and processes used in solving problems.

A7 Interpret and apply slope as a rate of change.
- a. Define slope as a rate of change using algebraic and geometric representations.
- b. Interpret and apply slope as a rate of change in problem-solving situations.
- c. Use ratio and proportion to solve problems including direct variation (y=kx).
- d. Apply the concept of slope to parallel and perpendicular lines.

A8 Analyze data and apply concepts of probability.
- a. Collect, organize, graph, and interpret data sets, draw conclusions, and make predictions from the analysis of data.
- b. Define event and sample spaces and apply to simple probability problems.
- c. Use counting techniques, permutations, and combinations to solve probability problems.

Biology I[2]

Competencies and Suggested Objective(s)

B1 Utilize critical thinking and scientific problem solving in designing and performing biological research and experimentation.
- a. Demonstrate the proper use and care for scientific equipment used in biology.
- b. Observe and practice safe procedures in the classroom and laboratory.
- c. Apply the components of scientific processes and methods in the classroom and laboratory investigations.

[2] *Mississippi science framework—Biology I.* (2003). Retrieved September 10, 2003, from http://marcopolo.mde.k12.ms.us/frameworks/science/sci_biology_I.html

d. Communicate results of scientific investigations in oral, written, and graphic form.

B2 Investigate the biochemical basis of life.

a. Identify the characteristics of living things.
b. Describe and differentiate between covalent and ionic bonds using examples of each.
c. Describe the unique bonding and characteristics of water that makes it an essential component of living systems.
d. Classify solutions using the pH scale and relate the importance of pH to organism survival.
e. Compare the structure, properties and functions of carbohydrates, lipids, proteins and nucleic acids in living organisms.
f. Explain how enzymes work and identify factors that can affect enzyme action.

B3 Investigate cell structures, functions, and methods of reproduction.

a. Differentiate between prokaryotic and eukaryotic cells.
b. Distinguish between plant and animal (eukaryotic) cell structures.
c. Identify and describe the structure and basic functions of the major eukaryotic organelles.
d. Describe the way in which cells are organized in multicellular organisms.
e. Relate cell membrane structure to its function in passive and active transport.
f. Describe the main events in the cell cycle and cell mitosis including differences in plant and animal cell divisions.
g. Relate the importance of meiosis to sexual reproduction and the maintenance of chromosome number.
h. Identify and distinguish among forms of asexual and sexual reproduction.

B4 Investigate the transfer of energy from the sun to living systems.

a. Describe the structure of ATP and its importance in life processes.
b. Examine, compare, and contrast the basic processes of photosynthesis and cellular respiration.
c. Compare and contrast aerobic and anaerobic respiration.

B5 Investigate the principles, mechanisms, and methodology of classical and molecular genetics.

a. Compare and contrast the molecular structures of DNA and RNA as they relate to replication, transcription, and translation.
b. Identify and illustrate how changes in DNA cause mutations and evaluate the significance of these changes.
c. Analyze the applications of DNA technology (forensics, medicine, agriculture).
d. Discuss the significant contributions of well-known scientists to the historical progression of classical and molecular genetics.
e. Apply genetic principles to solve simple inheritance problems including monohybrid crosses, sex linkage, multiple alleles, incomplete dominance, and codominance.

f. Examine inheritance patterns using current technology (gel electrophoresis, pedigrees, karyotypes).

B6 Investigate concepts of natural selection as they relate to diversity of life.

a. Analyze how organisms are classified into a hierarchy of groups and subgroups based on similarities and differences.
b. Identify characteristics of kingdoms including monerans, protists, fungi, plants and animals.
c. Differentiate among major divisions of the plant and animal kingdoms (vascular/non-vascular; vertebrate/invertebrate).
d. Compare the structures and functions of viruses and bacteria relating their impact on other living organisms.
e. Identify evidence of change in species using fossils, DNA sequences, anatomical and physiological similarities, and embryology.
f. Analyze the results of natural selection in speciation, diversity, adaptation, behavior and extinction.

B7 Investigate the interdependence and interactions that occur within an ecosystem.

a. Analyze the flow of energy and matter through various cycles including carbon, oxygen, nitrogen and water cycles.
b. Interpret interactions among organisms in an ecosystem (producer/consumer/decomposer, predator/prey, symbiotic relationships and competitive relationships).
c. Compare variations, tolerances, and adaptations of plants and animals in major biomes.
d. Investigate and explain the transfer of energy in an ecosystem including food chains, food webs, and food pyramids.
e. Examine long and short-term changes to the environment as a result of natural events and human actions.

English II[3]

Competencies and Suggested Objective(s)

E1 Produce writing which reflects increasing proficiency through planning, writing, revising, and editing and which is specific to audience and purpose.

a. Produce individual and/or group compositions and/or projects to persuade, tell a story, describe, create an effect, explain or justify an action or event, inform, entertain, etc.
b. Produce writing typically used in the workplace such as social, business, and technical correspondence; explanation of procedures; status reports; research findings; narratives for graphs; justification of decisions, actions, or expenses; etc.
c. Write a response, reaction, interpretation, analysis, summary, etc., of literature, other reading matter, or orally presented material.

[3] *Mississippi language arts framework—English II*. (2003). Retrieved September 10, 2003, from http://marcopolo.mde.k12.ms.us/frameworks/language_arts/la_10.html

d. Revise to ensure effective introductions, details, wording, topic sentences, and conclusions.

E2 Communicate ideas for a variety of school and other life situations through listening, speaking, and reading aloud.

a. Listen to determine the main idea and supporting details, to distinguish fact from opinion, and to determine a speaker's purpose or bias.
b. Speak with appropriate intonation, articulation, gestures, and facial expression.
c. Speak effectively to explain and justify ideas to peers, to inform, to summarize, to persuade, to entertain, to describe, etc.

E3 Read, evaluate, and use print, non-print, and technological sources to research issues and problems, to present information, and to complete projects.

a. Read, view, and listen to distinguish fact from opinions and to recognize persuasive and manipulative techniques.
b. Access both print and non-print sources to produce an I-Search paper, research paper, or project.
c. Use computers and audio-visual technology to access and organize information for purposes such as resumes, career search projects, and analytical writings, etc.
d. Use reference sources, indices, electronic card catalog, and appropriate research procedures to gather and synthesize information.

E4 Work individually and as a member of a team to analyze and interpret information, to make decisions, to solve problems, and to reflect, using increasingly complex and abstract thinking.

a. Interact with peers to examine real world and literary issues and ideas.
b. Show growth in critical thinking, leadership skills, consensus building, and self-confidence by assuming a role in a group, negotiating compromise, and reflecting on individual or group work.

E5 Complete oral and written presentations which exhibit interaction and consensus within a group.

a. Share, critique, and evaluate works in progress and completed works through a process approach.
b. Communicate effectively in a group to present completed projects and/or compositions.
c. Edit oral and written presentations to reflect correct grammar, usage, and mechanics.

E6 Explore cultural contributions to the history of the English language and its literature.

a. Explore a variety of works from various historical periods, geographical locations, and cultures, recognizing their influence on language and literature.
b. Identify instances of dialectal differences which create stereotypes, perceptions, and identities.
c. Recognize root words, prefixes, suffixes, and cognates.
d. Relate how vocabulary and spelling have changed over time.

E7 Discover the power and effect of language by reading and listening to selections from various literary genres.
- a. Listen to and read aloud selected works to recognize and respond to the rhythm and power of language to convey a message.
- b. Read aloud with fluency and expression.
- c. Analyze the stylistic devices, such as alliteration, assonance, word order, rhyme, onomatopoeia, etc., that make a passage achieve a certain effect.
- d. Demonstrate how the use of language can confuse or inform, repel or persuade, or inspire or enrage.
- e. Analyze how grammatical structure or style helps to create a certain effect.

E8 Read, discuss, analyze, and evaluate literature from various genres and other written material.
- a. Read and explore increasingly complete works, both classic and contemporary, for oral discussion and written analysis.
- b. Read, discuss, and interpret literature to make connections to life.
- c. Read from a variety of genres to understand how the literary elements contribute to the overall quality of the work.
- d. Identify qualities in increasingly complex literature that have produced a lasting impact on society.
- e. Read for enjoyment, appreciation, and comprehension of plot, style, vocabulary, etc.

E9 Sustain progress toward fluent control of grammar, mechanics, and usage of standard English in the context of writing and speaking.
- a. Infuse the study of grammar and vocabulary into written and oral communication.
- b. Demonstrate, in the context of their own writing, proficient use of the conventions of standard English, including, but not limited to, the following: complete sentences, subject-verb agreement, plurals, spellings, homophones, possessives, verb forms, punctuation, capitalization, pronouns, pronoun-antecedent agreement, parallel structure, and dangling and misplaced modifiers.
- c. Give oral presentations to reinforce the use of standard English.
- d. Employ increasingly proficient editing skills to identify and solve problems in grammar, usage, and structure.

E10 Use language and critical thinking strategies to serve as tools for learning.
- a. Use language to facilitate continuous learning, to record observations, to clarify thought, to synthesize information, and to analyze and evaluate language.
- b. Interpret visual material orally and in writing.

U. S. History from 1877[4]

Competencies and Suggested Objective(s)

H1 Explain how geography, economics, and politics have influenced the historical development of the United States in the global community.
- a. Apply economic concepts and reasoning when evaluating historical and contemporary social developments and issues (e.g., gold standard, free coinage of silver, tariff issue, laissez faire, deficit spending, etc.).
- b. Explain the emergence of modern America from a domestic perspective (e.g., frontier experience, Industrial Revolution and organized labor, reform movements of Populism and Progressivism, Women's Movement, Civil Rights Movement, the New Deal, etc.).
- c. Explain the changing role of the United States in world affairs since 1877 through wars, conflicts, and foreign policy (e.g., Spanish-American War, Korean conflict, containment policy, etc.).
- d. Trace the expansion of the United States and its acquisition of territory from 1877 (e.g., expansionism and imperialism).

H2 Describe the impact of science and technology on the historical development of the United States in the global community.
- a. Analyze the impact of inventions on the United States (e.g., telephone, light bulb, etc.).
- b. Examine the continuing impact of the Industrial Revolution on the development of our nation (e.g., mass production, computer operations, etc.).
- c. Describe the effects of transportation and communication advances since 1877.

H3 Describe the relationship of people, places, and environments through time.
- a. Analyze human migration patterns since 1877 (e.g., rural to urban, the Great Migration, etc.).
- b. Analyze how changing human, physical, geographic characteristics can alter a regional landscape (e.g., urbanization, Dust Bowl, etc.).

H4 Demonstrate the ability to use social studies tools (e.g., timelines, maps, globes, resources, graphs, a compass, technology, etc.).
- a. Interpret special purpose maps, primary/secondary sources, and political cartoons.
- b. Analyze technological information on graphs, charts, and timelines.
- c. Locate areas of international conflict (e.g., Caribbean, Southeast Asia, Europe, etc.).

H5 Analyze the contributions of Americans to the ongoing democratic process to include civic responsibilities.
- a. Examine various reform movements (e.g., Civil Rights, Women's Movement, etc.).

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[4] *Mississippi social studies framework—U.S. History from 1877*. (2003). Retrieved September 10, 2003, from http://marcopolo.mde.k12.ms.us/frameworks/social_studies/ss_us_history.html

b. Examine the government's role in various movements (e.g., arbitration, 26th Amendment, etc.).
c. Examine the role of government in the preservation of citizens' rights (e.g., 19th Amendment, Civil Rights Act of 1964).
d. Examine individuals' duties and responsibilities in a democratic society (e.g., voting, volunteerism, etc.).

Appendix B: Workplace Skills for the 21st Century[5]

WP1 Allocates resources (time, money, materials and facilities, and human resources).
WP2 Acquires, evaluates, organizes and maintains, and interprets/communicates information, including the use of computers.
WP3 Practices interpersonal skills related to careers including team member participation, teaching other people, serving clients/customers, exercising leadership, negotiation, and working with culturally diverse.
WP4 Applies systems concept including basic understanding, monitoring and correction system performance, and designing and improving systems.
WP5 Selects, applies, and maintains/troubleshoots technology.
WP6 Employs thinking skills including creative thinking, decision making, problem solving, reasoning, and knowing how to learn.
WP7 Basic Skills: Employs basic academic skills including reading, writing, arithmetic and mathematics, speaking, and listening.
WP8 Personal Qualities: Practices work ethics related to individual responsibility, integrity, honesty, and personal management.

[5] *Secretary's commission on achieving necessary skills*. Retrieved July 13, 2004, from http://wdr.doleta.gov/SCANS/

Appendix C: National Educational Technology Standards for Students[6]

T1 Basic operations and concepts
- Students demonstrate a sound understanding of the nature and operation of technology systems.
- Students are proficient in the use of technology.

T2 Social, ethical, and human issues
- Students understand the ethical, cultural, and societal issues related to technology.
- Students practice responsible use of technology systems, information, and software.
- Students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.

T3 Technology productivity tools
- Students use technology tools to enhance learning, increase productivity, and promote creativity.
- Students use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works.

T4 Technology communications tools
- Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences.
- Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

T5 Technology research tools
- Students use technology to locate, evaluate, and collect information from a variety of sources.
- Students use technology tools to process data and report results.
- Students evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks.

T6 Technology problem-solving and decision-making tools
- Students use technology resources for solving problems and making informed decisions.
- Students employ technology in the development of strategies for solving problems in the real world.

[6] International Society for Technology in Education. (2000). *National educational technology standards for students (NETS).* Retrieved July 13, 2004, from http://www.iste.org/

REVISED MISSISSIPPI CURRICULUM FRAMEWORKS FOR VOCATIONAL-TECHNICAL PROGRAMS

POSTSECONDARY EXECUTIVE SUMMARY

2006

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REVISED POSTSECONDARY CURRICULUM FRAMEWORKS
2006 EDITION
EXECUTIVE SUMMARY
FOREWORD

As the world economy continues to evolve, businesses and industries must adopt new practices and processes in order to survive. Quality and cost control, work teams and participatory management, and an infusion of technology are transforming the way people work and do business. Employees are now expected to read, write, and communicate effectively; think creatively, solve problems, and make decisions; and interact with each other and the technologies in the workplace. Vocational-technical programs must also adopt these practices in order to provide graduates who can enter and advance in the changing work world.

The curriculum framework in this document reflects these changes in the workplace and a number of other factors that impact on local vocational-technical programs. Federal and state legislation calls for articulation between high school and community college programs, integration of academic and vocational skills, and the development of sequential courses of study that provide students with the optimum educational path for achieving successful employment. National skills standards, developed by industry groups and sponsored by the U.S. Department of Education and Labor, provide vocational educators with the expectations of employers across the United States. All of these factors are reflected in the framework found in this document.

Each postsecondary program of instruction consists of a program description and a suggested sequence of courses which focus on the development of occupational competencies. Each vocational-technical course in this sequence has been written using a common format which includes the following components:

- Course Name – A common name that will be used by all community/junior colleges in reporting students.

- Course Abbreviation – A common abbreviation that will be used by all community/junior colleges in reporting students.

- Classification – Courses may be classified as:
    - Vocational-technical core – A required vocational-technical course for all students.
    - Area of concentration (AOC) core – A course required in an area of concentration of a cluster of programs.
    - Vocational-technical elective – An elective vocational-technical course.
    - Related academic course – An academic course which provides academic skills and knowledge directly related to the program area.
    - Academic core – An academic course which is required as part of the requirements for an Associate degree.

- Description – A short narrative which includes the major purpose(s) of the course and the recommended number of hours of lecture and laboratory activities to be conducted each week during a regular semester.

- Prerequisites – A listing of any courses that must be taken prior to or on enrollment in the course.

- Corequisites – A listing of courses that may be taken while enrolled in the course.

- Competencies and Suggested Objectives – A listing of the competencies (major concepts and performances) and of the suggested student objectives that will enable students to demonstrate mastery of these competencies.

The following guidelines were used in developing the program(s) in this document and should be considered in compiling and revising course syllabi and daily lesson plans at the local level:

- The content of the courses in this document reflects approximately 75 percent of the time allocated to each course. The remaining 25 percent of each course should be developed at the local district level and may reflect:
    - Additional competencies and objectives within the course related to topics not found in the State framework, including activities related to specific needs of industries in the community college district.
    - Activities which develop a higher level of mastery on the existing competencies and suggested objectives.
    - Activities and instruction related to new technologies and concepts that were not prevalent at the time the current framework was developed/revised.
    - Activities which implement components of the Mississippi Tech Prep initiative, including integration of academic and vocational-technical skills and coursework, school-to-work transition activities, and articulation of secondary and postsecondary vocational-technical programs.
    - Individualized learning activities, including worksite learning activities, to better prepare individuals in the courses for their chosen occupational area.

- Sequencing of the course within a program is left to the discretion of the local district. Naturally, foundation courses related to topics such as safety, tool and equipment usage, and other fundamental skills should be taught first. Other courses related to specific skill areas and related academics, however, may be sequenced to take advantage of seasonal and climatic conditions, resources located outside of the school, and other factors.

- Programs that offer an Associate of Applied Science degree must include a minimum 15 semester credit hour academic core. Specific courses to be taken within this core are to be determined by the local district. Minimum academic core courses are as follows:
    - 3 semester credit hours — Math/Science Elective
    - 3 semester credit hours — Written Communications Elective
    - 3 semester credit hours — Oral Communications Elective
    - 3 semester credit hours — Humanities/Fine Arts Elective

- 3 semester credit hours Social/Behavioral Science Elective

It is recommended that courses in the academic core be spaced out over the entire length of the program, so that students complete some academic and vocational-technical courses each semester. Each community/junior college has the discretion to select the actual courses that are required to meet this academic core requirement.

- In instances where secondary programs are directly related to community and junior college programs, competencies and suggested objectives from the high school programs are listed as Baseline Competencies. These competencies and objectives reflect skills and knowledge that are directly related to the community and junior college vocational-technical program. In adopting the curriculum framework, each community and junior college is asked to give assurances that:
    - Students who can demonstrate mastery of the Baseline Competencies do not receive duplicate instruction, and
    - Students who cannot demonstrate mastery of this content will be given the opportunity to do so.

- The roles of the Baseline Competencies are to:
    - Assist community/junior college personnel in developing articulation agreements with high schools, and
    - Ensure that all community and junior college courses provide a higher level of instruction than their secondary counterparts.

- The Baseline Competencies may be taught as special "Introduction" courses for 3-6 semester hours of institutional credit which will not count toward Associate degree requirements. Community and junior colleges may choose to integrate the Baseline Competencies into ongoing courses in lieu of offering the "Introduction" courses or may offer the competencies through special projects or individualized instruction methods.

- Technical elective courses have been included to allow community colleges and students to customize programs to meet the needs of industries and employers in their area.

In order to provide flexibility within the districts, individual courses within a framework may be customized by:

- Adding new competencies and suggested objectives.
- Revising or extending the suggested objectives for individual competencies.
- Integrating baseline competencies from associated high school programs.
- Adjusting the semester credit hours of a course to be up 1 hour or down 1 hour (after informing the State Board for Community and Junior Colleges [SBCJC] of the change).

In addition, the curriculum framework as a whole may be customized by:

- Resequencing courses within the suggested course sequence.
- Developing and adding a new course which meets specific needs of industries and other clients in the community or junior college district (with SBCJC approval).
- Utilizing the technical elective options in many of the curricula to customize programs.

COMMUNITY/JUNIOR COLLEGE VOCATIONAL-TECHNICAL PROGRAMS
2006 REVISION

Business and Computer Technology Programs
- Computer Information Systems Technology
- Court Reporting Technology
- Medical Billing and Coding Technology
- Paralegal Technology

Health Science Technology Programs
- Adult Short-Term Home Health Aide
- Dental Assisting Technology
- Emergency Medical Technology – Basic
- Physical Therapist Assistant
- Radiologic Technology
- Surgical Technology
- Veterinary Technology

Trade, Technical, and Related Technology Programs
- Automotive Machinist Technology
- Automotive Technology
- Drafting and Design Cluster
- Machine Tool Technology
- Marine Engine Mechanics (Gasoline)
- Residential Carpentry Technology
- Tool and Die Technology
- Welding and Cutting Technology
- Well Construction Technology

Work-Based Learning

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PROGRAM DESCRIPTIONS AND SUGGESTED COURSE SEQUENCES

BUSINESS AND COMPUTER TECHNOLOGY PROGRAMS

PROGRAM DESCRIPTION

COMPUTER INFORMATION SYSTEMS TECHNOLOGY

COMPUTER NETWORKING TECHNOLOGY

Computer Networking Technology is a two-year program which offers training in telecommunications, network administration, and client/server systems. An Associate of Applied Science degree is earned upon successful completion of the Computer Networking Technology curriculum. Successful completion of the first year entitles a student to a certificate of completion in Network Operations. This framework is based on the *Skill Standards for Information Technology* published by the National Workforce Center for Emerging Technologies, Bellevue Community College.

Industry standards are based on the *National Workforce Center for Emerging Technologies Skill Standards for Information Technology.*

SUGGESTED COURSE SEQUENCE*

Computer Information Systems Technology

Computer Networking Technology

FIRST YEAR

3 sch	Written Communications Elective	3 sch	Social/Behavioral Science Elective
3 sch	Operating Platforms (CPT 1333)	3-4 sch	Technical Elective**
4 sch	Network Operating Systems Elective***	4 sch	Network Operating Systems Elective***
4 sch	Fundamentals of Data Communications (CNT 1414/WDT 1814)	3 sch	Network Components (CNT 1523)
3 sch	Web Development Concepts (CNT 1513/CPT 1513/WDT 1123)	4 sch	Programming Elective^
17 sch		17-18 sch	

SECOND YEAR

3 sch	Business Communication (BOT 2813) OR Career Development (CPT 2133) OR Professional Development (BOT 1213)	3 sch	Oral Communications Elective
		4 sch	Network Implementation (CNT 2544)
3-4 sch	Technical Elective**	3-4 sch	Technical Elective**
3 sch	Math/Science Elective	3 sch	Humanities/Fine Arts Elective
3 sch	System Maintenance (CNT 2423/CPT 2383)	3 sch	Elective
4 sch	Network Planning and Design (CNT 2534)	16-17 sch	
16-17 sch			

* Students who lack entry level skills in math, English, science, etc. will be provided related studies.

** Technical Electives:

- 4 sch Network Administration Using Novell (CNT 1614)
- 4 sch Advanced Network Administration Using Novell (CNT 2634)
- 4 sch Network Administration Using Microsoft Windows Server (CNT 1624)
- 4 sch Network Administration Using Linux (CNT 1654)

3 sch Network Security (CNT 2553)
4 sch Advanced Network Administration Using Microsoft Windows Server (CNT 2644)
4 sch Advanced Network Administration Using Linux (CNT 2654)
4 sch Windows XP Installation and Configuration (CNT 1634)
3 sch Survey of Microcomputer Applications (CPT 1323)

*** Network Operating Systems Electives:

4 sch Network Administration Using Novell (CNT 1614)
4 sch Advanced Network Administration Using Novell (CNT 2634)
4 sch Network Administration Using Microsoft Windows Server (CNT 1624)
4 sch Advanced Network Administration Using Microsoft Windows Server (CNT 2644)
4 sch Advanced Network Administration Using Linux (CNT 2654)
4 sch Windows XP Installation and Configuration (CNT 1634)

^ Programming Electives:

4 sch Basic Programming Language (CPT 1214)
4 sch RPG Programming Language (CPT 1224)
4 sch COBOL Programming Language (CPT 1234)
4 sch Java Programming Language (CPT 1414)
4 sch Database Programming (CPT 2244)
4 sch C Programming Language (CPT 2284)

PROGRAM DESCRIPTION

COMPUTER INFORMATION SYSTEMS TECHNOLOGY

COMPUTER PROGRAMMING TECHNOLOGY

Computer Programming Technology is a two-year program which offers training in the design of coding, and testing of business applications; network management; and computer system operations. Opportunities for students with expertise in computer programming include corporations such as health care, manufacturing, telecommunications, and computer consulting. An Associate of Applied Science degree is earned upon successful completion of the Computer Programming curriculum. This framework is based on the *Skill Standards for Information Technology* published by the National Workforce Center for Emerging Technologies, Bellevue Community College.

SUGGESTED COURSE SEQUENCE*

Computer Information Systems Technology

Computer Programming Technology

FIRST YEAR

4 sch	Visual BASIC Programming Language (CPT 1214)	3 sch	Social/Behavioral Science Elective
3 sch	Programming Development Concepts (CPT 1143)	3 sch	Web Development Concepts (CPT 1513/CNT 1513/WPT 1123)
3 sch	Principles of Accounting I (ACC 1213) OR Business Accounting (BOT 1433)	3 sch	Database Design Fundamentals (CPT 1353)
3 sch	Written Communications Elective	3 sch	Elective
3 sch	Operating Platforms (CPT 1333)	4 sch	Advanced Visual BASIC (CPT 2434)
16 sch		16 sch	

SECOND YEAR

4 sch	Programming Language Elective	3 sch	Oral Communication Elective
4 sch	Network Operating Systems Elective	4 sch	Programming Language Elective
3 sch	Business Communication (BOT 2813) OR Career Development (CPT 2133) OR Professional Development (BOT 1213)	3 sch	Humanities/Fine Arts Elective
		3 sch	Elective
		4 sch	Systems Analysis and Design (CPT 2354)
3 sch	Math/Science Elective	17 sch	
4 sch	Programming Language Elective		
18 sch			

* Students who lack entry level skills in math, English, science, etc. will be provided related studies.

Programming Language Electives:

4 sch	RPG Programming Language (CPT 1224)
4 sch	COBOL Programming Language (CPT 1234)
4 sch	Java Programming Language (CPT 1414)
4 sch	Database Programming (CPT 2244)

4 sch Advanced RPG Programming Language (CPT 2264)
4 sch Advanced COBOL Programming Language (CPT 2274)
4 sch C Programming Language (CPT 2284)
4 sch Advanced C Programming Language (CPT 2424)
4 sch Advanced Visual BASIC Programming Language (CPT 2434)
4 sch Script Programming Language (CPT 2444)

Network Operating Systems Electives:

4 sch Fundamentals of Data Communications (CNT 1414)
4 sch Network Administration Using Novell (CNT 1614)
4 sch Network Administration Using Microsoft Windows Server (CNT 1624)
4 sch Windows XP Installation & Configuration (CNT 1634)
4 sch Network Administration Using Linux (CNT 1654)

Electives:

Survey of Microcomputer Applications (CPT 1323)
System Maintenance (CPT 2383/CNT 2423)
Supervised Work Experience in Computer Information Systems Technology [CPT 292(1-6)]
Any teacher-approved related programming course

PROGRAM DESCRIPTION

COMPUTER INFORMATION SYSTEMS TECHNOLOGY

WEB DEVELOPMENT TECHNOLOGY

Web Development Technology is a two-year program which offers training in website design, e-commerce development, server administration, graphics manipulation, Internet programming, and database interaction. Opportunities for students with expertise in web development include state and federal government, corporations, and Internet-based companies. An Associate Degree of Applied Science will be earned upon successful completion of the program. This framework is based on the *Skill Standards for Information Technology* published by the National Workforce Center for Emerging Technologies, Bellevue Community College.

SUGGESTED COURSE SEQUENCE*

Computer Information Systems Technology

Web Development Technology

FIRST YEAR

3 sch	Operating Platforms (CPT 1333)	3-4 sch	Programming Elective
4 sch	Technical Elective	4 sch	Web Design Applications (WDT 1414)
3-4 sch	Elective – Strongly recommend an art/graphic elective or Fundamentals of Data Communication (CNT 1414/WDT 1814)	3 sch	Humanities/Fine Arts Elective
		4 sch	Client-Side Programming (WDT 1314)
3 sch	Web Development Concepts (WDT 1123/CNT 1513/CPT 1513)	3 sch	Oral Communications Elective
3 sch	Written Communications Elective		
16-17 sch		17-18 sch	

SECOND YEAR

3 sch	Math/Science Elective	4 sch	Server-Side Programming II (WDT 2224)
4 sch	Server-Side Programming I (WDT 2214)	4 sch	Website Development (WDT 2614)
3 sch	Business Communication (BOT 2813) or Professional Development (BOT 1213) or Career Development (CPT 2133)	3 sch	E-Commerce Strategies (WDT 2723)
		3 sch	Social/Behavioral Science Elective
		3 sch	Technical Elective
3 sch	Web Server (WDT 2823)	17 sch	
3 sch	Database Design Fundamentals (CPT 1353)		
16 sch			

* Students who lack entry level skills in math, English, sciences, etc., will be provided related studies.

Programming Electives:

XML Programming (WDT 2324)
Programming Development Concepts (CPT 1143)
Visual BASIC Programming Language (CPT 1214)
Java Programming Language (CPT 1414)
C Programming Language (CPT 2284)
Any teacher-approved related programming course

Technical Electives:

Fundamentals of Data Communication (WDT 1814/CNT 1414)
Web Graphic Production (WDT 2263/CAT 2263)
Special Project in Web Development Technology [WDT 291(1-6)]
Fundamentals of Graphic Computers (CAT 1213)
Network Components (CNT 1523)
Network Administration Using Novell (CNT 1614)
Network Administration Using Microsoft Windows Server (CNT 1624)
Network Administration Using Linux (CNT 1654)
System Maintenance (CNT 2423/CPT 2383)
Survey of Microcomputer Applications (CPT 1323)
Advanced Visual BASIC Programming Language (CPT 2434)
Advanced C Programming Language (CPT 2424)
E-Commerce Marketing (MMT 2313)
Any teacher-approved related technical course

Electives:

Any teacher-approved related technical or academic course

PROGRAM DESCRIPTION

COMPUTER INFORMATION SYSTEMS TECHNOLOGY

DATABASE ADMINISTRATION TECHNOLOGY

The Database Administration Technology curriculum is designed to prepare the student for entry-level employment in the database administration field. Students will learn how to set up, administer, and maintain small- and large-scale relational database systems, and will prepare for certification exams in Database Administration. An Associate Degree of Applied Science will be earned upon successful completion of the program. This framework is based on the *Skill Standards for Information Technology* published by the National Workforce Center for Emerging Technologies, Bellevue Community College.

SUGGESTED COURSE SEQUENCE*

Computer Information Systems Technology

Database Administration Technology

FIRST YEAR

3 sch	Survey of Microcomputer Applications (CPT 1323)	3 sch	Database Management (BOT 2323)
4 sch	Programming Development Concepts (CPT 1144) or any other instructor-approved programming course	3 sch	Advanced SQL Programming (DBT 1123)
3 sch	Operating Platforms (CPT 1333)	4 sch	Database Architecture and Administration (DBT 1214)
3 sch	SQL Programming (DBT 1113)	3 sch	Technical Elective**
3 sch	English Composition (ENG 1113)	3 sch	College Algebra (MAT 1313)
16 sch		16 sch	

SECOND YEAR

4 sch	Advanced Database Architecture and Administration (DBT 2224)	3 sch	Linux Operating System Fundamentals (DBT 2614)
3 sch	Database Design Concepts (DBT 2313)	3 sch	Internet Concepts (CNT 1513)
4 sch	Visual BASIC Programming Language (CPT 1214)	4 sch	Advanced Database Design Concepts (DBT 2324)
3 sch	Social/Behavioral Science Elective	3 sch	Oral Communications Elective
4 sch	IT Project Management (DBT 2714)	3 sch	Humanities/Fine Arts Elective
18 sch		16 sch	

**Technical Electives:

Career Development (CPT 2133)
Professional Development (BOT 1213)
Supervised Work Experience in Database Administration Technology (DBT 2913)
Special Problem in Database Administration Technology DBT 292(1-3)

PROGRAM DESCRIPTION

COURT REPORTING TECHNOLOGY

The Court Reporting Technology program includes a basic core of courses designed to prepare a student for entry-level employment as an official and/or freelance judicial reporter, Communication Access Realtime Translation (CART) provider, or captioner. Students enrolled in this program can prepare for one of the following reporting options:

Judicial Reporting
CART
Captioning

Court Reporting Technology is a two-year program of study which requires courses in the career-technical core, designated areas of concentration, and the academic core. The Associate of Applied Science degree is earned upon successful completion of the Judicial Reporting, CART, or Captioning curriculum.

The Judicial Reporting program provides training for official and freelance reporters.

The CART program of study prepares students for the position of CART provider for hearing impairments and other disabilities.

The Captioning program of study prepares students to provide captioning services for live television broadcasts and other programs.

This framework is based on student outcomes specified in the General Requirements and Minimum Standards published by the National Court Reporters Association Council on Approved Education. Additional research data used in the development of this publication were collected from a review of related literature and from surveys of local experts in business, industry, and education.

Industry standards are based on the *Standards Specified by the National Court Reporters Association Council on Approved Education*.

SUGGESTED COURSE SEQUENCE*

Court Reporting Technology

Judicial Reporting Option**

FIRST YEAR

4 sch	Stenotype Machine Shorthand I (CRT 1114)	4 sch	Stenotype Machine Shorthand II (CRT 1124)
3 sch	Introduction to Law (LET 1113)	4 sch	Court Reporting Procedures (CRT 1154)
3 sch	Applied Business Math (BOT 1313)	3 sch	Medical Office Terminology I (BOT 1613)
3 sch	Mechanics of Communication (BOT 1713)	3-4 sch	Math/Science Elective
3 sch	Document Formatting (BOT 1113)***	3 sch	Social/Behavioral Science Elective
16 sch		17-18 sch	

SUMMER SESSION

First Term		Second Term	
3 sch	Speed Building I (CRT 1133)	3 sch	Speed Building II (CRT 1143)
3 sch		3 sch	

SECOND YEAR

4 sch	Stenotype Machine Shorthand III (CRT 2114)	4 sch	Stenotype Machine Shorthand IV (CRT 2124)
2 sch	Judicial Reporting Technology (CRT 2162)	4 sch	Speed Building IV (CRT 2144)
3 sch	Speed Building III (CRT 2133)	2 sch	Judicial Dictionary Development (CRT 2172)
3 sch	Medical Office Terminology II (BOT 1623)	1 sch	Internship for Judicial Reporters (CRT 2911)
3 sch	Written Communications Elective	3 sch	Oral Communications Elective
15 sch		3 sch	Humanities/Fine Arts Elective
		17 sch	

* Students who lack entry level skills in math, English, science, etc., will be provided related studies.

** Total hours required for completion of this program may be reduced through articulation agreements with local high schools/vocational centers. Local demands for note taking skills may be implemented through Continuing Education, Adult Education, and Industry Services.

*** Prior to enrollment in Document Formatting and Production (BOT 1113), students will be required to key straight-copy material at a minimum of 35 GWPM, on a 5-minute timed writing, with a maximum of one error per minute. Students who do not demonstrate this level of proficiency will be required to enroll in Introduction to Keyboarding (BOT 1013).

SUGGESTED COURSE SEQUENCE*

Court Reporting Technology

CART Option**

FIRST YEAR

4 sch	Stenotype Machine Shorthand I (CRT 1114)	4 sch	Stenotype Machine Shorthand II (CRT 1124)
3 sch	Introduction to Law (LET 1113)	4 sch	Court Reporting Procedures (CRT 1154)
3 sch	Applied Business Math (BOT 1313)	3 sch	Medical Office Terminology I (BOT 1613)
3 sch	Mechanics of Communication (BOT 1713)	3-4 sch	Math/Science Elective
3 sch	Document Formatting (BOT 1113)***	3 sch	Social/Behavioral Science Elective
16 sch		17-18 sch	

SUMMER SESSION

First Term		Second Term	
3 sch	Speed Building I (CRT 1133)	3 sch	Speed Building II (CRT 1143)
3 sch		3 sch	

SECOND YEAR

4 sch	CART I (CRT 2514)	4 sch	Speed Building IV (CRT 2144)
2 sch	CART Technology (CRT 2562)	4 sch	CART II (CRT 2524)
3 sch	Speed Building III (CRT 2133)	2 sch	CART Dictionary Development (CRT 2572)
3 sch	Foundations of Deafness (IDT 1143)	1 sch	Internship for CART (CRT 2921)
1 sch	Fingerspelling (IDT 1131)	3 sch	Oral Communications Elective
3 sch	Written Communications Elective	3 sch	Humanities/Fine Arts Elective
16 sch		17 sch	

* Students who lack entry level skills in math, English, science, etc., will be provided related studies.

** Total hours required for completion of this program may be reduced through articulation agreements with local high schools/vocational centers. Local demands for note taking skills may be implemented through Continuing Education, Adult Education, and Industry Services.

*** Prior to enrollment in Document Formatting and Production (BOT 1113), students will be required to key straight-copy material at a minimum of 35 GWPM, on a 5-minute timed writing, with a maximum of one error per minute. Students who do not demonstrate this level of proficiency will be required to enroll in Introduction to Keyboarding (BOT 1013).

SUGGESTED COURSE SEQUENCE*

Court Reporting Technology

Captioning Option**

FIRST YEAR

4 sch	Stenotype Machine Shorthand I (CRT 1114)	4 sch	Stenotype Machine Shorthand II (CRT 1124)
3 sch	Introduction to Law (LET 1113)	4 sch	Court Reporting Procedures (CRT 1154)
3 sch	Applied Business Math (BOT 1313)		
3 sch	Mechanics of Communication (BOT 1713)	3 sch	Medical Office Terminology I (BOT 1613)
3 sch	Document Formatting (BOT 1113)***	3-4 sch	Math/Science Elective
		3 sch	Social/Behavioral Science Elective
16 sch		17-18 sch	

SUMMER SESSION

First Term		Second Term	
3 sch	Speed Building I (CRT 1133)	3 sch	Speed Building II (CRT 1143)
3 sch		3 sch	

SECOND YEAR

4 sch	Captioning I (CRT 2714)	4 sch	Speed Building IV (CRT 2144)
2 sch	Captioning Technology (CRT 2762)	4 sch	Captioning II (CRT 2724)
3 sch	Speed Building III (CRT 2133)	2 sch	Captioning Dictionary Development (CRT 2772)
3 sch	HIS, PSC, GEO Elective		
3 sch	Written Communications Elective	1 sch	Internship for Captioning (CRT 2931)
		3 sch	Oral Communications Elective
15 sch		3 sch	Humanities/Fine Arts Elective
		17 sch	

* Students who lack entry level skills in math, English, science, etc., will be provided related studies.

** Total hours required for completion of this program may be reduced through articulation agreements with local high schools/vocational centers. Local demands for note taking skills may be implemented through Continuing Education, Adult Education, and Industry.

*** Prior to enrollment in Document Formatting and Production (BOT 1113), students will be required to key straight-copy material at a minimum of 35 GWPM, on a 5-minute timed writing, with a maximum of one error per minute. Students who do not demonstrate this level of proficiency will be required to enroll in Introduction to Keyboarding (BOT 1013).

PROGRAM DESCRIPTION

MEDICAL BILLING AND CODING TECHNOLOGY

The Medical Billing and Coding program includes a basic core of courses designed to prepare a student for entry-level employment in physician offices, hospitals, outpatient facilities, mental health clinics, nursing home facilities, and insurance companies.

Medical Billing and Coding is a two-year program of study which requires courses in the vocational-technical core, designated areas of concentration, and the academic core. The Associate of Applied Science degree is earned upon the successful completion of the Medical Billing and Coding curriculum.

This framework is based on the *Certified Coding Associate Competency Statements* and *Standards of Ethical Coding* published by the American Health Information Management Association. The competency statements were determined through a job analysis study of practitioners in the field. Additional research data used in the development of this publication were collected from a review of related literature and from surveys of local experts in business, industry, and education.

Industry standards are based on the *American Health Information Management Association Standards of Ethical Coding.*

SUGGESTED COURSE SEQUENCE*

Medical Billing and Coding Technology

Baseline Competencies for Medical Billing and Coding Technology**

FIRST YEAR

3 sch	Applied Business Math (BOT 1313)	3 sch	Word Processing (BOT 1143)
3 sch	Records Management (BOT 1413)	3 sch	Business Accounting (BOT 1433) OR Principles of Accounting I (ACC 1213)
3 sch	Mechanics of Communication (BOT 1713)	3 sch	Medical Office Terminology II (BOT 1623)
3 sch	Document Formatting and Production (BOT 1113)***	3 sch	Business Communication (BOT 2813)
3 sch	Microcomputer Applications (BOT 1133)	3 sch	Medical Office Concepts (BOT 2743)
3 sch	Medical Office Terminology I (BOT 1613)	3 sch	Social/Behavioral Science Elective
18 sch		18 sch	

SECOND YEAR

3 sch	Math/Science Elective	3 sch	Advanced Coding (BOT 2663)
3 sch	Medical Transcription I (BOT 2523)	3 sch	Medical Information Management (BOT 2753)
3 sch	CPT Coding (BOT 2643/BCT 2123)	3 sch	Medical Insurance Billing (BOT 2673)
3 sch	ICD Coding (BOT 2653/BCT 2133)	3 sch	Elective
3 sch	Computerized Accounting (BOT 2413)	3 sch	Oral Communications Elective
3 sch	Written Communications Elective	3 sch	Humanities/Fine Arts Elective
18 sch		18 sch	

APPROVED ELECTIVES

Electronic Spreadsheet (BOT 1813)
Database Management (BOT 2323)
Medical Transcription II (BOT 2533)
Supervised Work Experience (BOT 2913)
Communication Technology (BOT 2823)
Work-Based Learning I, II, III, IV, V, and VI [WBL 191(1-3), WBL 192(1-3), WBL 193(1-3), WBL 291(1-3), WBL 292(1-3), and WBL 293(1-3)]

* Students who lack entry level skills in math, English, science, etc., will be provided related studies.

** Baseline competencies are taken from the high school Business and Computer Technology programs. Students who can document mastery of these competencies should not receive duplicate instruction. Students who cannot demonstrate mastery will be required to do so.

*** Prior to enrollment in Document Formatting and Production (BOT 1113), students will be required to key straight-copy material at a minimum of 35 GWPM, on a 5-minute timed writing, with a maximum of 1 error per minute. Students who do not demonstrate this level of proficiency will be required to enroll in Introduction to Keyboarding (BOT 1013).

PROGRAM DESCRIPTION

PARALEGAL TECHNOLOGY

The Paralegal Technology curriculum is designed to prepare a person for entry-level employment as a legal assistant/paralegal in courts, corporations, law firms, and government agencies. Paralegal Technology is a two-year program of study which requires courses in the vocational-technical core, designated areas of concentration, and the academic core. The Associate of Applied Science Degree is earned upon successful completion of program.

The curriculum is based on standards developed from the National Association of Legal Assistants' Descriptions of Certified Legal Assistant (CLA) Exam Sections. Additional research data used in the development of this publication was collected from a review of related literature and from surveys of local experts in business, Industry, and education.

Industry standards are based on the *National Association of Legal Assistants' Descriptions of Certified Legal Assistant (CLA) Exam Sections.*

SUGGESTED COURSE SEQUENCE*

Paralegal Technology

Baseline Competencies for Paralegal Technology**

FIRST YEAR

3 sch	Written Communications Elective	3 sch	Humanities/Fine Arts Elective
3 sch	Microcomputer Applications (BOT 1133)	3 sch	Family Law (LET 1513)
3 sch	Introduction to Law (LET 1113)	3 sch	Legal Research (LET 1213)
3 sch	Document Formatting and Production (BOT 1113)****	3 sch	Business Communication (BOT 2813)
3 sch	Legal Environment of Business (BAD 2413)	3 sch	Wills and Estates (LET 1523)
3 sch	Mechanics of Communications (BOT 1713)	3sch	Elective ***
18 sch		18 sch	

SECOND YEAR

3 sch	Math/Science Elective	3 sch	Oral Communications Elective
3 sch	Real Property I (LET 2453)	3 sch	Criminal Justice Elective
3 sch	Civil Litigation I (LET 2313)	3 sch	Elective***
3 sch	Legal Writing (LET 1713)	3 sch	Elective***
3 sch	Elective***	3 sch	Torts (LET 2323)
3sch	Elective***	3 sch	Social/Behavioral Science Elective
18 sch		18 sch	

* Students who lack entry level skills in math, English, science, etc. will be provided related studies.

** Baseline competencies are taken from the high school Secondary Business and Computer Technology program. Students who can document mastery of these competencies should not receive duplicate instruction. Students who cannot demonstrate mastery will be required to do so.

*** Real Property II (LET 2463), Internship for Paralegal (LET 2923) Law Office Management (LET 2633), Civil Litigation II (LET 2333), Bankruptcy (LET 2523), Special Problem in Paralegal Technology [LET 291 (1-3)], or other instructor-approved related technical course or academic course.

**** Prior to enrollment in Document Formatting and Production (BOT 1113), students will be required to key straight-copy material at a minimum of 35 GWPM, on a 5-minute timed writing, with a maximum of 1 error per minute. Students who do not demonstrate this level of proficiency will be required to enroll in Introduction to Keyboarding (BOT 1013).

HEALTH SCIENCE TECHNOLOGY PROGRAMS

PROGRAM DESCRIPTION

ADULT SHORT-TERM HOME HEALTH AIDE

Home Health Aide services are supportive, therapeutic services provided in the home by a trained Home Health Aide. These services help the family or individual remain in their home when health or social problems occur, or to return to home after specialized care. The Home Health Aide program prepares the individual to assist in providing health care in the home as a member of the home health care team under the direction of a home health care professional.

Graduates of this 80-hour program will be awarded the Certificate of Home Health Aide upon passing the competency exam administered through the Mississippi Department of Education Office of Vocational and Technical Education.

Industry standards are based on the *National Health Care Skill Standards.*

COURSE OUTLINE

Adult Short-Term Home Health Aide

Course CIP Code: 51.1615

Unit	Title	Hours
1	Fundamentals of Home Care	14
2	Health Care Assisting Concepts and Skills	32
3	Human Needs/Growth and Development	7
4	Nutrition and Hydration Needs of Clients	4
5	Special Care Procedures	23
TOTAL HOURS		**80**

PROGRAM DESCRIPTION

DENTAL ASSISTING TECHNOLOGY

The Dental Assisting Technology curriculum is a one-year program of study designed to prepare the student for employment and advancement in the dental assisting field. The curriculum requires a minimum of 46 semester hours of courses with a certificate granted upon completion of the program. CPR - Health Care Provider is a prerequisite for the program. If the student desires, an Associate of Applied Science degree may be obtained by completing additional prescribed courses.

The program includes lecture hours, lab hours, and supervised clinical experiences. In the clinical experiences, the student will assist the dentist at chairside in private offices, clinics, and state facilities, as applicable.

Upon graduation from the program, the student will automatically receive a radiology permit which is necessary for taking x-rays in a dental office. Also having successfully completed the program, the student is eligible to take the Dental Assisting National Board Certification Exam.

Industry standards are based on the *Dental Assisting National Board Certified Dental Assistant Examination Topics*.

SUGGESTED COURSE SEQUENCE I
(TO BEGIN IN FALL SEMESTER) *

Dental Assisting Technology

Baseline Competencies for Dental Assisting Technology**

FIRST YEAR (CERTIFICATE)

3 sch	Oral Communications Elective	3 sch	Dental Science II (DAT 1323)
1 sch	Dental Orientation (DAT 1111)	3 sch	Chairside Assisting II (DAT 1423)
4 sch	Dental Assisting Materials (DAT 1214)	2 sch	Dental Radiology II (DAT 1522)
3 sch	Dental Science I (DAT 1313)	2 sch	Dental Health Education (DAT 1612)
5 sch	Chairside Assisting I (DAT 1415)	4 sch	Practice Management (DAT 1714)
3 sch	Dental Radiology I (DAT 1513)	5 sch	Clinical Experience I (DAT 1815)
19 sch		19 sch	

SUMMER TERM

3 sch	Written Communications Elective
2 sch	Clinical Experience II (DAT 1822)
3 sch	Chairside Assisting III (DAT 1433)
8 sch	

SECOND YEAR (TECHNICAL)

After completion of the 12-month course of study, a student will receive a certificate. If a student wishes to receive the AAS degree, the remainder of the minimum academic courses may be taken, plus additional electives. The second year should include:

3 sch	Math/Science Elective
3 sch	Social/Behavioral Science Elective
3 sch	Humanities/Fine Arts Elective
3 sch	Fundamentals of Microcomputer Applications (CPT 1113)
8 sch	Approved Electives†
20 hours	

* Students who lack entry level skills in math, English, science, etc. will be provided related studies.

** Baseline competencies are taken from the high school Allied Health program. Students who can document mastery of these competencies should not receive duplicate instruction. Students who cannot demonstrate mastery will be required to do so.

†APPROVED ELECTIVES

English Composition I (ENG 1113)
English Composition II (ENG 1123)
Oral Communications (Principles of Speech) (SPT 1113)
Anatomy and Physiology I (BIO 1514)
Anatomy and Physiology II (BIO 1524)
General Biology I (BIO 1134)
General Biology II (BIO 1144)
Microbiology (BIO 2924)
General Chemistry I (CHE 1213)
General Chemistry Laboratory I (CHE 1211)
General Chemistry II (CHE 1223)
General Chemistry Laboratory II (CHE 1221)
Principles of Chemistry I (CHE 1314)
Principles of Chemistry II (CHE 1324)
General Psychology I (PSY 1513)
General Sociology I (SOC 2113)
Nutrition (HEC 1253)
College Algebra (MAT 1313)
Trigonometry (MAT 1323)
Survey of Physics I (PHY 1214 or 2414)
Introduction to Computer Concepts (CSC 1113)
Fundamentals of Microcomputer Applications (CPT 1113)
Music Appreciation (MUS 1113)
Philosophy
History
Foreign Language
Art

SUGGESTED COURSE SEQUENCE II (TO BEGIN IN SPRING SEMESTER)*

Dental Assisting Technology

Baseline Competencies for Dental Assisting Technology**

FIRST YEAR (CERTIFICATE)

SPRING TERM

3 sch Oral Communications Elective
1 sch Dental Orientation (DAT 1111)
4 sch Dental Assisting Materials (DAT 1214)
3 sch Dental Science I (DAT 1313)
5 sch Chairside Assisting I (DAT 1415)
3 sch Dental Radiology I (DAT 1513)

_____
19 sch

SUMMER TERM

3 sch Written Communications Elective
2 sch Clinical Experience II (DAT 1822)
2 sch Dental Radiology II (DAT 1522)
3 sch Chairside Assisting II (DAT 1423)

_____
10 sch

FALL TERM

3 sch Dental Science II (DAT 1323)
3 sch Chairside Assisting III (DAT 1433)
2 sch Dental Health Education (DAT 1612)
4 sch Practice Management (DAT 1714)
5 sch Clinical Experience I (DAT 1815)

_____
17 sch

SECOND YEAR (TECHNICAL)

After completion of the 12-month course of study a student will receive a certificate. If a student wishes to receive the AAS degree, the remainder of the minimum academic courses may be taken, plus additional electives. The second year should include:

3 sch	Math/Science Elective
3 sch	Social/Behavioral Science Elective
3 sch	Humanities/Fine Arts Elective
3 sch	Fundamentals of Microcomputer Applications (CPT 1113)
8 sch	Approved Electives†
20 sch	

* Students who lack entry level skills in math, English, science, etc. will be provided related studies.

** Baseline competencies are taken from the high school Allied Health program. Students who can document mastery of these competencies should not receive duplicate instruction. Students who cannot demonstrate mastery will be required to do so.

†APPROVED ELECTIVES

English Composition I (ENG 1113)
English Composition II (ENG 1123)
Oral Communications (Principles of Speech) (SPT 1113)
Anatomy and Physiology I (BIO 1514)
Anatomy and Physiology II (BIO 1524)
General Biology I (BIO 1134)
General Biology II (BIO 1144)
Microbiology (BIO 2924)
General Chemistry I (CHE 1213)
General Chemistry Laboratory I (CHE 1211)
General Chemistry II (CHE 1223)
General Chemistry Laboratory II (CHE 1221)
Principles of Chemistry I (CHE 1314)
Principles of Chemistry II (CHE 1324)
General Psychology I (PSY 1513)
General Sociology I (SOC 2113)
Nutrition (HEC 1253)
College Algebra (MAT 1313)
Trigonometry (MAT 1323)
Survey of Physics I (PHY 1214 or 2414)
Introduction to Computer Concepts (CSC 1113)
Fundamentals of Microcomputer Applications (CPT 1113)

Music Appreciation (MUS 1113)
Philosophy
History
Foreign Language
Art

PROGRAM DESCRIPTION

EMERGENCY MEDICAL TECHNOLOGY – BASIC

Emergency Medical Technology – Basic is a one semester instructional program that prepares individuals to function in the pre-hospital environment. The EMT–Basic program provides instruction in basic life support care of sick and injured persons. This includes airway assessment, communications, documentation, general pharmacology, hemorrhage control, ambulance operations, and splinting of adult, pediatric, and infant patients; and special care of patients exposed to heat, cold, radiation, or contagious disease. Emergency Medical Technicians – Basic are certified by the Mississippi State Department of Health Emergency Medical Services. Students who complete the program are eligible to take the National Registry of Emergency Medical Technicians – Basic Level.

Industry standards are based on the *EMT–Basic: National Standard Curriculum Modules*.

SUGGESTED COURSE SEQUENCE*

Emergency Medical Technology – Basic

Baseline Competencies for Emergency Medical Technology – Basic**

FIRST YEAR

6 sch EMT Basic (EMT 1116)

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6 sch

* Students who lack entry level skills in math, English, science, etc. will be provided related studies.

** Baseline competencies are taken from the high school Allied Health program. Students who can document mastery of these competencies should not receive duplicate instruction. Students who cannot demonstrate mastery will be required to do so.

PROGRAM DESCRIPTION

PHYSICAL THERAPIST ASSISTANT

The Physical Therapist Assistant (PTA) curriculum is a two-year program of study that prepares a physical therapist assistant to perform interventions under the supervision of physical therapists (PTs) in an ethical, legal, safe, and effective manner. These paraprofessionals enhance the delivery of physical therapy services by providing delegated interventions, assisting the PT with data collection, communicating with other members of the health care delivery team, interacting with members of the patient's family and caregivers, and working cooperatively with other health care providers. Physical therapist assistants participate with the PT in teaching other health care providers, documenting patient interventions, and providing psychosocial support for patients and their families and caregivers with recognition of individual, cultural, and economic differences.

This program prepares the graduate to practice in hospitals, clinics, and other health care facilities as a member of the health care team. In Mississippi, physical therapist assistants are licensed by the Mississippi State Board of Physical Therapy.

This curriculum conforms to standards as published by the American Physical Therapy Association. In addition to the General Admission Requirements of the college, each PTA program has specific additional program admission requirements.

Industry standards are based on the *Evaluative Criteria for Accreditation of Education Programs for the Preparation of Physical Therapist Assistants*.

SUGGESTED COURSE SEQUENCE I*

Physical Therapist Assistant

Baseline Competencies for Physical Therapist Assistant**

FIRST YEAR

3 sch Math/Science Elective
3 sch Written Communications Elective
4 sch Anatomy and Physiology I (BIO 1514)
3 sch Social/Behavioral Science Elective†
3 sch Fundamental Concepts of Physical Therapy (PTA 1123)
0-3 sch PTA Elective (District option) ††

16-19 sch

3 sch Oral Communications Elective
4 sch Anatomy and Physiology II (BIO 1524)
3 sch Fundamental Skills for Physical Therapist Assistants (PTA 1213)
4 sch Kinesiology (PTA 1314)
0-2 sch PTA Elective (District option) ††

14-16 sch

SUMMER TERM (8 WEEKS)
(Two four-week sessions)

4 sch Therapeutic Modalities (PTA 1224)
4 sch Therapeutic Exercise and Rehabilitation I (PTA 1324)
3 sch Humanities/Fine Arts Elective

11 sch

SECOND YEAR

3 sch Clinical Education I (PTA 2413)
4 sch Electrotherapy (PTA 2234)
4 sch Therapeutic Exercise and Rehabilitation II (PTA 2334)
3 sch Medical Conditions and Related Pathology (PTA 2513)
0-1 sch PTA Elective (District Option) ††

14 -15 sch

3 sch Physical Therapy Seminar (PTA 2523)
4 sch Clinical Education II (PTA 2424)
4 sch Clinical Education III (PTA 2434)
4 sch Clinical Education IV (PTA 2444)

15 sch

* Students who lack entry level skills in math, English, science, etc. will be provided related studies.

** Baseline competencies are taken from the high school Allied Health program. Students who can document mastery of these competencies should not receive duplicate instruction. Students who cannot demonstrate mastery will be required to do so.

APPROVED ELECTIVES

Oral Communication (SPT 1113)

† General Psychology (PSY 1513) is required by national certification.

†† Health Care Experience I (PTA 1111)

†† PTA Practicum I (PTA 1132)

†† PTA Practicum II (PTA 1143)

†† Health Care Experience II (PTA 1151)

†† Seminar I (PTA 1911)

†† Seminar II (PTA 1921)

†† Seminar III (PTA 2911)

SUGGESTED COURSE SEQUENCE II*

Physical Therapist Assistant

Baseline Competencies for Physical Therapist Assistant**

FIRST YEAR

3 sch Math/Science Elective
3 sch Written Communications Elective

4 sch Anatomy & Physiology I (BIO 1514)
3 sch Oral Communications Elective
3 sch Social/Behavioral Science Elective†
0-3 sch PTA Elective (District option) ††

_____
16-19 sch

3 sch Humanities/Fine Arts Elective
6 sch Electives
4 sch Anatomy & Physiology II (BIO 1524)
0-3 sch PTA Elective (District option) ††

_____
13-16 sch

FIRST SUMMER TERM

3 sch Fundamental Concepts of Physical Therapy (PTA 1123)
3 sch Fundamental Skills for Physical Therapist Assistants (PTA 1213)

____
6 sch

SECOND YEAR

4 sch Kinesiology (PTA 1314)
4 sch Therapeutic Modalities (PTA 1224)
4 sch Therapeutic Exercise and Rehabilitation I (PTA 1324)
3 sch Clinical Education I (PTA 2413)
0-1 sch PTA Elective (District Option) ††

_____
15-16 sch

4 sch Electrotherapy (PTA 2234)
4 sch Therapeutic Exercise and Rehabilitation II (PTA 2334)
3 sch Medical Conditions and Related Pathology (PTA 2513)
4 sch Clinical Education II (PTA 2424)
3 sch Physical Therapy Seminar (PTA 2523)

_____
18 sch

SECOND SUMMER TERM

4 sch Clinical Education III (PTA 2434)
4 sch Clinical Education IV (PTA 2444)

_____
8 sch

* Students who lack entry level skills in math, English, science, etc. will be provided related studies.

** Baseline competencies are taken from the high school Allied Health program. Students who can document mastery of these competencies should not receive duplicate instruction. Students who cannot demonstrate mastery will be required to do so.

APPROVED ELECTIVES

Oral Communication (SPT 1113)
† General Psychology (PSY 1513) is required by national certification.
†† Health Care Experience I (PTA 1111)
†† PTA Practicum I (PTA 1132)
†† PTA Practicum II (PTA 1143)
†† Health Care Experience II (PTA 1151)
†† Seminar I (PTA 1911)
†† Seminar II (PTA 1921)
†† Seminar III (PTA 2911)

PROGRAM DESCRIPTION

RADIOLOGIC TECHNOLOGY

Radiographers perform imaging examinations and accompanying responsibilities at the request of physicians qualified to prescribe and/or perform radiologic procedures. They utilize equipment emitting ionizing radiation to produce radiographic images of the internal structures of human anatomy. These radiographic images are utilized by the physician for diagnostic and therapeutic purposes. The radiographer is responsible for all functions in the Radiology Department to insure consistent radiographic images and provide for personal and patient safety from ionizing radiation. In addition to producing diagnostic images and primary patient care, other responsibilities may include administrative and educational functions.

Graduates of this two-year program will be awarded an Associate of Applied Science Degree in Radiologic Technology and are eligible to make application to the American Registry of Radiologic Technology in order to become a Registered Radiographer.

Industry standards are based on the *Content Specifications for the Examination in Radiography*.

SUGGESTED COURSE SEQUENCE*

Radiologic Technology

Baseline Competencies for Radiologic Technology**

SUMMER TERM (2-5 week terms)

4 sch	Anatomy and Physiology I (BIO 1514)	4 sch	Anatomy and Physiology II (BIO 1524)
3 sch	Fundamentals of Radiography (RGT 1213)	3 sch	Patient Care and Radiography (RGT 1223)
7 sch		7 sch	

FIRST YEAR

3 sch	Math/Science Elective	3 sch	Written Communications Elective
4 sch	Clinical Education I (RGT 1114)	4 sch	Clinical Education II (RGT 1124)
2 sch	Principles of Radiation Protection (RGT 1312)	3 sch	Radiation Exposure II (RGT 1423)
3 sch	Radiation Exposure I (RGT 1413)	3 sch	Radiographic Procedures II (RGT 1523)
3 sch	Radiographic Procedures I (RGT 1513)	3 sch	Physics of Imaging Equipment (RGT 1613)
15 sch		16 sch	

SUMMER TERM (10 week term)

9 sch Clinical Education III (RGT 1139)

SECOND YEAR

3 sch	Social/Behavioral Science Elective	3 sch	Oral Communications Elective
2 sch	Social and Legal Responsibilities (RGT 2132)	7 sch	Clinical Education V (RGT 2157)
7 sch	Clinical Education IV (RGT 2147)	2 sch	Radiographic Procedures IV (RGT 2542)
3 sch	Humanities/Fine Arts Elective	1 sch	Radiation Biology (RGT 2911)
2 sch	Radiographic Procedures III (RGT 2532)	3 sch	Certification Fundamentals (RGT 2933)
1 sch	Radiographic Pathology (RGT 2921)	16 sch	
18 sch			

* Students who lack entry level skills in math, English, science, etc. will be provided related studies.

** Baseline competencies are taken from the high school Allied Health program. Students who can document mastery of these competencies should not receive duplicated instruction. Students who cannot demonstrate mastery will be required to do so.

PROGRAM DESCRIPTION

SURGICAL TECHNOLOGY

Surgical Technology is an instructional program that prepares an individual to serve as a member of the surgical team to work with surgeons, anesthesiologists, certified registered nurse anesthetists, registered nurses, and other surgical personnel in delivering patient care and assuming appropriate responsibilities before, during, and after surgery. This program includes the education of all aspects of surgical technology including the role of second assistant and circulator.

Graduates of the 12-month program will be awarded the Certificate of Surgical Technology. The Associate of Applied Science Degree in Surgical Technology will be awarded to the successful graduate of the 24-month program. Qualified graduates may apply to the Liaison Council on Certification for the Surgical Technologist for the National Certification Examination and become a Certified Surgical Technologist.

Industry standards are based on the *Core Curriculum for Surgical Technology*.

SUGGESTED COURSE SEQUENCE*

Surgical Technology

Baseline Competencies for Surgical Technology**

FIRST YEAR (CERTIFICATE)

3 sch	Fundamentals of Surgical Technology (SUT 1113)	8 sch	Basic and Related Surgical Procedures (SUT 1518)
6 sch	Principles of Surgical Technique (SUT 1216)	8 sch	Specialized Surgical Procedures (SUT 1528)
4 sch	Surgical Anatomy (SUT 1314)		
3 sch	Surgical Microbiology (SUT 1413)	16 sch	
3 sch	Written Communications Elective		
19 sch			

SUMMER TERM (8-weeks)

8 sch Advanced Surgical Procedures (SUT 1538)

SECOND YEAR (TECHNICAL)

3 sch	Oral Communications Elective	4 sch	Microbiology (BIO 2924)
3 sch	Humanities/Fine Arts Elective	3 sch	Social/Behavioral Science Elective
3 sch	Approved Electives***	3 sch	Approved Electives***
4 sch	Anatomy and Physiology I (BIO 1514)	4 sch	Anatomy and Physiology II (BIO 1524)
3 sch	Math/Science Elective	14 sch	
16 sch			

* Students who lack entry level skills in math, English, science, etc. will be provided related studies.

** Baseline competencies are taken from the high school Allied Health program. Students who can document mastery of these competencies should not receive duplicate instruction. Students who cannot demonstrate mastery will be required to do so.

***APPROVED ELECTIVES

General Chemistry I (CHE 1213) with General Chemistry Laboratory I (CHE 1211)
General Biology I (BIO 1134)
General Biology II (BIO 1144)
Algebra (MAT 1313 or higher)
Child Psychology (Human Growth and Development I) (EPY 2513)
Adolescent Psychology (Human Growth and Development II) (EPY 2523)
Nutrition (HEC 1253)
Personal and Community Health I (HPR 1213)
Personal and Community Health II (HPR 1223)
Marriage and Family (SOC 2143)
Certification and Role Transition (SUT 1703)

PROGRAM DESCRIPTION

VETERINARY TECHNOLOGY

The Veterinary Technology Program is a one-plus-one program offered by the community/junior college and the College of Veterinary Medicine of Mississippi State University. The first year of the program is taught at the community/junior college, and the second year is taught at Mississippi State University's College of Veterinary Medicine. Students successfully completing the program are prepared to enter various animal technology careers such as Veterinary Technician (Animal Health) in small animal practice, small animal emergency practice, mixed animal practice, large animal practice, equine practice, and food animal practice. Veterinary Technology programs may be accredited by the American Veterinary Medical Association. Graduates may become Registered Veterinary Technicians through the Mississippi Board of Veterinary Medicine.

Graduates would also be prepared for:

(1) Taking the Technology Laboratory Animal Technician certification examination to become an Assistant Laboratory Animal Technician.
(2) Taking the Laboratory Animal Technician certification examination after attaining Assistant Laboratory Animal Technician certification.
(3) Taking the Laboratory Animal Technologist certification examination after attaining Laboratory Animal Technician certification and completing four years of work experience in a laboratory animal facility.

After successfully completing the program, the student will be awarded an Associate of Applied Science Degree from the community/junior college.

Industry standards are based on the *American Veterinary Medical Association Committee on Veterinary Technician Education and Activities Skills List*.

SUGGESTED COURSE SEQUENCE*

Veterinary Technology

FIRST YEAR

3 sch	Written Communications Elective
4 sch	Math/Science Elective†
1 sch	Veterinary Math Calculations (VAT 1111)
3 sch	Animal Restraint and Medication (VAT 1213)
3 sch	Animal Anatomy and Physiology (VAT 1313)
4 sch	Surgical and Hospital Techniques I (VAT 1414)
18 sch	

3 sch	Oral Communications Elective
3 sch	Humanities/Fine Arts Elective†
3 sch	Behavioral/Social Science Elective†
2 sch	Animal Parasites and Diseases (VAT 1512)
3 sch	Clinical Pathology (VAT 1613)
4 sch	Surgical and Hospital Techniques II (VAT 1424)
18 sch	

SECOND YEAR
Completed at Mississippi State University College of Veterinary Medicine

1 sch	Clinical Elective (VAT 2151)
1 sch	Business Procedures (VAT 2161)
3 sch	Laboratory Animal Care (VAT 2171)
1 sch	Necropsy (VAT 2181)
1 sch	Pharmacy (VAT 2191)
1 sch	LARAC (VAT 2173)
3 sch	Community Practice (VAT 2213)
3 sch	Internal Medicine-ICU (VAT 2223)
3 sch	Equine Services (VAT 2233)
3 sch	Food Animal (VAT 2243)
3 sch	Small Animal Surgery (VAT 2253)
3 sch	Anesthesia (VAT 2263)
3 sch	Radiology (VAT 2273)
3 sch	Clinical Pathology (VAT 2283)

The second year clinical rotations and courses begin during August and are completed by the end of the spring semester.

Students must be 18 years of age before participating in the Radiology rotation.

SUMMER

4 sch Preceptorship (VAT 2184) will be the last rotation, and follows successful completion of two years of course work. This rotation is administered by the community/junior college.

* Students who lack entry level skills in math, English, sciences, etc. will be provided related studies.

† Selected with approval of the Veterinary Technology Program Director.

TRADE, TECHNICAL, AND RELATED HEALTH SCIENCE TECHNOLOGY PROGRAMS

PROGRAM DESCRIPTION

AUTOMOTIVE MACHINIST TECHNOLOGY

The Automotive Machinist Technology Program provides instruction in the use of precision measuring instruments, hand tools, machines, and equipment. Covered are types and uses of hand, mechanical, power, and hydraulic tools, along with types of fluids, cutting oils, and coolants. Disassembly and inspection of automotive engines, resurfacing brake drums and rotors, basic engine balancing, and cylinder head rebuilding are included. Students receive instruction and practice in cylinder boring and submerged arc welding of crankshafts. The operations of the drill press and crankshaft grinder, along with a general knowledge of the milling machine, connecting rod rebuilding, and engine assembly, are also covered.

Exit points are provided to allow for employment and ASE certification after the completion of Cylinder Head Service (ASE-Upper Engine), Cylinder Block Service (ASE-Lower Engine), and Engine Assembly (ASE-Engine Assembly). Successful graduates are awarded an Automotive Machinist Certificate and may be employed as auto machinists in auto machine shops, auto parts concerns, automotive dealerships, mechanics shops, and automotive engine manufacturing firms.

1. In all areas, appropriate theory, safety, and support instruction is required for performing each task. It is assumed that this instruction has included identification and use of appropriate tools and testing and measuring equipment required to accomplish certain tasks. It is also assumed that the student has received necessary training to locate and use current reference and training materials from accepted industry publications (in most cases, published by the vehicle manufacturer), which present manufacturers' recommended or required specifications and procedures for performing various tasks.
2. All diagnostic and repair tasks described in this document are to be accomplished in accordance with manufacturers' recommended procedures and specifications.
3. The individual training program being evaluated for certification should have written and detailed performance standards for each task taught in the curriculum. Learning progress of students should be monitored and evaluated against these performance standards. A system should be in place which informs all students of their individual progress through all phases of the training program.
4. It is recognized that individual courses of study will differ across automobile technician training programs. The development of appropriate learning delivery systems and tests which monitor student progress will be the responsibility of the individual training program.

(Adapted from ASE certification for automobile training programs. National Institute for Automotive Service Excellence, Reston, VA. 1993.)

For additional information on ASE Certification, contact:

National Automotive Technicians Education Foundation
13505 Dulles Technology Drive
Herndon, VA 22071-3415
(702) 713-010

The curriculum for Automotive Machinist Technology is designed to serve as the core of instruction for approximately seventy-five percent of each Automotive Machinist Technology course. The remaining twenty-five percent of each course is to be added at the local level based upon needs of students and local employers. Certificate programs in Automotive Machinist Technology require a minimum of 32 semester hours credit.

Industry standards are based on the *Standards and Guidelines for Automotive Machinist Programs*.

SUGGESTED COURSE SEQUENCE*

Automotive Machinist Technology

Baseline Competencies for Automotive Machinist Technology**

FIRST YEAR

6 sch	Fundamentals for Automotive Machinists (AUV 1116)
6 sch	Cylinder Head Service (AUV 1216)
1-3 sch	Special Problem in Automotive Machinist [AUV 191(1-3)]
13-15 sch	

6 sch	Cylinder Block Service (AUV 1316)
6 sch	Engine Assembly (AUV 1416)
3-6 sch	Electives
1-6 sch	Supervised Work Experience in Automotive Machinist [AUV 192(1-6)]
16-24 sch	

* Students who lack entry level skills in math, English, science, etc. will be provided related studies.

** Baseline competencies are taken from the high school Automotive Service Technology program. Students who can document mastery of these competencies should not receive duplicate instruction. Students who cannot demonstrate mastery will be required to do so.

APPROVED ELECTIVES

Other Instructor Approved Electives
Science and Technology (ATE 1113)
Parts and Labor (AUV 1513)
Crankshaft Balancing and Advanced Crankshaft Grinding (AUV 1613)
Brake Rotor and Drum Machining (AUV 1713)
Work-Based Learning [WBL 191(1-3), WBL 192(1-3), WBL 193(1-3), WBL 291(1-3), WBL 292(1-3), and WBL 293(1-3)]

PROGRAM DESCRIPTION

AUTOMOTIVE TECHNOLOGY

Postsecondary Automotive Technology is an instructional program that prepares individuals to engage in the servicing and maintenance of all types of automobiles. Instruction includes the diagnosis of malfunctions of all 8 areas of ASE/NATEF certification (Engine Repair, Electrical and Electronic Systems, Engine Performance, Brakes, Steering and Suspension Systems, Manual Drivetrains and Axles, Automatic Transmissions and Transaxles, Heating and Air Conditioning.

PROGRAM REQUIREMENTS

Postsecondary Automotive Technology is an articulated technical program designed to provide advanced and technical skills to its students. Baseline competencies, taken from the secondary Automotive Mechanics curriculum framework, serve as a foundation for the competencies and suggested objectives taught in the courses of the program. Students who do not possess these competencies will be allowed to acquire them during the program. Students who can document mastery of the baseline competencies will receive advanced instruction on these topics. Automotive Technology may be taught as either a certificate program or as a technical program.

The curriculum for Postsecondary Automotive Technology is based upon the task list published in ASE Certification for Automobile Training Programs, National Automotive Technicians Education Foundation, Inc. (NATEF). This task list serves as a national standard for certification of automobile technician training programs and is regularly reviewed and validated by technicians and engineers in the automotive industry. The task list is based upon the following assumptions which also apply to the model curriculum:

1. In all areas, appropriate theory, safety, and support instruction is required for performing each task. It is assumed that this instruction has included identification and use of appropriate tools and testing and measuring equipment required to accomplish certain tasks. It is also assumed that the student has received necessary training to locate and use current reference and training materials from accepted industry publications (in most cases, published by the vehicle manufacturer), which present manufacturers' recommended or required specifications and procedures for performing various tasks.
2. All diagnostic and repair tasks described in this document are to be accomplished in accordance with manufacturer's recommended procedures and specifications.
3. The individual training program being evaluated for certification should have written and detailed performance standards for each task taught in the curriculum. Learning progress of students should be monitored and evaluated against these performance standards. A system should be in place which informs all students of their individual progress through all phases of the training program.
4. It is recognized that individual courses of study will differ across automobile technician training programs. The development of appropriate learning delivery systems and tests which monitor student progress will be the responsibility of the individual training program.

(Adapted from ASE certification for automobile training programs. National Institute for Automotive Service Excellence, Reston, VA. 1993.)

For additional information on ASE Certification, contact:

National Automotive Technicians Education Foundation
13505 Dulles Technology Drive
Herndon, VA 22071-3415
(702) 713-010

Industry standards are based on the *Standards and Guidelines for Automotive Programs.*

SUGGESTED COURSE SEQUENCE*

Automotive Technology

Baseline Competencies for Automotive Technology**

FIRST YEAR

3 sch	Written Communications Elective	3 sch	Math/Science Elective
4 sch	Brakes (ATT 1213)	5 sch	Engine Repair (ATT 1715)
1 sch	Introduction, Safety, and Employability Skills (ATT 1811)	4 sch	Engine Performance I (ATT 1424)
4 sch	Basic Electrical/Electronic Systems (ATT 1124)	4 sch	Advanced Electrical/Electronic Systems (ATT 1134)
4 sch	Manual Drive Trains/Transaxles (ATT 1314)		
16 sch		16 sch	

SECOND YEAR

3 sch	Humanities/Fine Arts Elective	4 sch	Electives
4 sch	Engine Performance II (ATT 2434)	3 sch	Oral Communications Elective
4 sch	Heating and Air Conditioning (ATT 2614)	3 sch	Social/Behavioral Science Elective
5 sch	Automatic Transmissions/Transaxles (ATT 2325)	4 sch	Engine Performance III (ATT 2444)
		4 sch	Steering and Suspension Systems (ATT 2334)
16 sch		18 sch	

* Students who lack entry level skills in math, English, science, etc. will be provided related studies.

** Baseline competencies are taken from the high school Automotive Service Technology program. Students who can document mastery of these competencies should not receive duplicate instruction. Students who cannot demonstrate mastery will be required to do so.

APPROVED ELECTIVES

Other electives that are instructor approved
Science and Technology (ATE 1113)
Special Problem in Automotive Technology [ATT 291(1-3)]
Supervised Work Experience in Automotive Technology [ATT 292(1-6)]
Work-Based Learning [WBL 191(1-3), WBL 192(1-3), WBL 193(1-3), WBL 291(1-3), WBL 292(1-3), and WBL 293(1-3)]

PROGRAM DESCRIPTION

DRAFTING AND DESIGN TECHNOLOGY

The Drafting and Design Technology programs of study are designed to provide specialized occupational instruction in all phases of drafting technology in order to prepare students for positions in the drafting field. A combination of classwork and laboratory experience is stressed.

Successful completion of a minimum of 64 semester credit hours of coursework in a two-year program leads to an Associate in Applied Science degree. Students who successfully complete a minimum of 46 semester hours in drafting and design technology courses may earn a vocational certificate in general drafting.

The Drafting and Design Cluster curricula allow students to obtain skills and knowledge related to several fields of the drafting and design industry. Options within the curriculum framework include General Drafting and Geographical Information Systems Technology. The Architectural Engineering Technology curriculum provides students with specialized skills in the architectural drafting and design field.

The Geographical Information Systems option prepares a person for entry level positions in the geographical information systems field. A geographical information system (GIS) is an integrated database management system used to store, organize, retrieve, and analyze geographical and resource data for decision making. The curriculum includes computer-assisted drafting, map making, database management, surveying, and applications of geographical information systems. GIS technicians work under the supervision of GIS engineers, managers, cartographers, surveyors, and other professionals to store, organize, retrieve, and analyze resource data for planning and decision making. The need for technicians in this area continues to grow with the rapid development and implementation of GIS technology. A minimum of 64 semester credit hours is required to receive the Associate of Applied Science Degree in Geographical Information Systems Technology. Students who complete a minimum of 34 semester hours in the program may be eligible to receive a certificate in Geographical Information Systems.

The content of this curriculum framework is based on national standards as developed by the American Design and Drafting Association.

Articulation credit from Secondary General Drafting to Postsecondary Drafting and Design will be awarded beginning with the fall semester of 2005. Secondary students must have completed the Secondary General Drafting program and scored at the 80 percentile or higher on the Mississippi Career Planning and Assessment System (MS-CPAS). The State Board for Community and Junior Colleges will forward the scores for each district to the Director of Admissions/Registrar at each postsecondary institution. No grade will be given on the transcript; only hours granted will be transcripted (therefore making no changes to quality points).

Twelve (12) additional hours must be earned before credit is transcripted. No cost will be assessed on credit assigned to a student receiving articulated credit. MS-CPAS scores may be accepted for up to 12 months after they are published.

Industry standards are based on the *American Design Drafting Association Skill Standards.*

SUGGESTED COURSE SEQUENCE*

Drafting and Design Technology

Architectural Engineering Technology

Associate Degree

Baseline Competencies for Drafting and Design Cluster**

FIRST YEAR

4 sch	Fundamentals of Drafting (DDT 1114)	3 sch	Architectural Design I (DDT 1613)
3 sch	Construction Materials (DDT 1213)	3 sch	Intermediate CAD (DDT 1323)
3 sch	Principles of CAD (DDT 1313)	3 sch	Elective
3 sch	Written Communications Elective	3 sch	Oral Communications Elective
3 sch	Math/Science Elective	3 sch	Restrictive Elective***
16 sch		15 sch	

SECOND YEAR

3 sch	Cost Estimating (DDT 2243)	3 sch	Structural Drafting I (DDT 2233)
3 sch	Advanced CAD (DDT 2343)	3 sch	Civil Drafting (DDT 2153)****
6 sch	Technical Electives*****	3 sch	Architectural Design II (DDT 2623)
3 sch	Social/Behavioral Science Elective	3 sch	Restrictive Elective***
3 sch	Humanities/Fine Arts Elective	3 sch	Technical Electives*****
18 sch		15 sch	

* Students who lack entry level skills in math, English, science, etc. will be provided related studies.

** Baseline competencies are taken from the high school General Drafting program. Students who can document attainment of these competencies should not receive duplicate instruction. Students who cannot demonstrate attainment will be required to do so.

*** Restrictive elective includes math, science, or technology.

**** Elementary Surveying (DDT 1413) and Mapping and Topography (DDT 2423) may be taken in lieu of Civil Drafting (DDT 2153)

*****TECHNICAL ELECTIVES - ARCHITECTURAL ENGINEERING TECHNOLOGY

3 sch	Science and Technology (ATE 1113)
3 sch	Computational Methods for Drafting (DDT 1123)
3 sch	Database Construction and Maintenance (GIT 2113)
3 sch	Fundamentals of Geographical Information Systems (GIS) (GIT 2123)
3 sch	Principles of Image Processing (GIT 2133)
3 sch	Advanced Geographical Information Systems (GIT 2263)
3 sch	Remote Sensing (GIT 2273)
3 sch	Geometric Dimensioning and Tolerancing (DDT 1143)
3 sch	Descriptive Geometry (DDT 1153)
3 sch	Statics and Strength of Materials (DDT 2253)
3 sch	CAD Management (DDT 2353)
3 sch	Machine Drafting I (DDT 1133)
3 sch	Elementary Surveying (DDT 1413)
3 sch	Facilities Planning (DDT 2273)
3 sch	Structural Drafting II (DDT 2213)
3 sch	Mapping and Topography (DDT 2423)
3 sch	Legal Principles of Surveying (CIT 2113/DDT 2433)
3 sch	Advanced Surveying (CIT 2124/DDT 2443)
3 sch	GPS Surveying (CIT 2444/DDT 2463)
3 sch	Pipe Drafting (DDT 2523)
3 sch	Highway Drafting (DDT 2533)
3 sch	Fundamentals of Multimedia (DDT 2713)
1-3 sch	Special Project [DDT 291(1-3)]
1-6 sch	Supervised Work Experience in Drafting and Design Technology [DDT 292(1-6)]
1-3 sch	Work-Based Learning I, II, III, IV, V, and VI [(WBL 191(1-3), WBL 192(1-3), WBL 193(1-3), WBL 291(1-3), WBL 292(1-3), WBL 293(1-3)]

SUGGESTED COURSE SEQUENCE*

Drafting and Design Technology

General Drafting Option

Associate Degree

Baseline Competencies for Drafting and Design Cluster**

FIRST YEAR

4 sch	Fundamentals of Drafting (DDT 1114)	3 sch	Machine Drafting I (DDT 1133)
3 sch	Restrictive Elective***	3 sch	Intermediate CAD (DDT 1323)
3 sch	Principles of CAD (DDT 1313)	3 sch	Construction Materials (DDT 1213)
3 sch	Written Communications Elective	3 sch	Oral Communications Elective
3 sch	Math/Science Elective	3 sch	Elective
16 sch		15 sch	

SECOND YEAR

3 sch	Architectural Design I (DDT 1613)	3 sch	Structural Drafting I (DDT 2233)
3 sch	Advanced CAD (DDT 2343)	3 sch	Civil Drafting (DDT 2153)****
6 sch	Technical Electives*****	6 sch	Technical Electives*****
3 sch	Humanities/Fine Arts Elective	3 sch	Restrictive Elective***
3 sch	Social/Behavioral Science Elective		
18 sch		15 sch	

* Students who lack entry level skills in math, English, science, etc. will be provided related studies.

** Baseline competencies are taken from the high school General Drafting program. Students who can document attainment of these competencies should not receive duplicate instruction. Students who cannot demonstrate attainment will be required to do so.

*** Restrictive elective includes math, science, or technology.

**** Elementary Surveying (DDT 1413) and Mapping and Topography (DDT 2423) may be taken in lieu of Civil Drafting (DDT 2153)

*****TECHNICAL ELECTIVES - GENERAL DRAFTING

3 sch	Computational Methods for Drafting (DDT 1123)
3 sch	Science and Technology (ATE 1113)
3 sch	Database Construction and Maintenance (GIT 2113)
3 sch	Fundamentals of Geographical Information Systems (GIS) (GIT 2123)
3 sch	Principles of Image Processing (GIT 2133)
3 sch	Advanced Geographical Information Systems (GIT 2263)
3 sch	Remote Sensing (GIT 2273)
3 sch	Geometric Dimensioning and Tolerancing (DDT 1143)
3 sch	Descriptive Geometry (DDT 1153)
3 sch	Fundamentals of Machining Processes (DDT 1713)
3 sch	Elementary Surveying (DDT 1413)
3 sch	Design for Manufacturing (DDT 1813)
3 sch	Machine Drafting II (DDT 2163)
3 sch	Structural Drafting II (DDT 2213)
3 sch	Cost Estimating (DDT 2243)
3 sch	Statics and Strength of Materials (DDT 2253)
3 sch	Quality Assurance (DDT 2263)
3 sch	Computer Numerical Control (CNC) Drafting (DDT 2363)
3 sch	Mapping and Topography (DDT 2423)
3 sch	Legal Principles of Surveying (CIT 2113/DDT 2433)
3 sch	Advanced Surveying (CIT 2124/DDT 2443)
3 sch	GPS Surveying (CIT 2444/DDT 2463)
3 sch	Pipe Drafting (DDT 2523)
3 sch	CAD Management (DDT 2353)
3 sch	Highway Drafting (DDT 2533)
3 sch	Steel Ship Building and Design (DDT 2543)
3 sch	Architectural Design II (DDT 2623)
3 sch	Fundamentals of Multimedia (DDT 2713)
1-3 sch	Special Project [DDT 291(1-3)]
1-6 sch	Supervised Work Experience in Drafting and Design Technology [DDT 292(1-6)]
1-3 sch	Work-Based Learning I, II, III, IV, V, and VI [WBL 191(1-3), WBL 192(1-3), WBL 193(1-3), WBL 291(1-3), WBL 292(1-3), WBL 293(1-3)]

SUGGESTED COURSE SEQUENCE*

Drafting and Design Technology

General Drafting Option

Certificate

Baseline Competencies for Drafting and Design Cluster**

FIRST SEMESTER		SECOND SEMESTER	
4 sch	Fundamentals of Drafting (DDT 1114)	3 sch	Machine Drafting II (DDT 2163)
3 sch	Principles of CAD (DDT 1313)	3 sch	Architectural Design I (DDT 1613)
3 sch	Machine Drafting I (DDT 1133)	3 sch	Intermediate CAD (DDT 1323)
3 sch	Elementary Surveying (DDT 1413)	3 sch	Civil Drafting (DDT 2153)***
3 sch	Technical Elective****	3 sch	Technical Elective****
16 sch		15 sch	

THIRD SEMESTER

3 sch	Architectural Design II (DDT 2623)
3 sch	Advanced CAD (DDT 2343)
3 sch	Special Project (DDT 2913)
6 sch	Technical Electives****
15 sch	

* Students who lack entry level skills in math, English, science, etc. will be provided related studies.

** Baseline competencies are taken from the high school General Drafting program. Students who can document mastery of these competencies should not receive duplicate instruction. Students who cannot demonstrate mastery will be required to do so.

*** Elementary Surveying (DDT 1413) and Mapping and Topography (DDT 2423) may be taken in lieu of Civil Drafting (DDT 2153)

****TECHNICAL ELECTIVES - VOCATIONAL CERTIFICATE

3 sch	Computational Methods for Drafting (DDT 1123)
3 sch	Geometric Dimensioning and Tolerancing (DDT 1143)
3 sch	Descriptive Geometry (DDT 1153)
3 sch	Construction Materials (DDT 1213)
3 sch	Fundamentals of Machining Processes (DDT 1713)
3 sch	Design for Manufacturing (DDT 1813)
3 sch	CAD Management (DDT 2353)
3 sch	Legal Principles of Surveying (CIT 2113/DDT 2433)
3 sch	Advanced Surveying (CIT 2124/DDT 2443)
3 sch	GPS Surveying (CIT 2444/DDT 2463)
3 sch	Structural Drafting I (DDT 2233)
3 sch	Cost Estimating (DDT 2243)
3 sch	Statics and Strength of Materials (DDT 2253)
3 sch	Mapping and Topography (DDT 2423)
3 sch	Pipe Drafting (DDT 2523)
3 sch	Highway Drafting (DDT 2533)
3 sch	Steel Ship Building and Design (DDT 2543)
3 sch	Fundamentals of Multimedia (DDT 2713)
1-6 sch	Supervised Work Experience in Drafting and Design Technology [DDT 292(1-6)]
1-3 sch	Work-Based Learning I, II, III, IV, V, and VI [(WBL 191(1-3), WBL 192(1-3), WBL 193(1-3), WBL 291(1-3), WBL 292(1-3), WBL 293(1-3)]

SUGGESTED COURSE SEQUENCE*

Drafting and Design Technology

Geographical Information Systems Technology Option

Certificate Program

Baseline Competencies for Drafting and Design Cluster**

A Certificate of Geographical Information Systems may be awarded to a student who successfully completes the 34 semester credit hours of required courses.

FIRST YEAR

3 sch	Elementary Surveying (DDT 1413)
3 sch	Database Construction and Maintenance (GIT 2113)
4 sch	Fundamentals of Drafting (DDT 1114)
3 sch	Fundamentals of Geographical Information Systems (GIS) (GIT 2123)
3 sch	Principles of CAD (DDT 1313)
16 sch	

3 sch	Advanced Geographical Information Systems (GIT 2263)
3 sch	Cartography and Computer Map Reading (GIT 1253)
3 sch	Mapping and Topography for GIS (GIT 2423)***
3 sch	Remote Sensing (GIT 2273)
6 sch	Technical Electives****
18 sch	

* Students who lack entry level skills in math, English, science, etc. will be provided related studies.

** Baseline competencies are taken from the high school General Drafting program. Students who can document mastery of these competencies should not receive duplicate instruction. Students who cannot demonstrate mastery will be required to do so.

*** Mapping and Topography (DDT 2423) may be taken in lieu of Mapping and Topography for GIS (GIT 2423)

****APPROVED ELECTIVES

3 sch	Principles of Image Processing (GIT 2133)
3 sch	Intermediate CAD (DDT 1323)
3 sch	Advanced CAD (DDT 2343)
3 sch	Advanced Surveying (CIT 2124/DDT 2443)
3 sch	GPS Surveying (CIT 2444/DDT 2463)

1-3 sch	Special Problem in Geographical Information Systems Technology [GIT 291(1-3)]
1-6 sch	Supervised Work Experience in Geographical Information Systems Technology [GIT 292(1-6)]
1-3 sch	Work-Based Learning I, II, III, IV, V, and VI [WBL 191(1-3), WBL 192(1-3), WBL 193(1-3), WBL 291(1-3), WBL 292(1-3), WBL 293(1-3)]

SUGGESTED COURSE SEQUENCE*

Drafting and Design Technology

Geographical Information Systems Technology Option

Associate Degree Program

Baseline Competencies for Drafting and Design Cluster**

FIRST YEAR

3 sch	Elementary Surveying (DDT 1413)	3 sch	Descriptive Geometry (DDT 1153)
4 sch	Fundamentals of Drafting (DDT 1114)	3 sch	GPS Surveying (CIT 2444/DDT 2463)
3 sch	Principles of CAD (DDT 1313)	3 sch	Technical Elective***
3 sch	Math/Science Elective	3 sch	Approved Geography Course
3 sch	Written Communications Elective	3 sch	Oral Communications Elective
16 sch		15 sch	

SECOND YEAR

3 sch	Fundamentals of Geographical Information Systems (GIS) (GIT 2123)	3 sch	Advanced Geographical Information Systems (GIT 2263)
3 sch	Remote Sensing (GIT 2273)	3 sch	Approved Course in Geography or Geology
3 sch	Cartography and Computer Map Reading (GIT 1253)	3 sch	Principles of Image Processing (GIT 2133)
3 sch	Database Construction and Maintenance (GIT 2113)	3 sch	Technical Elective***
3 sch	Technical Elective****	3 sch	Social/Behavioral Science
3 sch	Humanities/Fine Arts Elective	15 sch	
18 sch			

* Students who lack entry level skills in math, English, science, etc. will be provided related studies.

** Baseline competencies are taken from the high school General Drafting program. Students who can document mastery of these competencies should not receive duplicate instruction. Students who cannot demonstrate mastery will be required to do so.

**** TECHNICAL ELECTIVES

3 sch	Science and Technology (ATE 1113)
3 sch	Intermediate CAD (DDT 1323)
3 sch	Advanced CAD (DDT 2343)
3 sch	Advanced Surveying (CIT 2124/DDT 2443)
3 sch	Visual Basic Programming Language (CPT 1214)
3 sch	Trigonometry (MAT 1323)
3 sch	Mapping and Topography for GIS (GIT 2423) or Mapping and Topography (DDT 2423)
1-3 sch	Special Problem in Geographical Information Systems Technology [GIT 291(1-3)]
1-6 sch	Supervised Work Experience in Geographical Information Systems Technology [GIT 292(1-6)]
1-3 sch	Work-Based Learning I, II, III, IV, V, and VI [WBL 191(1-3), WBL 192(1-3), WBL 193(1-3), WBL 291(1-3), WBL 292(1-3), WBL 293(1-3)]

PROGRAM DESCRIPTION

MACHINE TOOL TECHNOLOGY

Machine Tool Technology is an instructional program that prepares individuals to shape metal parts on machines such as lathes, grinders, drill presses, and milling machines. Included is instruction in making computations related to work dimensions, testing, feeds, and speeds of machines; using precision measuring instruments such as layout tools, micrometers, and gauges; machining and heat-treating various metals; and laying out machine parts. Also included is instruction in the operation and maintenance of computerized equipment.

Machine Tool Technology is an articulated certificate-technical program designed to provide advanced skills to its students. Entry into the program is based upon mastery of Baseline Competencies which are taught in the secondary programs. Students who do not possess such skills must complete additional coursework in order to graduate from the program. The certificate program consists of instruction in Baseline Competencies which may be obtained in a secondary metal trades program or at the community college and two semesters of advanced skill training which must be obtained at the community college level. Students desiring an Associate of Applied Science degree in the technical program must complete an additional two semesters of coursework including the academic core.

The uniform program structure for Machine Tool Technology is designed to serve as the core of instruction for approximately seventy-five percent of each major machine tool operation course. The remaining twenty-five percent of each course is to be added at the local level based upon needs of students and local employers.

This curriculum revision was developed by utilizing the national standards for machining skills as developed and approved by the National Institute for Metalworking Skills (NIMS).

Industry standards are based on the *National Institute for Metalworking Skills.*

SUGGESTED COURSE SEQUENCE*

Machine Tool Technology

One-Year Certificate of Machine Tool Technology

Baseline Competencies for Machine Tool Technology**

FIRST YEAR

3 sch	Machine Tool Mathematics (MST 1313)	4-6 sch	Power Machinery II (MST 1124-6)
3 sch	Blueprint Reading (MST 1413)	3 sch	Precision Layout (MST 1613)
4-6 sch	Power Machinery I (MST 1114-6)	3 sch	Advanced Blueprint Reading (MST 1423)
5 sch	Technical Electives	5 sch	Technical Electives
15-17 sch		15-17 sch	

* Students who lack entry level skills in math, English, science, etc. will be provided related studies.

** Baseline competencies are taken from the high school Allied Health program. Students who can document mastery of these competencies should not receive duplicate instruction. Students who cannot demonstrate mastery will be required to do so.

TECHNICAL ELECTIVES

Keyboarding/Beginning Computer Concepts (BOA 1413)
Plastics Tooling Construction Principles (PLT 2213)
Metallurgy (MST 2812-3)
Quality Assurance (DDT 2263)
Fundamentals of Microcomputer Applications (CPT 1113)
Fundamentals of Drafting (DDT 1114)
Principles of CAD (DDT 1313)
Safety and Fundamentals of Die Fabrication (TDT 1113)
Die Repair (TDT 1123)
Die Design I (TDT 1133)
Jigs, Fixtures, and Tools (TDT 2183)
Special Problem in Machine Tool Technology [MST 291(1 3)]

SUGGESTED COURSE SEQUENCE*

Machine Tool Technology

Two-Year Certificate of Machine Tool Technology

Baseline Competencies for Machine Tool Technology**

FIRST YEAR

3 sch	Machine Tool Mathematics (MST 1313)	5 sch	Power Machinery II (MST 1124-6)
3 sch	Blueprint Reading (MST 1413)	3 sch	Precision Layout (MST 1613)
4-6 sch	Power Machinery I (MST 1114-6)	3 sch	Advanced Blueprint Reading (MST 1423)
5 sch	Technical Elective	5 sch	Technical Elective
15-17 sch		15-17 sch	

SECOND YEAR

5 sch	Power Machinery III (MST 2135)	4 sch	Power Machinery IV (MST 2144)
4 sch	Computer Numerical Control Operations I (MST 2714)	4-5 sch	Computer Numerical Control Operations II (MST 2724-5)
6 sch	Technical Electives	6 sch	Technical Electives
15 sch		14- 15 sch	

* Students who lack entry level skills in math, English, science, etc. will be provided related studies.

** Baseline competencies are taken from the high school Metal Trades or Machine Shop Assistant program. Students who can document mastery of these competencies should not receive duplicate instruction. Students who cannot demonstrate mastery will be required to do so.

TECHNICAL ELECTIVES

Keyboarding/Beginning Computer Concepts (BOA 1413)
Plastics Tooling Construction Principles (PLT 2213)
Metallurgy (MST 2812-3)
Fundamentals of Microcomputer Applications (CPT 1113)
Principles of CAD (DDT 1313)
Fundamentals of Drafting (DDT 1114)
Safety and Fundamentals of Die Fabrication (TDT 1113)
Die Repair (TDT 1123)

Die Design I (TDT 1133)
Jigs, Fixtures, and Tools (TDT 2183)
Supervised Work Experience in Machine Tool Technology [MST 292(1-6)]
Special Problem in Machine Tool Technology [MST 291(1-3)]
Work-Based Learning I, II, III, IV, V, VI [WBL 191(1-3), WBL 192(1-3), WBL 193(1-3), WBL 291(1-3), WBL 292(1-3), WBL 293(1-3)]

SUGGESTED COURSE SEQUENCE*

Machine Tool Technology

Associate Degree in Machine Tool Technology

Baseline Competencies for Machine Tool Technology**

FIRST YEAR

3 sch	Machine Tool Mathematics (MST 1313)	4-6 sch	Power Machinery II (MST 1124-6)
3 sch	Blueprint Reading (MST 1413)	3 sch	Precision Layout (MST 1613)
4-6 sch	Power Machinery I (MST 1114-6)	3 sch	Advanced Blueprint Reading (MST 1423)
3 sch	Written Communications Elective	3 sch	Math/Science Elective
		3 sch	Humanities/Fine Arts Elective
13-15 sch		16-18 sch	

SECOND YEAR

4 sch	Technical Elective***	4 sch	Power Machinery IV (MST 2144)
5 sch	Power Machinery III (MST 2135)	4-5 sch	Computer Numerical Control Operations II (MST 2724-5)
4 sch	Computer Numerical Control Operations I (MST 2714)	5 sch	Technical Elective
3 sch	Oral Communications Elective	3 sch	Social/Behavioral Science Elective
16 sch		16-17 sch	

* Students who lack entry level skills in math, English, science, etc. will be provided related studies.

** Baseline competencies are taken from the high school Allied Health program. Students who can document mastery of these competencies should not receive duplicate instruction. Students who cannot demonstrate mastery will be required to do so.

***TECHNICAL ELECTIVES

Keyboarding/Beginning Computer Concepts (BOA 1413)
Plastics Tooling Construction Principles (PLT 2213)
Metallurgy (MST 2812-3)
Fundamentals of Microcomputer Applications (CPT 1113)
Principles of CAD (DDT 1313)
Fundamentals of Drafting (DDT 1114)
Safety and Fundamentals of Die Fabrication (TDT 1113)

Die Repair (TDT 1123)
Die Design I (TDT 1133)
Jigs, Fixtures, and Tools (TDT 2183)
Supervised Work Experience in Machine Tool Technology [(MST 292(1-6)]
Special Problem in Machine Tool Technology [(MST 29(1-3)]
Work-Based Learning I, II, III, IV, V, VI [WBL 191(1-3), WBL 192(1-3), WBL 193(1-3), WBL 291(1-3), WBL 292(1-3), WBL 293(1-3)]

PROGRAM DESCRIPTION

MARINE ENGINE MECHANICS (GASOLINE)

Marine Engine Mechanics (Gasoline) is a postsecondary instructional program which prepares individuals to maintain and repair inboard and outboard gasoline engines; test, maintain, and repair steering devices and electrical systems; and perform minor repairs on wood, metal, and fiberglass components found on pleasure craft. This program was written to include the Equipment & Engine Training Council's standards for 2- and 4-stroke cycle gasoline engines.

PROGRAM REQUIREMENTS

Marine Engine Mechanics (Gasoline) is an articulated vocational program designed to provide students with technical skills. Entry into the program is based upon mastery of skills which are taught in the secondary outboard marine engine mechanics programs. Students who do not possess such skills must complete additional course work in order to graduate from the program. The program consists of baseline competencies skills which may be obtained in a secondary program or at the community/junior college level.

The curriculum for Marine Engine Mechanics (Gasoline) is based upon data as collected from curricula guides, input from the business, national standards, and revision team. The listing of tasks within this document serves as baseline data for the development of this curriculum. The task list used in this curriculum is based upon the following assumptions:

1. In all areas, appropriate theory, safety, and support instruction will be provided for each task. It is essential for all instruction to include use of the appropriate equipment needed to accomplish certain tasks. It is also assumed that each student will receive instruction to locate and use current reference materials from publications which present manufacturers' recommended or required specifications and procedures for doing the various tasks.

2. The individual program should have written and detailed evaluation standards for each task covered in the curriculum. Learning progress of students should be monitored and evaluated against these stated standards. A system should be in place which informs all students of their progress throughout the program.

3. It is recognized that individual courses will differ across the technical programs. The development of appropriate learning activities and tests will be the responsibility of the individual program.

4. These standards require that tasks contained in the list be included in the program to validate that the program is meeting the needs of the business.

The curriculum for Marine Engine Mechanics (Gasoline) is designed to serve as the core curriculum for approximately 75 percent of each course at the postsecondary level. The remaining 25 percent of each course is to be added at the local level based upon needs of students and area employers. The program in Marine Engine Mechanics (Gasoline) requires a minimum of 47 semester credit hours (sch) beyond the baseline competencies.

Industry standards are based on the *Equipment & Engine Training Council, OPE Category 1, 2- and 4-Stroke Cycle Gasoline Engine Standards.*

SUGGESTED COURSE SEQUENCE*

Marine Engine Mechanics

Baseline Competencies for Marine Engine Mechanics (Gasoline)**

FIRST SEMESTER		SECOND SEMESTER	
6 sch	Inboard Gasoline Engines (MAV 1216)	2 sch	Marine Fuel Systems (MAV 1222)
5 sch	Fundamentals of Outboard Marine Engine Repair (MAV 1115)	2 sch	Marine Engine Lubrication Systems (MAV 1232)
6 sch	Advanced Outboard Marine Engine Repair (MAV 1126)	2 sch	Marine Engine Cooling Systems (MAV 1242)
		3 sch	Inboard Transmissions (MAV 1253)
		4 sch	Outdrives (MAV 1264)
		4 sch	Vocational-Technical Elective(s)
17 sch		17 sch	

THIRD SEMESTER

3 sch	Vocational-Technical Elective(s)
2 sch	Electrical Systems (MAV 1612)
8 sch	Tune-up and Troubleshooting (MAV 1718)
13 sch	

* Students who lack entry level skills in math, English, science, etc. will be provided related studies.

** Baseline competencies are taken from the high school outboard marine engine mechanics program. Students who can document mastery of these competencies should not receive duplicate instruction. Students who cannot demonstrate mastery will be required to do so.

VOCATIONAL-TECHNICAL ELECTIVES

Boat Maintenance and Repair (MAV 1424)
Marine Accessories (MAV 1312)
Trailers (MAV 1511)
Supervised Work Experience in Marine Engine Mechanics (Gasoline) [MAV 192(1-6)]
Special Project in Marine Engine Mechanics (Gasoline) [MAV 191(1-3)]
Work-Based Learning [WBL 191(1-3), WBL 192(1-3), WBL 193(1-3), WBL 291(1-3), WBL 292(1-3), and WBL 293(1-3)]

PROGRAM DESCRIPTION

RESIDENTIAL CARPENTRY TECHNOLOGY

Residential Carpentry Technology is an instructional program designed to prepare students for entry level into the residential carpentry trade. The residential carpentry program offers learning experiences in blueprint reading, estimating, building, installing, and repairing structural units.

The Associate of Applied Science (AAS) degree in Residential Carpentry may be awarded to a student who successfully completes the two years or 65 semester credit hours of required courses. Included in the requirements are 15 semester credit hours of academic courses.

Certification by the National Center for Construction Education (NCCER):

This curriculum has been aligned to modules in the Contren program as endorsed by the National Center for Construction Education and Research (NCCER). Students who study this curriculum using the Contren materials under the supervision of an instructor who has been certified by the NCCER are eligible to be tested on each module. Students who successfully pass these tests may be certified to the NCCER by the instructor and will receive documentation from NCCER. Secondary level programs of Carpentry and Building Trades cover the NCCER Core and Level I. Postsecondary One-Year Certificate programs cover subjects in Level II and Two-Year Certificate programs cover Level III topics.

Industry standards are based on the *Contren Best Practices for Residential Carpentry Programs.*

SUGGESTED COURSE SEQUENCE*

One-Year Certificate for Residential Carpentry

Baseline Competencies for Residential Carpentry**

FIRST YEAR

6 sch	Foundations (CAV 1116)	5 sch	Ceiling and Roof Framing (CAV 1245)
6 sch	Floor and Wall Framing (CAV 1236)	3 sch	Roofing (CAV 1413)
3 sch	Blueprint Reading (CAV 1133)	3 sch	Exterior Finishing (CAV 1513)
3 sch	Vocational-Technical Electives†	6 sch	Interior Finishing and Cabinet Making (CAV 1316)
18 sch		17 sch	

* Students who lack entry level skills in math, English, science, etc., will be provided related studies.

** Baseline competencies are taken from the secondary Residential Carpentry program. Students who can document mastery of these competencies should not receive duplicate instruction. Students who cannot demonstrate mastery will be required to do so.

†APPROVED ELECTIVES

3 sch	Science and Technology (ATE 1113)
3 sch	Fundamentals of Microcomputer Applications (CPT 1113) (or any other suitable computer science course approved by the instructor)
3 sch	Forming Applications (CAV 1123)
3 sch	Advanced Cabinet Making (CAV 2133)
3 sch	Advanced Interior Finishing (CAV 2313)
1-3 sch	Special Problem in Residential Carpentry Technology [CAV 291(1-3)]
1-6 sch	Supervised Work Experience in Residential Carpentry Technology [CAV 292(1 6)]
1-3 sch	Work Based Learning [WBL 191(1-3), WBL 192(1-3), WBL 193(1-3), WBL 291(1-3), WBL 292(1-3), and WBL 293(1-3)]

SUGGESTED COURSE SEQUENCE*

Two-Year Certificate for Residential Carpentry

Baseline Competencies for Residential Carpentry**

FIRST YEAR

6 sch	Foundations (CAV 1116)
6 sch	Floor and Wall Framing (CAV 1236)
3 sch	Blueprint Reading (CAV 1133)
3 sch	Vocational-Technical Electives†
18 sch	

5 sch	Ceiling and Roof Framing (CAV 1245)
3 sch	Roofing (CAV 1413)
3 sch	Exterior Finishing (CAV 1513)
6 sch	Interior Finishing and Cabinet Making (CAV 1316)
17 sch	

SECOND YEAR

3 sch	Construction Materials (DDT 1213)
4 sch	Fundamentals of Drafting (DDT 1114)
6 sch	Vocational-Technical Electives†
13 sch	

3 sch	Principles of Multi-family & Light Commercial Construction (CAV 2113)
3 sch	Cost Estimating (DDT 2243)
6 sch	Vocational-Technical Electives†
12 sch	

* Students who lack entry level skills in math, English, science, etc., will be provided related studies.

** Baseline competencies are taken from the secondary Residential Carpentry program. Students who can document mastery of these competencies should not receive duplicate instruction. Students who cannot demonstrate mastery will be required to do so.

†APPROVED ELECTIVES

3 sch	Science and Technology (ATE 1113)
3 sch	Fundamentals of Microcomputer Applications (CPT 1113) (or any other suitable computer science course approved by the instructor)
3 sch	Forming Applications (CAV 1123)
3 sch	Advanced Cabinet Making (CAV 2133)
3 sch	Advanced Interior Finishing (CAV 2313)
1-3 sch	Special Problem in Residential Carpentry Technology [CAV 291(1-3)]

1-6 sch Supervised Work Experience in Residential Carpentry Technology [CAV 292(1 6)]
1-3 sch Work Based Learning [WBL 191(1-3), WBL 192(1-3), WBL 193(1-3), WBL 291(1-3), WBL 292(1-3), and WBL 293(1-3)]

SUGGESTED COURSE SEQUENCE*

Two-Year Associate Degree for Residential Carpentry

Baseline Competencies for Residential Carpentry**

FIRST YEAR

6 sch	Foundations (CAV 1116)
6 sch	Floor and Wall Framing (CAV 1236)
3 sch	Blueprint Reading (CAV 1133)
3 sch	Math/Science Elective
18 sch	

5 sch	Ceiling and Road Framing (CAV 1245)
3 sch	Roofing (CAV 1413)
3 sch	Exterior Finishing (CAV 1513)
6 sch	Interior Finishing and Cabinet Making (CAV 1316)
17 sch	

SECOND YEAR

3 sch	Written Communications Elective
3 sch	Oral Communications Elective
3 sch	Construction Materials (DDT 1213)
4 sch	Fundamentals of Drafting (DDT 1114)
3 sch	Vocational-Technical Electives†
16 sch	

3 sch	Humanities/Fine Arts Elective
3 sch	Social/Behavioral Science Elective
3 sch	Principles of Multi-family and Light Commercial Construction (CAV 2113)
3 sch	Cost Estimating (DDT 2243)
2 sch	Vocational-Technical Electives†
14 sch	

* Students who lack entry level skills in math, English, science, etc., will be provided related studies.

** Baseline competencies are taken from the secondary Residential Carpentry program. Students who can document mastery of these competencies should not receive duplicate instruction. Students who cannot demonstrate mastery will be required to do so.

†APPROVED ELECTIVES

3 sch	Science and Technology (ATE 1113)
3 sch	Fundamentals of Microcomputer Applications (CPT 1113) (or any other suitable computer science course approved by the instructor)
3 sch	Forming Applications (CAV 1123)
3 sch	Advanced Cabinet Making (CAV 2133)

3 sch	Advanced Interior Finishing (CAV 2313)
1-3 sch	Special Problem in Residential Carpentry Technology [CAV 291(1-3)]
1-6 sch	Supervised Work Experience in Residential Carpentry Technology [CAV 292(1 6)]
1-3 sch	Work Based Learning [WBL 191(1-3), WBL 192(1-3), WBL 193(1-3), WBL 291(1-3), WBL 292(1-3), and WBL 293(1-3)]

PROGRAM DESCRIPTION

TOOL AND DIE TECHNOLOGY

This is an instructional program that prepares individuals to analyze specifications; lay out metal stock; operate machine tools; and construct metalworking dies, cutting tools, fixtures, and gauges.

Tool and Die Technology is an articulated program designed to provide advanced and technical skills to its students. Entry into the program is based upon mastery of Baseline Competencies which are taught in the secondary programs. Students who do not possess such skills must complete additional coursework in order to graduate from the program.

The student who successfully completes a minimum of 32 semester hours of required coursework will earn a certificate. A student who successfully completes a minimum of 64 semester hours of required coursework will receive an Associate degree. Fifteen hours of academic study are included in the 64 semester hours for an Associate degree.

This curriculum revision was developed by utilizing the national standards for machining skills as developed and approved by the National Institute for Metalworking Skills (NIMS).

Industry standards are based on the *National Institute for Metalworking Skills.*

SUGGESTED COURSE SEQUENCE*

Tool and Die Technology

One-Year Certificate of Tool And Die Technology

Baseline Competencies for Tool and Die Technology Cluster**

3 sch	Safety and Fundamentals of Die Fabrication (TDT 1113)	4 sch	Die Fabrication I (TDT 1144)
4 sch	Fundamentals of Drafting (DDT 1114)	2 sch	Elective***
4-6 sch	Power Machinery I (MST 1114-6)	4-5 sch	Computer Numerical Control Operations II (MST 2724-5)
4-6 sch	Computer Numerical Control Operations I (MST 2714)	4-6 sch	Power Machinery II (MST 1124-6)
15-19 sch		14-17 sch	

* Students who lack entry level skills in math, English, science, etc. will be provided related studies.

** Baseline competencies are taken from the high school Machine Tool Operation program. Students who can document mastery of these competencies should not receive duplicate instruction. Students who cannot demonstrate mastery will be required to do so.

*** APPROVED ELECTIVES

Other Instructor Approved Electives
Die Repair (TDT 1123)
Metallurgy (MST 2812)
Jigs, Fixtures, and Tools (TDT 2183)
Computer Fundamentals for Electronics/Electricity (EET 1613)
Fundamentals of Microcomputer Applications (CPT 1113)
Industrial Hydraulics (ROT 1213)
Machine Drafting I (DDT 1133)
Descriptive Geometry (DDT 1153)
Quality Assurance (DDT 2263)
Special Problem in Tool and Die Technology [TDT 291(1-3)]

SUGGESTED COURSE SEQUENCE*

Tool and Die Technology

Associate Degree in Tool And Die Technology

Baseline Competencies for Tool and Die Technology**

FIRST YEAR

3 sch	Safety and Fundamentals of Die Fabrication (TDT 1113)	3 sch	Die Design I (TDT 1133)
4 sch	Fundamentals of Drafting (DDT 1114)	4 sch	Die Fabrication I (TDT 1144)
3 sch	Math/Science Elective	3 sch	Written Communications Elective
4-6 sch	Power Machinery I (MST 1114-6)	4 sch	Computer Numerical Control Operations I (MST 2714)
		4-6 sch	Power Machinery II (MST 1124-6)
14-16 sch		18-20 sch	

SECOND YEAR

3 sch	Die Design II (TDT 2153)	4 sch	Die Fabrication III (TDT 2174)
4 sch	Die Fabrication II (TDT 2164)	3 sch	Computer Numerical Control Operations III (TDT 2233)
3 sch	Oral Communications Elective	3 sch	Elective***
4-5 sch	Computer Numerical Control Operations II (MST 2724-5)	3 sch	Social/Behavioral Science Elective
		3 sch	Humanities/Fine Arts Elective
14-15 sch		16 sch	

* Students who lack entry level skills in math, English, science, etc. will be provided related studies.

** Baseline competencies are taken from the high school Machine Tool Operation program. Students who can document mastery of these competencies should not receive duplicate instruction. Students who cannot demonstrate mastery will be required to do so.

*** APPROVED ELECTIVES

Other Instructor Approved Electives
Die Repair (TDT 1123)
Metallurgy (MST 2812)
Jigs, Fixtures, and Tools (TDT 2183)
Trigonometry (MAT 1323)
Computer Fundamentals for Electronics/Electricity (EET 1613)

Fundamentals of Microcomputer Applications (CPT 1113)
Industrial Hydraulics (ROT 1213)
Machine Drafting I (DDT 1133)
Descriptive Geometry (DDT 1153)
Quality Assurance (DDT 2263)
Special Problem in Tool and Die Technology [TDT 291(1-3)]
Supervised Work Experience in Tool and Die Technology [(TDT 292(1-6)]
Work-Based Learning I, II, III, IV, V, VI [WBL 191(1-3), WBL 192(1-3), WBL 193(1-3), WBL 291(1-3), WBL 292(1-3), WBL 293(1-3)]

PROGRAM DESCRIPTION

WELDING AND CUTTING TECHNOLOGY

The Welding and Cutting Technology curriculum is designed to prepare the student for entry level employment in the field of welding and cutting. The curriculum includes Shielded Metal Arc Welding (SMAW), Gas Metal Arc Welding (GMAW), Flux Cored Arc Welding (FCAW), Plasma Arc Cutting (PAC), Carbon Arc Cutting, Oxyfuel Cutting, and Gas Tungsten Arc Welding (GTAW). Electives are available in advanced levels of welding and cutting.

National Standards Developed by American Welding Society (AWS)

The welding competencies required in this curriculum were developed to coincide with the Guide for the Training and Qualification of Welding Personnel: Entry Level Welders (AWS EG2.0-95) and Specification for Qualification and Certification for Entry Level Welders (AWS QC 10-95), developed by the American Welding Society and funded by the U.S. Department Education under Grant V.244 B 3006. The contributions of this resource are hereby acknowledged.

The American Welding Society provides a series of reference materials to support this curriculum. For additional information on AWS Educational Membership contact: American Welding Society, AWS Education Department, 550 NW LeJeune Road, Miami, FL 33161, (800) 443-WELD, FAX: (305) 443-7559, (www.aws.org).

Industry standards are based on the *American Welding Society Standards EG2.0-95*.

SUGGESTED COURSE SEQUENCE*

Welding and Cutting Technology

Baseline Competencies for Welding and Cutting**

FIRST YEAR

6 sch	Shielded Metal Arc Welding I (WLV 1116)	6 sch	Gas Tungsten Arc Welding (WLV 1136)
6 sch	Shielded Metal Arc Welding II (WLV 1226)	4 sch	Gas Metal Arc Welding (WLV 1124)
3 sch	Flux Cored Arc Welding (WLV 1143)	4 sch	Cutting Processes (WLV 1314)
1 sch	Welding Safety, Inspection and Testing Principles (WLV 1171)	4 sch	Electives†
2 sch	Drawing and Welding Symbol Interpretation (WLV 1232)		
18 sch		18 sch	

A Basic SMAW Certificate will be offered to students who exit the Welding and Cutting program after the first semester.

* Students who lack entry level skills in math, English, science, etc., will be provided related studies.

** Baseline competencies are taken from the high school Metal Trades program. Students who can document mastery of these competencies will not receive duplicate instruction. Students who cannot demonstrate mastery will be required to do so.

† ELECTIVES

Other instructor approved electives
Pipe Welding (WLV 1155)
Advanced Pipe Welding (WLV 1252)
Gas Metal Arc Aluminum Welding (WLV 1162)
Welding Code (WLV 2913)
Welding Metallurgy (WLV 2812)
Special Problem in Welding and Cutting Technology [(WLV 191(1-3)]
Supervised Work Experience in Welding and Cutting Technology [WLV 192(1-6)]
Work-Based Learning I, II, III, IV, V, and VI [WBL 191(1-3), WBL 192(1-3), WBL 193(1-3), WBL 291(1-3), WBL 292(1-3), and WBL 293(1-3)]

PROGRAM DESCRIPTION

WELL CONSTRUCTION TECHNOLOGY

The Well Construction Technology Program provides classroom and laboratory instruction in the use of rotary drilling and related equipment used in drilling for water, petroleum, and ecological operations. Classroom study covers the rotary rig, power equipment, mechanical maintenance, drilling fluids, hydraulics, and other areas associated with well drilling operations. Laboratory instruction includes hands-on operation of drilling rigs, maintenance of rigs, operation of related equipment, and drilling and completion of various types of wells. Included are basic welding, machine shop operations, hydraulics, and basic industrial electricity.

Graduates of the Well Construction Technology Program at the 12-month level are awarded a Certificate of Well Construction and those who complete the 24-month program are awarded the Associate of Applied Science Degree in Well Construction Technology. Successful graduates are eligible to apply for examination for certification from Mississippi State Water Well Contractors Examination and National Ground Water Association (NGWA). After one year of experience, it is the intent of this program to develop rotary drilling technicians or “drillers” who may qualify for entry level employment. Employment opportunities for technicians may exist in firms specializing in drilling for water, petroleum, and environmental and geotechnical operations.

Industry standards are based on the *Standards and Guidelines for Well Construction Programs*.

SUGGESTED COURSE SEQUENCE*

Well Construction Technology

Certificate

FIRST YEAR

3 sch	Maintenance Mechanics (WDT 1113)	6 sch	Operation of Rotary Rig and Related Equipment (WDT 1146)
3 sch	Approved Computer Elective	4 sch	Drilling Fluids (WDT 1314)
6 sch	Rotary Rig and Related Equipment (WDT 1136)	3 sch	Geological Formations (WDT 1513)
3 sch	Metal Fabrication for Well Drilling (WDT 1613)	3 sch	Technical Elective
3 sch	Technical Elective	_____	
_____		16 sch	
18 sch			

* Students who lack entry level skills in math, English, science, etc. will be provided related studies.

TECHNICAL ELECTIVES

Rotary Drilling Safety (WDT 1123)
Special Problem in Well Construction Technology [WDT 291(1-3)]
Supervised Work Experience in Well Construction Technology [WDT 292(1-6)]
Work-Based Learning I, II, III, IV, V, and VI [WBL 191(1-3), WBL 192(1-3), WBL 193(1-3), WBL 291(1-3), WBL 292(1-3), and WBL 293(1-3)]

SUGGESTED COURSE SEQUENCE

Well Construction Technology

Associate Degree Program*

FIRST YEAR

3 sch	Maintenance Mechanics (WDT 1113)	6 sch	Operation of Rotary Rig and Related Equipment (WDT 1146)
3 sch	Approved Computer Elective	4 sch	Drilling Fluids (WDT 1314)
6 sch	Rotary Rig and Related Equipment (WDT 1136)	3 sch	Geological Formations (WDT 1513)
3 sch	Metal Fabrication for Well Drilling (WDT 1613)	3 sch	Written Communications Elective
3 sch	Math/Science Elective	16 sch	
18 sch			

SECOND YEAR

3 sch	Residential Wiring (ELT 1113)	3 sch	Well Testing and Completion (WDT 2233)
3 sch	Pump Theory and Installation (WDT 2223)	3 sch	Down-hole Problems (WDT 2333)
3 sch	Environmental and Geotechnical Drilling (WDT 2433)	6 sch	Technical Electives
3 sch	Water Well Construction (WDT 2423)	3 sch	Social/Behavioral Science Elective
3 sch	Humanities/Fine Arts Elective	3 sch	Oral Communications Elective
15 sch		18 sch	

* Students who lack entry level skills in math, English, science, etc. will be provided related studies.

TECHNICAL ELECTIVES

Rotary Drilling Safety (WDT 1123)
Special Problem in Well Construction Technology [WDT 291(1-3)]
Supervised Work Experience in Well Construction Technology [WDT 292(1-6)]
Work-Based Learning I, II, III, IV, V, and VI [WBL 191(1-3), WBL 192(1-3), WBL 193(1-3), WBL 291(1-3), WBL 292(1-3), and WBL 293(1-3)]

PROGRAM DESCRIPTION

WORK-BASED LEARNING

Work-Based Learning combines classroom instruction with structured on-the-job experiences in local businesses and industries to provide a curriculum for vocational and technical students which better equips them for employment in technical careers. Placed in a work environment which complements classroom learning, the Work-Based Learning student masters skills and competencies which have been outlined by participating businesses and industries using state-of-the-art equipment. In doing so, the Work-Based Learning participant is not only better able to see the connection between education and work but is also able to earn wages while learning from skilled professionals as well as testing a potential career. Work-Based Learning students enter the workforce equipped with employability skills as well as an educational background which enhances their future career options.

LISTING OF COURSES

BUSINESS AND COMPUTER TECHNOLOGY PROGRAMS

COMPUTER INFORMATION SYSTEMS TECHNOLOGY

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Course Name: Fundamentals of Data Communications
Course Abbreviation: CNT 1414/WDT 1814
Classification: Vocational-Technical Core
Description: This course presents basic concepts of telephony, local area networks, wide area networks, data transmission, and topology methods. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: None

* * * * *

Course Name: Web Development Concepts
Course Abbreviation: CNT 1513/CPT 1513/WDT 1123
Classification: Vocational-Technical Core
Description: This course is an introduction to the Internet and its uses in the world of business. It includes basic and advanced features of the Internet, World Wide Web, browers, listservers, and creating web pages. Upon completion of this course, students will be able to create a personalized home page and post it on the Internet, download files using a browser and an FTP program, and send e-mail messages. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: None

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Course Name: Network Components
Course Abbreviation: CNT 1523
Classification: Vocational-Technical Core
Description: This course presents local area network and wide area network connectivity. It focuses on architectures, topologies, protocols, and transport methods of a network. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: Fundamentals of Data Communications (CNT 1414)

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Course Name: Network Administration Using Novell
Course Abbreviation: CNT 1614
Classification: Vocational-Technical Elective
Description: This course focuses on the management of a computer network using the Novell network operating system. Emphasis will be placed on daily administrative tasks performed by a network administrator. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: None

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Course Name: Network Administration Using Microsoft Windows Server
Course Abbreviation: CNT 1624
Classification: Vocational-Technical Elective
Description: This course focuses on the management of a computer network using the Microsoft Windows Server network operating system. Emphasis will be placed on daily administrative tasks performed by a network administrator. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: None

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Course Name: Windows XP Installation and Configuration
Course Abbreviation: CNT 1634
Classification: Vocational-Technical Elective
Description: This course is designed to help the student install, support, and troubleshoot the current operating system. Emphasis will be placed on common user's operations as well as the network administrator's support of the operating system. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: None

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Course Name: Network Administration Using Linux
Course Abbreviation: CNT 1654
Classification: Vocational-Technical Elective
Description: This course focuses on the management of a computer network using the Linux operating system. Emphasis is placed on installation, configuration, implementation, and administrative tasks of a functional server. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: None

* * * * *

Course Name: System Maintenance
Course Abbreviation: CNT 2423/CPT 2383
Classification: Vocational-Technical Core
Description: This course covers the diagnosis, troubleshooting, and maintenance of computer components. Topics include hardware compatibility, system architecture, memory, input devices, video displays, disk drives, modems, and printers. (3 sch: 2 hr. lecture, 2 hr. lab)
Pre/corequisite: Operating Platforms (CPT 1333)

* * * * *

Course Name: Network Planning and Design
Course Abbreviation: CNT 2534
Classification: Vocational-Technical Core
Description: This course involves applying network concepts in planning and designing a functioning network. Emphasis is placed on recognizing the need for a network, conducting an analysis, and designing a solution. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisites: Network Operating Systems Elective; Network Components (CNT 1523)

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Course Name: Network Implementation
Course Abbreviation: CNT 2544
Classification: Vocational-Technical Core
Description: This course is the culmination of all concepts learned in the network curriculum. Topics include planning, installation, evaluation, and maintenance of a network solution. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: Network Planning and Design (CNT 2534)

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Course Name: Network Security
Course Abbreviation: CNT 2553
Classification: Vocational-Technical Elective
Description: This course provides an introduction to network and computer security. Topics such as ethics, security policies, legal issues, vulnerability testing tools, firewalls, and operating system hardening will be discussed. Students will receive a deeper understanding of network operations and protocols through traffic capture and protocol analysis. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisites: Web Development Concepts (WDT 1123/CNT 1513/CPT 1513); Network Components (CNT 1523)

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Course Name: Advanced Network Administration Using Novell
Course Abbreviation: CNT 2634
Classification: Vocational-Technical Elective
Description: This course is a continuation of Network Administration Using Novell. Emphasis is placed on installation, configuration, and implementation of a Novell network. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: Network Administration Using Novell (CNT 1614)

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Course Name: Advanced Network Administration Using Microsoft Windows Server
Course Abbreviation: CNT 2644
Classification: Vocational-Technical Elective
Description: This course is a continuation of Network Administration Using Microsoft Windows Server. Emphasis is placed on installation, configuration, and implementation of a functional server. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisites: Fundamentals of Data Communications (CNT 1414), Network Administration Using Microsoft Windows Server (CNT 1624)

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Course Name: Advanced Network Administration Using Linux
Course Abbreviation: CNT 2654
Classification: Vocational-Technical Elective

Description: This course is a continuation of Network Administration Using Linux. This is an advanced administration course in network services for Linux users who wish to increase their skills. Students will learn how to apply security to network users and resources, manage and compile the Linux kernel, manage network clients, and troubleshoot network processes and services. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisites: Web Development Concepts (WDT 1123/CNT 1513/CPT 1513); Network Components (CNT 1523); Network Administration Using Linux (CNT 1654)

Computer Information Systems Technology

Computer Programming Technology Courses

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Course Name: Programming Development Concepts
Course Abbreviation: CPT 1143
Classification: Vocational-Technical Core
Description: This course is an introduction to programming logic and computer systems. Students will gain hands-on experience in the development of computer programs. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: None

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Course Name: Visual BASIC Programming Language
Course Abbreviation: CPT 1214
Classification: Vocational-Technical Core
Description: Introduction to the Visual BASIC programming language. Introduces the student to object-oriented programming and a graphical integrated development environment. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: None

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Course Name: RPG Programming Language
Course Abbreviation: CPT 1224
Classification: Vocational-Technical Elective
Description: This course is designed to introduce the student to the RPG language for the creation of business applications. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: Programming Development Concepts (CPT 1143) or permission of instructor

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Course Name: COBOL Programming Language
Course Abbreviation: CPT 1234
Classification: Vocational-Technical Elective
Description: This course is designed to introduce the student to the use of the COBOL language in business applications to include arithmetic operations, report editing, control break processing, and table processing techniques. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: Programming Development Concepts (CPT 1143) or permission of instructor

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Course Name: Survey of Microcomputer Applications
Course Abbreviation: CPT 1323
Classification: Vocational-Technical Elective
Description: Introduces microcomputer operation, word processing, spreadsheets, and database management. (3 sch: 2 hr. lecture, 2 hr. lab)

Prerequisite: None

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Course Name: Operating Platforms
Course Abbreviation**:** CPT 1333
Classification: Vocational-Technical Core
Description: This course will provide experience in a variety of operating platforms. Emphasis will be placed on support personnel interaction with the platform to assist users in business environments. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: None

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Course Name: Database Design Fundamentals
Course Abbreviation: CPT 1353
Classification: Vocational-Technical Core
Description: This course is a study of the design of databases. Additional emphasis is placed on creation, manipulation, extraction, and display of data from existing databases. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: Any programming class

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Course Name: Java Programming Language
Course Abbreviation: CPT 1414
Classification: Vocational-Technical Elective
Description: Introduction to the Java Programming Language to include sort, loops, arrays, and applets. (4 sch: 2 hr. lecture, 4 hr. lab.)
Prerequisite: None

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Course Name: Web Development Concepts
Course Abbreviation: CNT 1513/CPT 1513/WDT 1123
Classification: Vocational-Technical Core
Description: This course is an introduction to the Internet and its uses in the world of business. It includes basic and advanced features of the Internet, World Wide Web, browers, listservers, and creating web pages. Upon completion of this course, students will be able to create a personalized home page and post it on the Internet, download files using a browser and an FTP program, and send e-mail messages. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: None

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Course Name: Career Development
Course Abbreviation: CPT 2133
Classification: Vocational-Technical Elective
Description: This course provides practical exercises in both the technical and social skills necessary for employment. Interpersonal skills, the job search process, and the importance of

high standards of personal and professional relationships are stressed. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: Written Communications Elective

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Course Name: Database Programming
Course Abbreviation: CPT 2244
Classification: Vocational-Technical Elective
Description: This course will introduce programming using a database management software application. Emphasis will be placed on menus and file maintenance. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisites: Database Design Fundamentals (CPT 1353); Advanced Visual Basic Programming Language (CPT 2434)

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Course Name: Advanced RPG Programming Language
Course Abbreviation: CPT 2264
Classification: Vocational-Technical Elective
Description: This course is a continuation of the RPG programming language. Emphasis is placed on advanced table processing, file maintenance, and interactive programming. (4 sch: 2 hr. lecture, 4 hr. lab.)
Prerequisite: RPG Programming Language (CPT 1224)

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Course Name: Advanced COBOL Programming Language
Course Abbreviation: CPT 2274
Classification: Vocational-Technical Elective (Computer Programming)
Description: This course is a continuation in the study of COBOL. Emphasis is placed on advanced table processing, file maintenance, and interactive programming. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: COBOL Programming Language (CPT 1234)

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Course Name: C Programming Language
Course Abbreviation: CPT 2284
Classification: Vocational-Technical Elective
Description: This course is designed to introduce the student to the C programming language and its basic functions. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: Successful completion of any CPT programming language course or permission of instructor.

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Course Name: Systems Analysis and Design
Course Abbreviation: CPT 2354
Classification: Vocational-Technical Core

Description: This course introduces techniques used in systems analysis and design. Emphasis will be placed on the design, development, and implementation of an information system. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: None

* * * * *

Course Name: System Maintenance
Course Abbreviation: CPT 2383/CNT 2423
Classification: Vocational-Technical Elective
Description: This course covers the diagnosis, troubleshooting, and maintenance of computer components. Topics include hardware compatibility, system architecture, memory, input devices, video displays, disk drives, modems, and printers. (3 sch: 2 hr. lecture, 2 hr. lab)
Pre/corequisite: Operating Platforms (CPT 1333)

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Course Name: Advanced C Programming Language
Course Abbreviation: CPT 2424
Classification: Vocational-Technical Elective
Description: This course is a continuation of the study of the C Programming language. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: C Programming Language (CPT 2284)

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Course Name: Advanced Visual BASIC Programming Language
Course Abbreviation: CPT 2434
Classification: Vocational-Technical Elective
Description: This course is a continuation of the Visual BASIC programming language. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: Visual BASIC Programming Language (CPT 1214)

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Course Name: Script Programming Language
Course Abbreviation: CPT 2444
Classification: Vocational-Technical Elective
Description: This course is an introduction to the use of integrating scripts to add functionality to web pages. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: Web Development Concepts (WDT 1123/CNT 1513/CPT 1513) or consent of instructor

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Course Name: Supervised Work Experience in Computer Information Systems Technology
Course Abbreviation: CPT 292(1-6)
Classification: Vocational-Technical Elective
Description: A course which is a cooperative program between industry and education designed to integrate the student's technical studies with industrial experience. Variable credit is awarded on the basis of one semester hour per 45 industrial contact hours. (1-6 sch: 3-18 hr. externship)

Prerequisites: Consent of instructor and completion of at least one semester of advanced coursework in Computer Information Systems Technology.

Computer Information Systems Technology

Web Development Technology Courses

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Course Name: Web Development Concepts
Course Abbreviation: CNT 1513/CPT 1513/WDT 1123
Classification: Vocational-Technical Core
Description: This course is an introduction to the Internet and its uses in the world of business. It includes basic and advanced features of the Internet, World Wide Web, browers, listservers, and creating web pages. Upon completion of this course, students will be able to create a personalized home page and post it on the Internet, download files using a browser and an FTP program, and send e-mail messages. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: None

* * * * *

Course Name: Client-Side Programming
Course Abbreviation: WDT 1314
Classification: Vocational-Technical Core
Description: This course offers a comprehensive understanding of programming using JavaScript and CSS. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: Web Development Concepts (WDT 1123/CNT 1513/CPT 1513)

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Course Name: Web Design Applications
Course Abbreviation: WDT 1414
Classification: Vocational-Technical Core
Description: Application of various professional and personal web design techniques. Students will work with the latest WYSIWYG editors, HTML editors, animation/multi-media products, and photo editors. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: Web Development Concepts (WDT 1123/CNT 1513/CPT 1513)

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Course Name: Fundamentals of Data Communications
Course Abbreviation: CNT 1414/WDT 1814
Classification: Vocational-Technical Core
Description: This course presents basic concepts of telephony, local area networks, wide area networks, data transmission, and topology methods. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: None

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Course Name: Server-Side Programming I
Course Abbreviation: WDT 2214
Classification: Vocational-Technical Core

Description: An introduction to creating dynamic web applications using server-side technologies. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: Client-Side Programming (WDT 1314)

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Course Name: Server-Side Programming II
Course Abbreviation: WDT 2224
Classification: Vocational-Technical Core
Description: Continuation of Server-Side Programming I with increased emphasis on data-driven content. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: Server-Side Programming I (WDT 2214)

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Course Name: Web Graphic Production
Course Abbreviation: WDT 2263/CAT 2263
Classification: Vocational-Technical Elective
Description: An in-depth study of producing and utilizing graphic elements designed for Internet or web application. Emphasis is placed equally on aesthetics, technical requirements, and principles of interactive design. The course will provide a concentrated study related to color management, typography, graphic development and manipulation, digital imaging, and creating dynamic web experiences. The focus is on the production and manipulation of individual elements and is recommended as a supplement to a web design application course or previous experience. (3 sch: 1 hr. lecture, 4 hr. lab)
Prerequisites: Web Design Applications (WDT 1414); Web Development Concepts (WDT 1123/CNT 1513/CPT 1513) or consent of instructor

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Course Name: XML Programming
Course Abbreviation: WDT 2324
Classification: Vocational-Technical Elective
Description: Provides a comprehensive understanding of the Extensible Markup Language (XML). (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: Web Development Concepts (WDT 1123/CNT 1513/CPT 1513)

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Course Name: Website Development
Course Abbreviation: WDT 2614
Classification: Vocational-Technical Core
Description: This course is the culmination of all concepts learned in the Web Development Technology curriculum. Emphasis will be placed on portfolio development, web design and development, maintenance, security, and evaluation. (4 sch: 2 hr. lecture, 4 hr. lab.)
Prerequisite: Server-Side Programming I (WDT 2214)

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Course Name: E-Commerce Strategies
Course Abbreviation: WDT 2723

Classification: Vocational-Technical Core

Description: Provides opportunities for students to examine strategies and products available for building electronic commerce sites, examine how such sites are managed, and explore how they can complement an existing business infrastructure. Students get hands-on experience implementing the technology to engage cardholders, merchants, issues, payment gateways, and other parties in electronic transactions. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisites: Server-Side Programming I (WDT 2214)

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Course Name: Web Server
Course Abbreviation: WDT 2823
Classification: Vocational-Technical Core
Description: Introduces students to web, e-mail, and proxy servers and the platforms on which they reside. Students will be able to install and configure web, e-mail, and proxy servers. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: Operating Platforms (CPT 1333)

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Course Name: Special Project in Web Development Technology
Course Abbreviation: WDT 291(1-6)
Classification: Vocational-Technical Elective
Description: Practical applications of skill and knowledge gained in other Web Development Technology courses. The instructor works closely with the student to ensure that selection of a special project enhances the student's learning experiences. (1-6 sch: 45 contact hours per sch)
Prerequisite: Completion of one semester of coursework in Web Development Technology program.

Computer Information Systems Technology

Database Administration Technology Courses

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Course Name: SQL Programming
Course Abbreviation: DBT 1113
Classification: Vocational-Technical Core
Description: This course is the first of a two-part series which offers students an extensive introduction to data server technology, covering the concepts of both relational and object relational databases and the Structured Query Language (SQL). Students are taught to store, retrieve, and manipulate data. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: None

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Course Name: Advanced SQL Programming
Course Abbreviation: DBT 1123
Classification: Vocational-Technical Core
Description: This course is the second of a two-part series which offers students an extensive introduction to data server technology. Students are taught advanced concepts of both relational and object relational databases and the Structured Query Language (SQL). Students are taught to create and maintain database objects and control user access. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: SQL Programming (DBT 1113)

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Course Name: Database Architecture and Administration
Course Abbreviation: DBT 1214
Classification: Vocational-Technical Core
Description: This course is designed to give students a firm foundation in basic database tasks enabling them to design, create, and maintain a database. Students will gain a conceptual understanding of database architecture and how its components work and interact with one another. Students will also learn how to create an operational database and properly manage the various structures. (4 sch: 3 hr. lecture, 2 hr. lab)
Prerequisite: SQL Programming (DBT 1113) or Operating Platforms (CPT 1333)
Corequisite: Advanced SQL Programming (DBT 1123)

* * * * *

Course Name: Advanced Database Architecture and Administration
Course Abbreviation: DBT 2224
Classification: Vocational-Technical Core

Description: This course is a continuation of Database Architecture and Administration. It is designed to provide a firm foundation in basic database tasks enabling students to design, create, and maintain a database. Students will gain a conceptual understanding of database architecture and how its components work and interact with one another. Students will also learn how to create an operational database and properly manage the various structures. (4 sch: 3 hr. lecture, 2 hr. lab)
Prerequisite: Database Architecture and Administration (DBT 1214)

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Course Name: Database Design Concepts
Course Abbreviation: DBT 2313
Classification: Vocational-Technical Core
Description: This course is a theoretical study of the database design concepts. Emphasis is placed on Database Management Systems (DBMS) functions, the relational model, and Query-by-Example (QBE) applications. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: Database Management (BOT 2323) and SQL Programming (DBT 1113)

* * * * *

Course Name: Advanced Database Design Concepts
Course Abbreviation: DBT 2324
Classification: Vocational-Technical Core
Description: This course will introduce programming using a database management software application. Emphasis will be place on manipulating data using advanced features and customizing the user interface. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: Database Design Concepts (DBT 2313) and Visual BASIC Programming Language (CPT 1214)

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Course Name: Linux Operating System Fundamentals
Course Abbreviation: DBT 2614
Classification: Vocational-Technical Core
Description: In this course, students develop proficiency in using and customizing a Linux operating system for common command line processes and desktop productivity roles. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: Operating Platforms (CPT 1333)

* * * * *

Course Name: IT Project Management
Course Abbreviation: DBT 2714
Classification: Vocational-Technical Core
Description: In this course, students develop proficiency in using and customizing a Linux operating system for common command line processes and desktop productivity roles. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisites: Survey of Microcomputer Applications (CPT 1324); Operating Platforms (CPT 1333)

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Course Name: Supervised Work Experience for Database Development Technology
Course Abbreviation: DBT 2913
Classification: Vocational-Technical Elective
Description: A course which is a cooperative program between industry and education designed to integrate the student's technical studies with industrial experience. Variable credit is awarded on the basis of one semester hour per 45 industrial contact hours. (1-6 sch: 3-18 hr. externship)
Prerequisite: Consent of instructor and completion of at least one semester of advanced coursework in Database Development Technology.

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Course Name: Special Problem in Database Administration Technology
Course Abbreviation: DBT 292(1-3)
Classification: Vocational-Technical Elective
Description: A course to provide students with an opportunity to utilize skills and knowledge gained in other Database Administration Technology courses. The instructor and student work closely together to select a topic and establish criteria for completion of the project. (1-3 sch: 2-6 hr. lab)
Prerequisites: Consent of instructor

COURT REPORTING TECHNOLOGY

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Course Name: Stenotype Machine Shorthand I
Course Abbreviation: CRT 1114
Classification: Vocational-Technical Core
Description: This course provides instruction in writing the spoken word with punctuation using a realtime translation theory to provide instantaneous translation. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: None

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Course Name: Stenotype Machine Shorthand II
Course Abbreviation: CRT 1124
Classification: Vocational-Technical Core
Description: This course is a continuation of Stenotype Machine Shorthand I. Emphasis is placed on keyboard, theory, and speed development. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: Stenotype Machine Shorthand I (CRT 1114)

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Course Name: Speed Building I
Course Abbreviation: CRT 1133
Classification: Vocational-Technical Core
Description: This course is an initial course for building speed in taking dictation. Mailable transcripts of dictated (courtroom material) stenotype notes are required. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: Stenotype Machine Shorthand II (CRT 1124)

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Course Name: Speed Building II
Course Abbreviation: CRT 1143
Classification: Vocational-Technical Core
Description: This is a continuation course for building speed in taking dictation. Mailable transcripts of dictated (courtroom material) stenotype notes are required. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: Speed Building I (CRT 1133)

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Course Name: Court Reporting Procedures
Course Abbreviation: CRT 1154
Classification: Vocational-Technical Core
Description: This course is a study of the role of the reporter in trials, depositions, and administrative hearings; transcript preparation and format; proofreading; marking exhibits; indexing and storing notes; reporting techniques; and proper use of library and reference materials. Instruction in the National Court Reporters Association (NCRA) Code of Professional

Ethics and an introduction to captioning and Communication Access Realtime Translation (CART) are included. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: Stenotype Machine Shorthand I (CRT 1114)

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Course Name: Stenotype Machine Shorthand III
Course Abbreviation: CRT 2114
Classification: AOC Core (Judicial Reporting)
Description: This is a continuation course for advanced speed development, using carefully graded and timed practice material. Writing vocabulary is developed along with speed. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: Speed Building II (CRT 1143)

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Course Name: Stenotype Machine Shorthand IV
Course Abbreviation: CRT 2124
Classification: AOC Core (Judicial Reporting)
Description: This course is a continuation of Stenotype Machine Shorthand III. Practice for court reporters will include reporting abbreviations and phrases and speaker designations for the courtroom and extracts from actual court cases. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: Stenotype Machine Shorthand III (CRT 2114)

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Course Name: Speed Building III
Course Abbreviation: CRT 2133
Classification: Vocational-Technical Core
Description: This is a continuation course for building speed in taking dictation. Mailable transcripts of dictated (courtroom material) stenotype notes are required. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: Speed Building II (CRT 1143)

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Course Name: Speed Building IV
Course Abbreviation: CRT 2144
Classification: Vocational-Technical Core
Description: This is a continuation course for building speed in taking dictation. Mailable transcripts of dictated (courtroom material) stenotype notes are required. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: Speed Building III (CRT 2133)

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Course Name: Judicial Reporting Technology
Course Abbreviation: CRT 2162
Classification: AOC Core (Judicial Reporting)

Description: This course is an overview in reporter-related technology, concepts, and vocabulary. Emphasis is placed on computer-assisted transcription systems and video applications for the court reporter. (2 sch: 1 hr. lecture, 2 hr. lab)
Prerequisite: Stenotype Machine Shorthand II (CRT 1124)

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Course Name: Judicial Dictionary Development
Course Abbreviation: CRT 2172
Classification: AOC Core (Judicial Reporting)
Description: In this course, the student will continue to build a dictionary for judicial reporting. (2 sch: 1 hr. lecture, 2 hr. lab)
Prerequisite: Judicial Reporting Technology (CRT 2162)

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Course Name: CART I
Course Abbreviation: CRT 2514
Classification: AOC Core (CART)
Description: This course provides instruction in writing the spoken word with punctuation using a realtime translation theory for Communication Access Realtime Translation (CART). (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: Speed Building II (CRT 1143)

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Course Name: CART II
Course Abbreviation: CRT 2524
Classification: AOC Core (CART)
Description: This course is a continuation of CART I and provides instruction in writing the spoken word with punctuation using a realtime translation theory for Communication Access Realtime Translation (CART). (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: CART I (CRT 2514)

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Course Name: CART Technology
Course Abbreviation: CRT 2562
Classification: AOC Core (CART)
Description: This course is an overview in Communication Access Realtime Translation (CART) technology, concepts, and vocabulary. Emphasis is on basic equipment setup for maximum benefit of CART recipients and knowledge of the NCRA *CART Provider's Manual*. (2 sch: 1 hr. lecture, 2 hr. lab)
Prerequisite: Stenotype Machine Shorthand II (CRT 1124)

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Course Name: CART Dictionary Development
Course Abbreviation: CRT 2572
Classification: AOC Core (CART)

Description: In this course, the student will continue to build a dictionary for Communication Access Realtime Translation (CART). (2 sch: 1 hr. lecture, 2 hr. lab)
Prerequisite: CART Technology (CRT 2562)

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Course Name: Captioning I
Course Abbreviation: CRT 2714
Classification: AOC Core (Captioning)
Description: This course provides instruction in writing the spoken word with punctuation using a realtime translation theory to provide instantaneous, realtime translation for broadcast captioning. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: Speed Building II (CRT 1143)

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Course Name: Captioning II
Course Abbreviation: CRT 2724
Classification: AOC Core (Captioning)
Description: This course is a continuation of Captioning I, providing instruction in writing the spoken word with punctuation using a realtime translation theory to provide instantaneous, realtime translation for broadcast captioning. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: Captioning I (CRT 2714)

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Course Name: Captioning Technology
Course Abbreviation: CRT 2762
Classification: AOC Core (Captioning)
Description: This course is an overview in captioning technology, concepts, and vocabulary. Emphasis is on basic equipment setup for broadcast captioning. (2 sch: 1 hr. lecture, 2 hr. lab)
Prerequisite: Stenotype Machine Shorthand II (CRT 1124)

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Course Name: Captioning Dictionary Development
Course Abbreviation: CRT 2772
Classification: AOC Core (Captioning)
Description: In this course, the student will continue to build a dictionary for captioning. (2 sch: 1 hr. lecture, 2 hr. lab)
Prerequisite: Captioning Technology (CRT 2762)

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Course Name: Internship for Judicial Reporters
Course Abbreviation: CRT 2911
Classification: AOC Core (Judicial Reporting)
Description: This course provides supervised practical experience in courts and freelance court reporting firms. (1 sch: 45 clock hours)
Prerequisite: Stenotype Machine Shorthand III (CRT 2114)

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Course Name: Internship for CART
Course Abbreviation: CRT 2921
Classification: AOC Core (CART)
Description: This course provides supervised practical experience in Communication Accesss Realtime Translation (CART). (1 sch: 45 clock hours)
Prerequisite: CART I (CRT 2514)

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Course Name: Internship for Captioning
Course Abbreviation: CRT 2931
Classification: AOC Core (Captioning)
Description: This course provides supervised practical experience in broadcast captioning. (1 sch: 45 clock hours)
Prerequisite: Captioning I (CRT 2714)

MEDICAL BILLING AND CODING TECHNOLOGY

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Course Name: CPT Coding
Course Abbreviation: BOT 2643/BCT 2123
Classification: Vocational-Technical Core
Description: This course is an introduction to the field of procedural coding and requirements for insurance reimbursement. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: Medical Office Terminology I (BOT 1613), Medical Office Terminology II (BOT 1623), or consent of instructor.

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Course Name: ICD Coding
Course Abbreviation: BOT 2653/BCT 2133
Classification: Vocational-Technical Core
Description: This course is an introduction to the field of diagnostic coding. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: Medical Office Terminology I (BOT 1613), Medical Office Terminology II (BOT 1623), or consent of instructor.

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Course Name: Advanced Coding
Course Abbreviation: BOT 2663
Classification: Vocational-Technical Core
Description: This course includes advanced analysis of diagnostic and procedural coding systems. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisites: CPT Coding (BOT 2643/BCT 2123) and ICD Coding (BOT 2653/BCT 2133)

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Course Name: Medical Insurance Billing
Course Abbreviation: BOT 2673
Classification: Vocational-Technical Core
Description: This course is a culmination of skills and knowledge of appropriate procedures for generating, processing, and submitting health insurance claims to private and governmental health insurance programs. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisites: CPT Coding (BOT 2643/BCT 2123) and ICD Coding (BOT 2653/BCT 2133)

PARALEGAL TECHNOLOGY

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Course Name: Introduction to Law
Course Abbreviation: LET 1113
Classification: Vocational-Technical Core
Description: This course provides an overview of major principles and functions of the state and federal legal systems, introduces various legal fields for professional opportunities, presents legal vocabulary, gives an overview of different areas of law, and presents ethics. (3 sch: 3 hr. lecture)
Prerequisite: Local college requirements

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Course Name: Legal Research
Course Abbreviation: LET 1213
Classification: Vocational-Technical Core
Description: This course is an introduction to basic sources of law and the methods of legal research, including ethics. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: Introduction to Law (LET 1113)

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Course Name: Family Law
Course Abbreviation: LET 1513
Classification: Vocational-Technical Core
Description: This course is a study of the areas of law pertaining to domestic relations, emphasizing ethics. (3 sch: 3 hr. lecture)
Prerequisite: Local college requirements

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Course Name: Wills and Estates
Course Abbreviation: LET 1523
Classification: Vocational-Technical Core
Description: This course is an introduction to the laws of inheritance and estates, basic concepts of estates and wills, probate procedures, and preparation of documents while emphasizing ethics. (3 sch: 3 hr. lecture)
Prerequisite: Local college requirements

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Course Name: Legal Writing
Course Abbreviation: LET 1713
Classification: Vocational-Technical Core
Description: This course includes composition of legal communications, briefs, memoranda, and other legal documents with an emphasis on ethical considerations. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: Introduction to Law (LET 1113) and Legal Research (LET 1213)

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Course Name: Civil Litigation I
Course Abbreviation: LET 2313
Classification: Vocational-Technical Core
Description: This course presents the litigation process. Emphasis is on the structure of the Mississippi Court System and on gathering information and evidence, summarizing and arranging materials, maintaining docket and file control, developing a litigation case, and interviewing clients and witnesses, using ethical standards. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: Introduction to Law (LET 1113) and Legal Research (LET 1213)

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Course Name: Torts
Course Abbreviation: LET 2323
Classification: Vocational-Technical Core
Description: This course provides instruction in the area of law which deals with civil wrongs and injuries as distinguished from breach of contract. It concentrates on the elements of a tort, type of tort, damages, ethics, and remedies. (3 sch: 3 hr. lecture)
Prerequisite: Introduction to Law (LET 1113)

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Course Name: Civil Litigation II
Course Abbreviation: LET 2333
Classification: Vocational-Technical Elective
Description: This course is designed to continue the study of the litigation process from discovery through appeal. Emphasis is placed on collecting and organizing discovery materials, and demonstrating knowledge of the limits placed on discovery by the federal and states rules of civil procedure. The course also includes the trial and appeal phases of litigation, with emphasis on trial preparation and appellate procedure. (3 sch: 3 hr. lecture)
Prerequisite: Civil Litigation I (LET 2313)

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Course Name: Real Property I
Course Abbreviation: LET 2453
Classification: Vocational-Technical Core
Description: This course is an introduction to real property law including ownership, transfer of property, liens and encumbrances, and the various types of deeds. (3 sch: 3 hr. lecture)
Prerequisite: None

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Course Name: Real Property II
Course Abbreviation: LET 2463
Classification: Vocational-Technical Elective

Description: This course examines legal documents related to real property as recorded in the chancery clerk's office, the tax assessor's office, and the circuit clerk's office. It includes compiling a title abstract and completing an assignment to prepare a real estate file from transaction through closing and post-closing implementing ethics. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: Real Property I (LET 2453)

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Course Name: Bankruptcy Law
Course Abbreviation: LET 2523
Classification: Vocational-Technical Elective
Description: This course is an introduction to federal bankruptcy law. Emphasis is placed on federal bankruptcy statutes, chapters, and forms. (3 sch: 3 hr. lecture)
Prerequisite: Introduction to Law (LET 1113)

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Course Name: Law Office Management
Course Abbreviation: LET 2633
Classification: Vocational-Technical Elective
Description: This course provides practical application of daily legal office skills needed in the legal field, professional enrichment presentations, history of the profession, professional ethics through fact analysis, and an overview of law office management. (3 sch: 3 hr. lecture)
Prerequisite: Introduction to Law (LET 1113)

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Course Name: Special Problem in Paralegal Technology
Course Abbreviation: LET 291(1-3)
Classification: Vocational-Technical Elective
Description: A course to provide students with an opportunity to utilize skills and knowledge gained in other Paralegal Technology courses. The instructor and student work closely together to select a topic and establish criteria for completion of the project. (1-3 sch: 2-6 hr. lab)
Prerequisites: Consent of Instructor

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Course Name: Internship for Paralegal
Course Abbreviation: LET 2923
Classification: Vocational-Technical Elective
Description: Supervised practical experience in a private law office, courts, government offices, or businesses. Provides students the opportunity to apply theory presented in the classroom in a supervised work setting. (3 sch: 135 clock hours)
Prerequisite: All courses as scheduled

HEALTH SCIENCE TECHNOLOGY PROGRAMS

ADULT SHORT-TERM HOME HEALTH AIDE

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Adult Short-Term Home Health Aide
Course CIP Code: 51.1615

Unit	Title	Hours
1	Fundamentals of Home Care	14
2	Health Care Assisting Concepts and Skills	32
3	Human Needs/Growth and Development	7
4	Nutrition and Hydration Needs of Clients	4
5	Special Care Procedures	23
TOTAL HOURS		**80**

DENTAL ASSISTING TECHNOLOGY

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Course Name: Dental Orientation
Course Abbreviation: DAT 1111
Classification: Vocational-Technical Core
Description: The development, function, status, and organization of the dental profession; and the professional, legal, and ethical responsibilities of the dental assistant. Terminology emphasizing prefixes, suffixes, roots, abbreviations, spelling, and definitions of medical and dental terms. (1 sch: 1 hr. lecture)
Corequisites: All first semester courses

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Course Name: Dental Assisting Materials
Course Abbreviation: DAT 1214
Classification: Vocational-Technical Core
Description: Dental safety precautions will be emphasized. Includes a comprehensive study of the physical and chemical properties of dental materials. Lab sessions include measuring, manipulating, and preparing dental materials for use in the dental operatory and dental laboratory. (4 sch: 2 hr. lecture, 4 hr. lab)
Corequisites: All first semester courses

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Course Name: Dental Science I
Course Abbreviation: DAT 1313
Classification: Vocational-Technical Core
Description: Physiology, anatomy, and morphology as related to the oral cavity. Content organized to include a study of the body systems, the anatomy of the head and neck, and the form of each of the 32 teeth. (3 sch: 3 hr. lecture)
Corequisites: All first semester courses

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Course Name: Dental Science II
Course Abbreviation: DAT 1323
Classification: Vocational-Technical Core
Description: Embryology, pharmacology, microbiology, and pathology as related to dentistry. Content organized to give the student basic information required for effective dental assisting. (3 sch: 3 hr. lecture)
Prerequisites: All first semester courses

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Course Name: Chairside Assisting I
Course Abbreviation: DAT 1415
Classification: Vocational-Technical Core

Description: Comprehensive study of information relating to assisting at the dental chair. Laboratory sessions include all phases of chairside assisting from seating the patient to post-operative care in the treatment room. (5 sch: 2 hr. lecture, 6 hr. lab)
Corequisites: All first semester courses

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Course Name: Chairside Assisting II
Course Abbreviation: DAT 1423
Classification: Vocational-Technical Core
Description: Continuation of the study of information related to assisting at the dental chair. Emphasis on techniques utilized in performing all dental procedures at the chair. Special consideration to assisting in the dental specialties. (3 sch: 2 hr. lecture, 2 hr. lab)
Pre/corequisites: Chairside Assisting I (DAT 1415)

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Course Name: Chairside Assisting III
Course Abbreviation: DAT 1433
Classification: Vocational-Technical Core
Description: Continuation of Chairside Assisting II. (3 sch: 2 hr. lecture, 2 hr. lab)
Pre/corequisites: Chairside Assisting II (DAT 1423)

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Course Name: Dental Radiology I
Course Abbreviation: DAT 1513
Classification: Vocational-Technical Core
Description: Principles and safety precautions in dental radiology. Laboratory sessions include positioning, exposing, processing, and mounting bite-wing, occlusal, and periapical dental radiographs on a manikin. (3 sch: 2 hr. lecture, 2 hr. lab)
Corequisites: All first semester courses

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Course Name: Dental Radiology II
Course Abbreviation: DAT 1522
Classification: Vocational-Technical Core
Description: Continuation of Dental Radiology I. Emphasis placed on clinical competence in exposing periapical radiographs. (2 sch: 4 hr. lab)
Prerequisites: Dental Radiology I (DAT 1513)

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Course Name: Dental Health Education
Course Abbreviation: DAT 1612
Classification: Vocational-Technical Core
Description: Study of the nutritional needs of the body. Emphasis on nutritional requirements for maintaining good oral hygiene. Comprehensive study of the dental assistant's responsibilities in patient education as related to good oral health. (2 sch: 2 hr. lecture)
Prerequisites: All first semester courses

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Course Name: Practice Management
Course Abbreviation: DAT 1714
Classification: Vocational-Technical Core
Description: Comprehensive study of the dental office business procedures. Topics covered: patient contact, patient records, insurance, financial records, telephone usage, office management, basic skills in psychology, and professional ethics. (4 sch: 3 hr. lecture, 2 hr. lab)
Prerequisites: All first semester Dental Assisting courses

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Course Name: Clinical Experience I
Course Abbreviation: DAT 1815
Classification: Vocational-Technical Core
Description: Supervised clinical experience in an authorized dental clinic. (5 sch: 1 hr. lecture, 12 hr. clinical)
Prerequisites: Chairside Assisting I (DAT 1415)

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Course Name: Clinical Experience II
Course Abbreviation: DAT 1822
Classification: Vocational-Technical Core
Description: Continuation of supervised clinical experience in an authorized dental clinic. (2 sch: 6 hr. clinical)
Pre/corequisites: All first semester Dental Assisting courses

EMERGENCY MEDICAL TECHNOLOGY – BASIC

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Course Name: EMT Basic
Course Abbreviation: EMT 1116
Classification: Vocational-Technical Core
Description: This course includes responsibilities of the EMT during each phase of an ambulance run, patient assessment, emergency medical conditions, appropriate emergency care, and appropriate procedures for transporting patient. (6 sch: 2 hr. lecture, 6 hr. lab, 3 hr. clinical)
Prerequisites: None

PHYSICAL THERAPIST ASSISTANT

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Course Name: Health Care Experience I
Course Abbreviation: PTA 1111
Classification: Vocational-Technical Elective
Description: This course is designed to provide the student with observation of physical therapy activities. The student has the opportunity to gain knowledge of the health care delivery system and physical therapy's place within that system. (1 sch: 3 hr. clinical)
Prerequisites: Admission to Physical Therapist Assistant Program

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Course Name: Fundamental Concepts of Physical Therapy
Course Abbreviation: PTA 1123
Classification: Vocational-Technical Core
Description: This course is an introduction to the field of physical therapy including role orientation, professional organizational structure, legal and ethical implications, and legislation. Historical patterns in the development of the profession will be explored and medical terminology introduced. (3 sch: 3 hr. lecture)
Prerequisites: Admission to Physical Therapist Assistant Program

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Course Name: PTA Practicum I
Course Abbreviation: PTA 1132
Classification: Vocational-Technical Elective
Description: This course is designed to provide the student with observational time with participation in selected physical therapy activities. (2 sch: 6 hr. clinical)
Prerequisites: Admission to Physical Therapist Assistant Program

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Course Name: PTA Practicum II
Course Abbreviation: PTA 1143
Classification: Vocational-Technical Elective
Description: This course is designed to provide the student with extended observation time with participation in selected physical therapy and/or related activities. (3 sch: 9 hr. clinical)
Prerequisites: Admission to Physical Therapist Assistant Program

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Course Name: Health Care Experience II
Course Abbreviation: PTA 1151
Classification: Vocational-Technical Elective
Description: This course is designed to provide the student with extended observational time with limited participation in physical therapy activities. The student has the opportunity to gain additional knowledge of the health care delivery system and physical therapy's place within that system. (1 sch: 3 hr. clinical)

Prerequisites: Admission to Physical Therapist Assistant Program

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Course Name: Fundamental Skills for Physical Therapist Assistants
Course Abbreviation: PTA 1213
Classification: Vocational-Technical Core
Description: This course provides knowledge of topics utilized in the practice of physical therapy. Topics covered will include positioning, draping, transfers, body mechanics, gait training, and standard precautions. Vital signs, first aid, and emergency techniques will also be covered. (3 sch: 2 hr. lecture, 2 hr. lab)
Pre/corequisites: Fundamental Concepts of Physical Therapy (PTA 1123)

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Course Name: Therapeutic Modalities
Course Abbreviation: PTA 1224
Classification: Vocational-Technical Core
Description: This course is an introduction to the theory and practical application of hydrotherapy, thermotherapy, cryotherapy, light therapy, and mechanotherapy. Emphasis will be placed on the technique of application, indications, and contraindications of modalities. (4 sch: 3 hr. lecture, 2 hr. lab)
Pre/corequisites: Fundamental Concepts of Physical Therapy (PTA 1123), Fundamental Skills for Physical Therapist Assistants (PTA 1213), Kinesiology (PTA 1314)

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Course Name: Kinesiology
Course Abbreviation: PTA 1314
Classification: Vocational-Technical Core
Description: This course studies individual muscles and muscle functions, biomechanical principles of joint motion, gait analysis, goniometry, and postural assessment. (4 sch: 3 hr. lecture, 2 hr. lab)
Pre/corequisites: Fundamental Concepts of Physical Therapy (PTA 1123) and Fundamental Skills for Physical Therapist Assistants (PTA 1213)

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Course Name: Therapeutic Exercise and Rehabilitation I
Course Abbreviation: PTA 1324
Classification: Vocational-Technical Core
Description: This course provides an overview of the biochemical and neurophysiological basis and application of various therapeutic exercises. The basics of therapeutic exercise are correlated with specific conditions. This course focuses on rehabilitation techniques in the treatment of a variety of selected conditions. Specialized exercise procedures are emphasized. (4 sch: 3 hr. lecture, 2 hr. lab)
Pre/corequisites: Fundamental Concepts of Physical Therapy (PTA 1123), Fundamental Skills for Physical Therapist Assistants (PTA 1213), Therapeutic Modalities (PTA 1224), and Kinesiology (PTA 1314)

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Course Name: Seminar I
Course Abbreviation: PTA 1911
Classification: Vocational-Technical Elective
Description: This course presents the opportunity for group assembly on a regular basis to work toward achievement of course objectives. Leadership skills, an understanding of group dynamics, community service, interaction with other health education students, and the practice of reading and interpreting professional literature are emphasized. A desire to continue development of knowledge and skills is stressed.
Prerequisites: Admission to Physical Therapist Assistant Program

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Course Name: Seminar II
Course Abbreviation: PTA 1921
Classification: Vocational-Technical Elective
Description: This course provides the opportunity for group assembly on a regular basis to work to achieve course objectives. Demonstration of leadership skills, an understanding of group dynamics, community service, interaction with other health education students, and the practice of reading and interpreting professional literature are further developed. A desire to continue development of knowledge and skills is emphasized.
Prerequisites: Fundamental Concepts of Physical Therapy (PTA 1123)

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Course Name: Electrotherapy
Course Abbreviation: PTA 2234
Classification: Vocational-Technical Core
Description: This course emphasizes theory and practical application of electrotherapy and other therapeutic procedures. Indications and contraindications of modalities are also discussed. (4 sch: 3 hr. lecture, 2 hr. lab)
Prerequisites: Fundamental Concepts of Physical Therapy (PTA 1123), Fundamental Skills for Physical Therapist Assistants (PTA 1213), and Kinesiology (PTA 1314)

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Course Name: Therapeutic Exercise and Rehabilitation II
Course Abbreviation: PTA 2334
Classification: Vocational-Technical Core
Description: This course presents theory, principles, and techniques of therapeutic exercise and rehabilitation for primarily neurological conditions. Methods of functional, motor, and sensory assessment and intervention techniques are included. Principles of prosthetics and orthotics, functional training, and other techniques are covered. (4 sch: 3 hr. lecture, 2 hr. lab)
Pre/corequisites: Fundamental Concepts of Physical Therapy (PTA 1123), Fundamental Skills for Physical Therapist Assistants (PTA 1213), Therapeutic Modalities (PTA 1224), Kinesiology (PTA 1314), Therapeutic Exercise and Rehabilitation I (PTA 1324), and Clinical Education I (PTA 2413)

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Course Name: Clinical Education I
Course Abbreviation: PTA 2413
Classification: Vocational-Technical Core
Description: This course provides supervised clinical experiences in demonstrating the attributes and applying the skills for which students have been deemed competent for the clinical setting. (3 sch: 9 hr. clinical)
Prerequisite: Core Physical Therapist Assistant Courses

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Course Name: Clinical Education II
Course Abbreviation: PTA 2424
Classification: Vocational-Technical Core
Description: This is the first of three culminating clinical education experiences (identified in A Normative Model of PTA Education as the first full time clinical experience) which provide supervised clinical experiences in demonstrating the attributes and applying the skills which prepare students for entry into the physical therapy profession. (4 sch: 12 hr. clinical)
Prerequisite: Core Physical Therapist Assistant courses

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Course Name: Clinical Education III
Course Abbreviation: PTA 2434
Classification: Vocational-Technical Core
Description: This is the second of three culminating clinical education experiences which provide supervised clinical experiences in demonstrating the attributes and applying the skills which prepare students for entry into the Physical Therapy profession. (4 sch: 12 hr. clinical)
Prerequisite: Core Physical Therapist Assistant courses

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Course Name: Clinical Education IV
Course Abbreviation: PTA 2444
Classification: Vocational-Technical Core
Description: This is the third of three culminating clinical education experiences (identified in A Normative Model of PTA Education as the last full time clinical experience) which provide supervised clinical experiences in demonstrating the attributes and applying the skills which prepare students for entry into the Physical Therapy profession. (4 sch: 12 hr. clinical)
Prerequisite: All Core Physical Therapist Assistant and Clinical Education courses

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Course Name: Medical Conditions and Related Pathology
Course Abbreviation: PTA 2513
Classification: Vocational-Technical Core

Description: This course provides a basic knowledge of selected diseases and conditions encountered in physical therapy practice. Emphasis is on etiology, pathology, and clinical picture of diseases studied. Various physical therapy procedures in each disability are discussed. (3 sch: 3 hr. lecture)
Pre/corequisites: Fundamental Concepts of Physical Therapy (PTA 1123), Fundamental Skills for Physical Therapist Assistants (PTA 1314), Kinesiology (PTA 1314), Therapeutic Modalities (PTA 1224), Electrotherapy (PTA 2234), Clinical Education I (PTA 2413), Therapeutic Exercise and Rehabilitation I (PTA 1324), and Therapeutic Exercise and Rehabilitation II (PTA 2334)

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Course Name: Physical Therapy Seminar
Course Abbreviation: PTA 2523
Classification: Vocational-Technical Core
Description: This course represents a synthesis of previous didactic, laboratory, and clinical experiences. Students are directed to explore a topic or area of interest in physical therapy practice. Recognition of the importance of employability skills after graduation is included. (3 sch: 3 hr. lecture)
Prerequisite: 4 semesters of core Physical Therapist Assistant coursework

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Course Name: Seminar III
Course Abbreviation: PTA 2911
Classification: Vocational-Technical Elective
Description: This course further develops the principles and characteristics presented in PTA 1911 and PTA 1921.
Prerequisites: Seminar I (PTA 1911) and Seminar II (PTA 1921)

RADIOLOGIC TECHNOLOGY

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Course Name: Clinical Education I
Course Abbreviation: RGT 1114
Classification: Vocational-Technical Core
Description: This course includes clinical practice and instruction in a clinical affiliate. Areas included are patient care and management, radiation protection, operation of equipment, and radiologic procedures. (4 sch: 12 hr. clinical)
Prerequisite: All core courses as scheduled. CPR-Health Care Provider must be completed before Clinical Education I experience begins.

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Course Name: Clinical Education II
Course Abbreviation: RGT 1124
Classification: Vocational-Technical Core
Description: This course involves clinical practice and instruction in a clinical affiliate. Areas included are patient care and management, radiation protection, operation of equipment, and radiologic procedures. (4 sch: 12 hr. clinical)
Prerequisites: All core courses as scheduled

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Course Name: Clinical Education III
Course Abbreviation: RGT 1139
Classification: Vocational-Technical Core
Description: This course is a clinical practice and instruction in a clinical affiliate. Areas included are patient care and management, radiation protection, operation of equipment, and radiologic procedures. (9 sch: 27 hr. clinical)
Prerequisites: All core courses as scheduled

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Course Name: Fundamentals of Radiography
Course Abbreviation: RGT 1213
Classification: Vocational-Technical Core
Description: This course is an introduction to Radiologic Technology including professional, departmental, and historical aspects. Included are terminology, medical ethics, and fundamental legal responsibilities. (3 sch: 3 hr. lecture)
Prerequisites: None

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Course Name: Patient Care and Radiography
Course Abbreviation: RGT 1223
Classification: Vocational-Technical Core

Description: This course will provide the student with the basic concepts of patient care, including consideration for the physical and psychological needs of the patient and family. Routine and emergency patient care procedures will be described, as well as infection control procedures utilizing standard precautions. The role of the radiographer in patient education will be identified. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: None

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Course Name: Principles of Radiation Protection
Course Abbreviation: RGT 1312
Classification: Vocational-Technical Core
Description: This course is designed to present an overview of the principles of radiation protection including the responsibilities of the radiographer for patients, personnel, and the public. Radiation health and safety requirements of federal and state regulatory agencies, accreditation agencies, and health care organizations are incorporated. (2 sch: 2 hr. lecture)
Prerequisite: None

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Course Name: Radiation Exposure I
Course Abbreviation: RGT 1413
Classification: Vocational-Technical Core
Description: This course is a study of the principles involving manipulation of factors controlling and influencing exposure and radiographic quality. Included are the prime factors of radiographic exposure. Basic technical conversions, problem solving procedures, and the production and nature of x-rays are addressed. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: None

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Course Name: Radiation Exposure II
Course Abbreviation: RGT 1423
Classification: Vocational-Technical Core
Description: This course is a continuation of Radiation Exposure I. Included are beam limiting devices, filtration, production and control of scatter and secondary radiation, exposure systems, and advanced technical conversions and problem solving. This course presents an introduction to film processing including darkroom design and equipment. Included are chemistry of developing solutions, procedures of general maintenance, quality control, and silver recovery methods. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisites: Radiation Exposure I (RGT 1413)

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Course Name: Radiographic Procedures I
Course Abbreviation: RGT 1513
Classification: Vocational-Technical Core

Description: This course includes terminology, principles, and procedures involved in routine radiographic positioning for demonstration of the chest, abdomen, upper extremities and digestive system. Included is a review of radiographic anatomy on each procedure. (3 sch: 2 hr. lecture, 2 hr. lab)
Pre/Corequisite: Anatomy and Physiology I (BIO 1514)

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Course Name: Radiographic Procedures II
Course Abbreviation: RGT 1523
Classification: Vocational-Technical Core
Description: This course includes principles and procedures involved in the radiographic positioning of the spinal column, urinary system, pelvic girdle, lower extremities, bony thorax, and mobile and trauma radiography procedures. Included is a review of radiographic anatomy on each procedure. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisites: Radiographic Procedures I (RGT 1513)

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Course Name: Physics of Imaging Equipment
Course Abbreviation: RGT 1613
Classification: Vocational-Technical Core
Description: This course is designed to establish a knowledge base in radiographic, fluoroscopic, mobile, and tomographic equipment requirements and design. The content will also provide a basic knowledge of quality control. Computer applications in the radiologic sciences related to image capture, display, storage, and distribution are presented. (3 sch: 3 hr. lecture)
Prerequisites: All core courses as scheduled

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Course Name: Social and Legal Responsibilities
Course Abbreviation: RGT 2132
Classification: Vocational-Technical Core
Description: Legal terminology, concepts, and principles will be presented in this course. Topics include misconduct, malpractice, legal and professional standards, and the ASRT scope of practice. The importance of proper documentation and informed consent is emphasized. This course will prepare students to better understand their patient, the patient's family, and professional peers through comparison of diverse populations based on their value systems, cultural and ethnic influences, communication styles, socioeconomic influences, health risks, and life stages. (2 sch: 2 hr. lecture)
Prerequisite: Fundamentals of Radiography (RGT 1213)

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Course Name: Clinical Education IV
Course Abbreviation: RGT 2147
Classification: Vocational-Technical Core
Description: This course is a clinical practice and instruction in a clinical affiliate. Areas included are patient care and management, radiation protection, operation of equipment, and radiologic procedures. (7 sch: 21 hr. clinical)

Prerequisites: All core courses as scheduled

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Course Name: Clinical Education V
Course Abbreviation: RGT 2157
Classification: Vocational-Technical Core
Description: This course is a clinical practice and instruction in a clinical affiliate. Areas included are patient care and management, radiation protection, operation of equipment, and radiologic procedures. (7 sch: 21 hr. clinical)
Prerequisites: All core courses as scheduled

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Course Name: Radiographic Procedures III
Course Abbreviation: RGT 2532
Classification: Vocational-Technical Core
Description: This course includes principles and procedures involved in radiographic positioning of the entire cranium, facial bones, and reproductive systems. Included is a review of radiographic anatomy on each procedure. (2 sch: 1 hr. lecture, 2 hr. lab)
Prerequisites: Radiographic Procedures II (RGT 1523)

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Course Name: Radiographic Procedures IV
Course Abbreviation: RGT 2542
Classification: Vocational-Technical Core
Description: This course is a study of special radiographic procedures which utilizes sterile techniques and specialized equipment. It also includes basic concepts of pharmacology. (2 sch: 2 hr. lecture)
Prerequisites: Radiographic Procedures III (RGT 2532)

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Course Name: Radiation Biology
Course Abbreviation: RGT 2911
Classification: Vocational-Technical Core
Description: This course is a study of the biological effects of radiation upon living matter. It includes genetic and somatic effects, instrumentation for detection, and measurement and calculation of dosage. (1 sch: 1 hr. lecture)
Prerequisites: All core courses as scheduled

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Course Name: Radiographic Pathology
Course Abbreviation: RGT 2921
Classification: Vocational-Technical Core
Description: This course is designed to introduce theories of disease causation and the pathophysiologic disorders that compromise healthy systems. Etiology, pathophysiologic responses, clinical manifestations, radiographic appearance, and management of alterations in body systems will be presented. (1 sch: 1 hr. lecture)

Prerequisites: All core courses as scheduled

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Course Name: Certification Fundamentals
Course Abbreviation: RGT 2933
Classification: Vocational-Technical Core
Description: This course is designed to correlate scientific components of radiography to entry level knowledge required by the profession. (3 sch: 3 hr. lecture)
Prerequisites: All core courses as scheduled

SURGICAL TECHNOLOGY

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Course Name: Fundamentals of Surgical Technology
Course Abbreviation: SUT 1113
Classification: Vocational-Technical Core
Description: This is a basic introductory course including hospital and surgical suite organization and environment, history, legal responsibilities, terminology, interpersonal relationships, pharmacology, and anesthesia. (3 sch: 3 hr. lecture)
Corequisites: All first semester courses

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Course Name: Principles of Surgical Technique
Course Abbreviation: SUT 1216
Classification: Vocational-Technical Core
Description: This course is a comprehensive study of aseptic technique, safe patient care, and surgical techniques. (6 sch: 1 hr. lecture, 10 hr. lab)
Corequisites: All first semester courses

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Course Name: Surgical Anatomy
Course Abbreviation: SUT 1314
Classification: Vocational-Technical Core
Description: Emphasis is placed on the structure and function of the human body as related to surgery. Application of the principles of surgical anatomy to participation in clinical experience. (4 sch: 4 hr. lecture)
Corequisites: All first semester courses

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Course Name: Surgical Microbiology
Course Abbreviation: SUT 1413
Classification: Vocational-Technical Core
Description: This is an introduction to pathogenic microorganisms related to surgery and their effect on wound healing and infection. It includes principles of sterilization and disinfection. (3 sch: 3 hr. lecture)
Corequisites: All first semester courses

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Course Name: Basic and Related Surgical Procedures
Course Abbreviation: SUT 1518
Classification: Vocational-Technical Core
Description: This course includes instruction in regional anatomy, pathology, instrumentation, and surgical techniques in general surgery, gynecology, obstetrics, and urology. It requires clinical experience in area hospital surgical suites and related departments. (8 sch: 4 hr. lecture, 12 hr. clinical)

Prerequisites: CPR-Health Care Provider and all first semester courses

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Course Name: Specialized Surgical Procedures
Course Abbreviation: SUT 1528
Classification: Vocational-Technical Core
Description: This course includes instruction in regional anatomy, pathology, instrumentation, and techniques in surgical specialty areas of ear, nose, and throat; eye; oral and maxillofacial surgery; pediatrics; and plastics. This course requires clinical experience in area hospital surgical suite and related departments. (8 sch: 4 hr. lecture, 12 hr. clinical)
Prerequisites: CPR-Health Care Provider and all first semester courses

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Course Name: Advanced Surgical Procedures
Course Abbreviation: SUT 1538
Classification: Vocational-Technical Core
Description: This course includes instruction in regional anatomy, pathology, instrumentation, and techniques in surgical specialty areas of orthopedics, neurosurgery, thoracic, peripheral vascular, cardiovascular surgery, and employability skills. This course requires clinical experience in area hospital surgical suites and related departments and a comprehensive final examination. (8 sch: 4 hr. lecture, 12 hr. clinical)
Prerequisites: CPR-Health Care Provider and all second semester courses

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Course Name: Certification and Role Transition
Course Abbreviation: SUT 1703
Classification: Vocational-Technical Elective
Description: An in-depth study of the role of the surgical technologist and review for the certification examination. The course examines liability and legal issues of practice, adapting critical thinking skills to a variety of practice settings, effective team and professional behaviors, continuing education, and ethical issues. Practice on computer simulations is required. (3 sch: 3 hr. lecture)
Prerequisite: None

VETERINARY TECHNOLOGY

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Course Name: Veterinary Math Calculations
Course Abbreviation: VAT 1111
Classification: Vocational-Technical Core
Description: Veterinary Math Calculations provides a consistent approach to computations involved in drug and solution problems. (1 sch: 1 hr. lecture)
Prerequisite: None

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Course Name: Animal Restraint and Medication
Course Abbreviation: VAT 1213
Classification: Vocational-Technical Core
Description: Animal Restraint and Medication is the study and practice of restraining small animals, utilizing both chemical and physical means of safe and humane restraint. Included in the course are basic terminology, usage, administration, and general knowledge of common drugs and vaccines. (3 sch: 2 hr. lecture, 3 hr. clinical)
Prerequisite: None

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Course Name: Animal Anatomy and Physiology
Course Abbreviation: VAT 1313
Classification: Vocational-Technical Core
Description: Animal Anatomy and Physiology introduces the student to basic anatomy and physiology as related to the needs of a Veterinary Technician. Special emphasis is given to the structure of a selected cadaver, location of specific structures, and functions of these structures. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisites: None

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Course Name: Surgical and Hospital Techniques I
Course Abbreviation: VAT 1414
Classification: Vocational-Technical Core
Description: Surgical and Hospital Techniques I is the study and practical application of sterile techniques, preparation of the surgical site, operating room conduct, assisting the surgeon, preanesthetics, anesthesiology, and anesthetic emergencies. (4 sch: 3 hr. lecture, 3 hr. clinical)
Prerequisites: None

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Course Name: Surgical and Hospital Techniques II
Course Abbreviation: VAT 1424
Classification: Vocational-Technical Core

Description: Surgical and Hospital Techniques II is the study and practical application of basic clinical and hospital techniques required of the veterinary technician. Subjects include pharmacology, animal nutrition, radiology, patient management and client instructions, and office procedures. (4 sch: 3 hr. lecture, 3 hr. clinical)
Prerequisites: None

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Course Name: Animal Parasites and Diseases
Course Abbreviation: VAT 1512
Classification: Vocational-Technical Core
Description: Animal Parasites and Diseases includes the study of etiology, symptoms, pathology, transmission, duration, prognosis, prevention, and general knowledge of common parasites and diseases of farm animals and pets. (2 sch: 2 hr. lecture)
Prerequisites: None

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Course Name: Clinical Pathology
Course Abbreviation: VAT 1613
Classification: Vocational-Technical Core
Description: Clinical Pathology is the study and practical application of veterinary diagnostic aids. The course includes hematology, blood chemistries, serology, urinalysis, fecal analysis, and organ function test. (3 sch: 2 hr. lecture, 3 hr. clinical)
Prerequisites: None

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Course Name: Preceptorship
Course Abbreviation: VAT 2184
Classification: Vocational-Technical Core
Description: The Animal Health Technician student is required to complete a four week preceptorship with an approved Mississippi veterinarian practice or laboratory animal facility. This internship provides hands-on experience in a small animal, mixed animal, large animal, or laboratory animal facility. (4 sch: 12 hr. clinical)
Prerequisites: Successful completion of two years of course work

College of Veterinary Medicine (CVM) Courses

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Course Name: Clinical Elective
Course Abbreviation: VAT 2151
Classification: CVM Course
Description: The student will participate in an additional rotation of the student's choice.
Prerequisites: Successful completion of all first year courses

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Course Name: Business Procedures
Course Abbreviation: VAT 2161
Classification: CVM Course
Description: The educational goals of this course relate primarily to understanding and practicing proper hospital procedures and improving communication skills in actual hospital situations. Emphasis will be placed on developing professionalism and efficiency.
Prerequisites: Successful completion of all first year courses.

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Course Name: Laboratory Animal Care
Course Abbreviation: VAT 2171
Classification: CVM Course
Description: The Veterinary Technician student will be instructed in the care and handling of laboratory animals. Maintenance of health laboratory animals to include proper nutrition, husbandry, and handling will be emphasized.
Prerequisites: Successful completion of all first year courses.

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Course Name: Necropsy
Course Abbreviation: VAT 2181
Classification: CVM Course
Description: The student will rotate through the Necropsy Service of the Diagnostic Laboratory under the direct supervision of a faculty pathologist.
Prerequisites: Successful completion of all first year courses.

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Course Name: Pharmacy
Course Abbreviation: VAT 2191
Classification: CVM Course
Description: The student will be instructed in basic knowledge of various aspects of pharmacy. This will include the area pharmacokinetics, proper handling of Controlled Substances, and dosage calculation.
Prerequisites: Successful completion of all first year courses.

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Course Name: LARAC
Course Abbreviation: VAT 2173
Classification: CVM Course
Description: The Veterinary Technician student will rotate through the Laboratory Animal Unit of the College of Veterinary Medicine. Maintenance of health laboratory animals to include proper nutrition, husbandry, and handling will be emphasized.
Prerequisites: Successful completion of all first year courses.

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Course Name: Community Practice
Course Abbreviation: VAT 2213
Classification: CVM Course
Description: This rotation will require active participation in the management of small animal cases, aspects of the practice environment, and the delivery of health maintenance programs associated with a small animal clinical service.
Prerequisites: Successful completion of all first year courses.

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Course Name: Internal Medicine-ICU

Course Abbreviation: VAT 2223
Classification: CVM Course
Description: The student will rotate through the Small Animal Unit of the Animal Health Center under the direct supervision of internal medicine faculty. The student will participate in the receiving, analysis, and management of patients referred for medical or surgical care. The student will also be instructed in the area of Intensive Care Unit.
Prerequisites: Successful completion of all first year courses.

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Course Name: Equine Services
Course Abbreviation: VAT 2233
Classification: CVM Course
Description: The student will rotate through Equine Units of the Large Animal Clinic under the direct supervision of large animal clinical faculty. The student will participate in the receiving, analysis, and management of equine patients referred for medical or surgical care.
Prerequisites: Successful completion of all first year courses.

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Course Name: Food Animal
Course Abbreviation: VAT 2243
Classification: CVM Course

Description: The student will rotate through the Field Services Unit of the Animal Health Center under the direct supervision of large animal clinical faculty. The student will participate in problem analysis, case management, and development of health maintenance programs for populations of animals.
Prerequisites: Successful completion of all first year courses.

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Course Name: Small Animal Surgery
Course Abbreviation: VAT 2253
Classification: CVM Course
Description: The student will rotate through the Small Animal Surgery Unit of the Animal Health Center under the direct supervision of surgical faculty and will participate in all aspects of patient preparation, patient management, operating room setup, and surgical equipment and supply preparation.
Prerequisites: Successful completion of all first year courses.

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Course Name: Anesthesia
Course Abbreviation: VAT 2263
Classification: CVM Course
Description: The student will rotate through the Anesthesia Services of the Animal Health Center under the direct supervision of faculty in anesthesia. Responsibilities include preoperative evaluation of patients, selection of appropriate anesthetic protocols, induction of anesthesia, maintenance of anesthesia, monitoring of anesthesia, anesthetic recovery of patients, and post-operative management.
Prerequisites: Successful completion of all first year courses.

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Course Name: Radiology
Course Abbreviation: VAT 2273
Classification: CVM Course
Description: The student will rotate through the Radiology Services of the Animal Health Center under the direct supervision of faculty radiologists. Responsibilities include positioning animals for radiographs. The student is also responsible for participation in ultrasound diagnostic and radiotherapy procedures.
Prerequisites: Successful completion of all first year courses.

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Course Name: Clinical Pathology
Course Abbreviation: VAT 2283
Classification: CVM Course
Description: The student will rotate through the Diagnostic Laboratory of the Animal Health Center under the direct supervision of the Diagnostic Services faculty. Responsibilities include collection of laboratory samples, conducting laboratory analysis in clinical pathology, parasitology, and bacteriology.
Prerequisites: Successful completion of all first year courses.

TRADE, TECHNICAL, AND RELATED TECHNOLOGY PROGRAMS

AUTOMOTIVE MACHINIST TECHNOLOGY

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Course Name: Fundamentals for the Automotive Machinist
Course Abbreviation: AUV 1116
Classification: Vocational-Technical Core
Description: This course includes the study and practice of personal hand tools and shop safety; study and practice of measuring; types of calipers, micrometers, and gauges; types and uses of hand tools, mechanical tools, power tools, and coolants; and identification of materials and metals. (6 sch: 2 hr. lecture, 8 hr. lab)
Prerequisite: None

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Course Name: Cylinder Head Service
Course Abbreviation: AUV 1216
Classification: Vocational-Technical Core
Description: This course includes the rebuilding of cylinder heads. Included are valve, guide, and seat reconditioning as well as the resurfacing and assembly of heads. Crack detection and repair are also included in the course. (6 sch: 2 hr. lecture, 8 hr. lab)
Prerequisite: None

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Course Name: Cylinder Block Service
Course Abbreviation: AUV 1316
Classification: Vocational-Technical Core
Description: This course includes the study of cylinder reconditioning, crankshaft renewal, and rod reconditioning. (6 sch: 2 hr. lecture, 8 hr. lab)
Prerequisite: None

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Course Name: Engine Assembly
Course Abbreviation: AUV 1416
Classification: Vocational-Technical Core
Description: This course includes preparation of the block and components for assembly. The individual installation of all internal components is included in the course. (6 sch: 2 hr. lecture, 8 hr. lab)
Prerequisite: None

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Course Name: Parts and Labor
Course Abbreviation: AUV 1513
Classification: Vocational-Technical Elective

Description: This course includes training in the use of computerized parts pricing and inventory, labor price guides, the purchasing and recovery of core materials. (3 sch: 1 hr. lecture, 4 hr. lab)
Prerequisite: Consent of the Instructor

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Course Name: Crankshaft Balancing and Advanced Crankshaft Grinding
Course Abbreviation: AUV 1613
Classification: Vocational-Technical Elective
Description: This course includes the balancing of bottom-end rotating and reciprocating parts. Crankshaft indexing, straightening, and stroking are also included. (3 sch: 1 hr. lecture, 4 hr. lab)
Prerequisite: Consent of the Instructor

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Course Name: Brake Rotor and Drum Machining
Course Abbreviation: AUV 1713
Classification: Vocational-Technical Elective
Description: Course includes machining of the brake drum and rotor. (3 sch: 1hr. lecture, 4 hr. lab)
Prerequisite: Consent of the Instructor

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Course Name: Special Problem in Automotive Machinist
Course Abbreviation: AUV 191(1-3)
Classification: Vocational-Technical Elective
Description: A course to provide students with an opportunity to utilize skills and knowledge gained in other courses. The instructor and student work closely together to select a topic and establish criteria for completion of the project. (1-3 sch: 2-6 hr. lab)
Prerequisite: Consent of Instructor

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Course Name: Supervised Work Experience in Automotive Machinist Industry
Course Abbreviation: AUV 192(1-6)
Classification: Vocational-Technical Core
Description: A course which is a cooperative program between industry and education designed to integrate the student's technical studies with industrial experience. Variable credit is awarded on the basis of one semester hour per 45 industrial contact hours. (1-6 sch: 3-18 hr. externship)
Prerequisite: Consent of instructor and completion of at least one semester of advanced coursework.

AUTOMOTIVE TECHNOLOGY

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Course Name: Basic Electrical/Electronic Systems
Course Abbreviation: ATT 1124
Classification: Vocational-Technical Core
Description: This is a course designed to provide advanced skills and knowledge related to all components of the vehicle electrical system including lights, battery, and charging components. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: None

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Course Name: Advanced Electrical/Electronic Systems
Course Abbreviation: ATT 1134
Classification: Vocational-Technical Core
Description: This is a course designed to provide advanced skills and knowledge related to all components of the vehicle electrical system including gauges, driver information systems, horn, wiper/wiper systems, and accessories. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: None

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Course Name: Brakes
Course Abbreviation: ATT 1213
Classification: Vocational-Technical Core
Description: This is a course designed to provide advanced skills and knowledge related to the repair and maintenance of brake systems on automobiles. It includes instruction and practice in diagnosis of braking systems problems and the repair of brake systems. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: None

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Course Name: Manual Drive Trains/Transaxles
Course Abbreviation: ATT 1314
Classification: Vocational-Technical Core
Description: This is a course designed to provide advanced skills and knowledge related to the maintenance and repair of manual transmissions, transaxles, and drive train components. It includes instruction in the diagnosis of drive train problems, and the repair and maintenance of transmissions, transaxles, clutches, CV joints, differentials, and other components. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: None

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Course Name: Engine Performance I
Course Abbreviation: ATT 1424
Classification: Vocational-Technical Core

Description: This is a course designed to provide advanced skills and knowledge related to the maintenance and adjustment of gasoline engines for optimum performance. It includes instruction, diagnosis, and correction of problems associated within these areas. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: Basic Electrical/Electronic Systems (ATT 1124)

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Course Name: Engine Repair
Course Abbreviation: ATT 1715
Classification: Vocational-Technical Core
Description: This is a course designed to provide advanced skills and knowledge related to the repair and rebuilding of automotive engines. It includes instruction and practice in the diagnosis and repair of engine components including valve trains, blocks, pistons and connecting rods, crankshafts, and oil pumps. (5 sch: 2 hr. lecture, 6 hr. lab)
Prerequisite: None

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Course Name: Introduction, Safety, and Employability Skills
Course Abbreviation: ATT 1811
Classification: Vocational-Technical Core
Description: This is a course designed to provide knowledge of classroom and lab policies and procedures. Safety practices and procedures associated with the automotive program and automotive industry. (1 sch: 1 hr. lecture)
Prerequisite: None

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Course Name: Automatic Transmissions/Transaxles
Course Abbreviation: ATT 2325
Classification: Vocational-Technical Core
Description: This is a course designed to provide skills and knowledge related to the diagnosis of automatic transmissions and transaxles. Includes instruction and practice of testing, inspecting, and repair of these devices. (5 sch: 2 hr. lecture, 6 hr. lab)
Prerequisite: None

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Course Name: Steering and Suspension Systems
Course Abbreviation: ATT 2334
Classification: Vocational-Technical Core
Description: This is a course designed to provide advanced skills and knowledge related to the inspection and repair of steering and suspension systems of automobiles. Includes instruction and practice in the diagnosis of steering system problems and the repair/replacement of steering components. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: None

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Course Name: Engine Performance II

Course Abbreviation: ATT 2434
Classification: Vocational-Technical Core
Description: This is a course designed to provide advanced skills and knowledge related to the ignition system, fuel, air induction, and exhaust systems. It includes instruction, diagnosis, and correction of problems associated within these areas. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: None

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Course Name: Engine Performance III
Course Abbreviation: ATT 2444
Classification: Vocational-Technical Core
Description: This is a course designed to provide advanced skills and knowledge related to the emissions control systems and engine related service. It includes instruction, diagnosis, and correction of problems associated within these areas. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: None

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Course Name: Heating and Air Conditioning
Course Abbreviation: ATT 2614
Classification: Vocational-Technical Core
Description: This course is designed to provide advanced skills and knowledge associated with the maintenance and repair of automotive heating and air conditioning systems. It includes instruction and practice in the diagnosis and repair of heating and air conditioning system components, and control systems. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: None

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Course Name: Special Problem in Automotive Technology
Course Abbreviation: ATT 291(1-3)
Classification: Vocational-Technical Elective
Description: A course to provide students with an opportunity to utilize skills and knowledge gained in other Automotive Technology courses. The instructor and student work closely together to select a topic and establish criteria for completion of the project. (1-3 sch: 2-6 hr. lab)
Prerequisite: Consent of instructor

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Course Name: Supervised Work Experience in Automotive Technology
Course Abbreviation: ATT 292(1-6)
Classification: Vocational-Technical Elective
Description: A course which is a cooperative program between industry and education designed to integrate the student's technical studies with industrial experience. Variable credit is awarded on the basis of one semester hour per 45 industrial contact hours. (1-6 sch: 3-18 hr. externship)
Prerequisite: Consent of instructor and completion of at least one semester of advanced coursework in Automotive Technology.

DRAFTING AND DESIGN CLUSTER

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Course Name: Fundamentals of Drafting
Course Abbreviation: DDT 1114
Classification: Vocational-Technical Core
Description: Fundamentals and principles of drafting to provide the basic background needed for all other drafting courses. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: None

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Course Name: Computational Methods for Drafting
Course Abbreviation: DDT 1123
Classification: Vocational-Technical Elective (Architectural; General Drafting)
Description: Study of computational skills required for the development of accurate design and drafting methods. (3 sch: 1 hr. lecture, 4 hr. lab)
Prerequisite: None

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Course Name: Machine Drafting I
Course Abbreviation: DDT 1133
Classification: Vocational-Technical Core (General Drafting); Vocational-Technical Elective (Architectural)
Description: Emphasizes methods, techniques, and procedures in presenting screws, bolts, rivets, springs, thread types, symbols for welding, materials, finish and heat treatment notation, working order preparation, routing, and other drafting room procedures. (3 sch: 1 hr. lecture, 4 hr. lab)
Pre/corequisite: Fundamentals of Drafting (DDT 1114) and Principles of CAD (DDT 1313)

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Course Name: Geometric Dimensioning and Tolerancing
Course Abbreviation: DDT 1143
Classification: Vocational-Technical Elective (Architectural; General Drafting)
Description: A continuation of conventional dimensioning with emphasis on concepts as adopted by the American National Standards Institute (ANSI). A study of international dimensioning symbols used to control tolerances of form, profile, orientation, runout, and location of features on an object. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: Machine Drafting I (DDT 1133)

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Course Name: Descriptive Geometry
Course Abbreviation: DDT 1153
Classification: Vocational-Technical Elective (Architectural; General Drafting Certificate); Vocational-Technical Core (Geographical Information Systems Technology Associate Degree)

Description: Theory and problems designed to develop the ability to visualize points, lines, and surfaces of space. (3 sch: 1 hr. lecture, 4 hr. lab)
Prerequisite: Fundamentals of Drafting (DDT 1114)

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Course Name: Construction Materials
Course Abbreviation: DDT 1213
Classification: Vocational-Technical Core (Architectural; General Drafting Associate Degree); Vocational-Technical Elective (General Drafting Certificate)
Description: Physical properties of the materials generally used in the erection of a structure, with a brief description of their manufacture. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: None

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Course Name: Principles of CAD
Course Abbreviation: DDT 1313
Classification: Vocational-Technical Core
Description: Basic operating system and drafting skills on CAD. (3 sch: 2 hr. lecture, 2 hr. lab)
Pre/corequisite: Fundamentals of Drafting (DDT 1114) or consent of instructor

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Course Name: Intermediate CAD
Course Abbreviation: DDT 1323
Classification: Vocational-Technical Core (General Drafting; Architectural); Vocational-Technical Elective (Geographical Information System Technology)
Description: Continuation of Principles of CAD. Subject areas include dimensioning, sectional views, and symbols. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: Principles of CAD (DDT 1313)

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Course Name: Elementary Surveying
Course Abbreviation: DDT 1413
Classification: Vocational-Technical Core (General Drafting Certificate; Geographical Information Systems Technology); Vocational-Technical Elective (Architectural; General Drafting Associate Degree)
Description: Basic course dealing with principles of geometry, theory, and use of instruments, mathematical calculations, and the control and reduction of errors. (3 sch: 1 hr. lecture, 4 hr. lab)
Prerequisite: Consent of instructor

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Course Name: Blueprint Reading I
Course Abbreviation: DDT 1513
Classification: Service course for vocational-technical programs
Description: Terms and definitions used in reading blueprints. Basic sketching, drawing, and dimensioning of objects will be covered. (Enrollment in this course is limited to vocational certificate students in other disciplines.) (3 sch: 2 hr. lecture, 2 hr. lab)

Prerequisite: Consent of instructor

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Course Name: Blueprint Reading II
Course Abbreviation: DDT 1523
Classification: Service course for vocational-technical programs
Description: Continuation of Blueprint Reading I with emphasis placed on reading and interpreting blueprints for different types of structures and performing basic calculations. (Enrollment in this course is limited to vocational certificate students in other disciplines.) (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: Blueprint Reading I (DDT 1513)

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Course Name: Architectural Design I
Course Abbreviation: DDT 1613
Classification: Vocational-Technical Core (Architectural; General Drafting)
Description: This course is a study and development of architectural design principles for a residential structure. (3 sch: 1 hr. lecture, 4 hr. lab)
Prerequisite: Fundamentals of Drafting (DDT 1114) and Principles of CAD (DDT 1313)

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Course Name: Fundamentals of Machining Processes
Course Abbreviation: DDT 1713
Classification: Vocational-Technical Elective (General Drafting)
Description: Basic machining equipment and safety procedures. Emphasis is placed on measurement techniques, machine technology, machine tools, and applications. (A course for drafting students with no previous machining experience.) (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: None

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Course Name: Design for Manufacturing
Course Abbreviation: DDT 1813
Classification: Vocational-Technical Elective (General Drafting)
Description: Instruction in various methods of manufacturing with emphasis on the drafter's role in manufacturing. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: None

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Course Name: Civil Drafting
Course Abbreviation: DDT 2153
Classification: Vocational-Technical Core (Architectural; General Drafting)
Description: Course dealing with basic principles of surveying and the development of topographical maps. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: Fundamentals of Drafting (DDT 1114) and Principles of CAD (DDT 1313) or consent of instructor

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Course Name: Machine Drafting II
Course Abbreviation: DDT 2163
Classification: Vocational-Technical Core (General Drafting Certificate); Vocational-Technical Elective (General Drafting Associate Degree)
Description: A continuation of Machine Drafting I with emphasis on advanced techniques and knowledge employed in the planning of mechanical objects. Includes instruction in the use of tolerancing and dimensioning techniques. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: Machine Drafting I (DDT 1133)

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Course Name: Structural Drafting II
Course Abbreviation: DDT 2213
Classification: Vocational-Technical Elective (Architectural; General Drafting Associate Degree)
Description: Study of the miscellaneous areas of structural drafting including stairs, handrails, and cage ladders. (3 sch: 1 hr. lecture, 4 hr. lab)
Prerequisite: Intermediate CAD (DDT 1323) and Structural Drafting I (DDT 2233)

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Course Name: Structural Drafting I
Course Abbreviation: DDT 2233
Classification: Vocational-Technical Core (Architectural; General Drafting Associate Degree); Vocational-Technical Elective (General Drafting Certificate)
Description: Structural section, terms, and conventional abbreviations and symbols used by structural fabricators and erectors are studied. Knowledge is gained in the use of the A.I.S.C. Handbook. Problems are studied that involve structural designing and drawing of beams, columns, connections, trusses, and bracing (steel, concrete, and wood). (3 sch: 1 hr lecture, 4 hr. lab)
Prerequisite: Fundamentals of Drafting (DDT 1114) and Principles of CAD (DDT 1313)

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Course Name: Cost Estimating
Course Abbreviation: DDT 2243
Classification: Vocational-Technical Core (Architectural); Vocational-Technical Elective (General Drafting)
Description: Preparation of material and labor quantity surveys from actual working drawings and specifications. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: Consent of instructor

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Course Name: Statics and Strength of Materials
Course Abbreviation: DDT 2253
Classification: Vocational-Technical Elective (Architectural; General Drafting)

Description: Study of forces acting on bodies; moments of forces; stress of materials; basic machine design; beams, columns, and connections. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: College Algebra (MAT 1313) or by consent of instructor

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Course Name: Quality Assurance
Course Abbreviation: DDT 2263
Classification: Vocational-Technical Elective (General Drafting Associate Degree)
Description: The application of statistics and probability theory in quality assurance programs. Various product sampling plans will be studied as well as the development of product charts for defective units. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: None

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Course Name: Facilities Planning
Course Abbreviation: DDT 2273
Classification: Vocational-Technical Elective (Architectural)
Description: This course deals with the techniques and procedures for developing an efficient facility layout and introduces some of the state-of-the-art tools involved, such as 3D design and computer simulation. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: None

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Course Name: Advanced CAD
Course Abbreviation: DDT 2343
Classification: Vocational-Technical Core (Architectural; General Drafting); Vocational-Technical Elective (Geographical Information Systems Technology)
Description: A continuation of Intermediate CAD. Emphasis is placed on the user coordinate system and 3D modeling. (3 sch: 1 hr. lecture, 4 hr. lab)
Prerequisite: Intermediate CAD (DDT 1323)

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Course Name: CAD Management
Course Abbreviation: DDT 2353
Classification: Vocational-Technical Elective (Architectural; Mechanical/Industrial; General Drafting)
Description: Topics include technical and business aspects of CAD. Standards, customization, networking, Internet integration, and employee support will be covered. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: Intermediate CAD (DDT 1323)

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Course Name: Computer Numerical Control (CNC) Drafting
Course Abbreviation: DDT 2363
Classification: Vocational-Technical Elective (General Drafting Associate Degree)
Description: Basics of numerical control machines. (3 sch: 2 hr. lecture, 2 hr. lab)

Prerequisite: Principles of CAD (DDT 1313)

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Course Name: Mapping and Topography
Course Abbreviation: DDT 2423
Classification: Vocational-Technical Elective (General Drafting; Architectural; Geographical Information Systems Technology)
Description: Selected drafting techniques are applied to the problem of making maps, traverses, plot plans, plan drawings, and profile drawings using maps, field survey data, aerial photographs, and related references and materials including symbols, notations, and other applicable standardized materials. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: Elementary Surveying (DDT 1413) and Intermediate CAD (DDT 1323) or by consent of instructor

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Course Name: Legal Principles of Surveying
Course Abbreviation: CIT 2113/ DDT 2433
Classification: Vocational-Technical Elective (Architectural; General Drafting)
Description: A study of the legal aspects of boundary controls for the survey and resurvey of real property. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: Elementary Surveying (DDT 1413)

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Course Name: Advanced Surveying
Course Abbreviation: CIT 2124/DDT 2443
Classification: Vocational-Technical Elective (Architectural; General Drafting; Geographical Information Systems Technology)
Description: A course designed to provide the student with practicle applications of skills and knowledge gained in other surveying and related courses. (3 sch: 1 hr. lecture, 4 hr. lab)
Prerequisite: Elementary Surveying (DDT 1413)

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Course Name: GPS Surveying
Course Abbreviation: CIT 2444/DDT 2463
Classification: Vocational-Technical Core (Geographical Information Systems Technology Associate Degree); Vocational-Technical Elective (Architectural; General Drafting; Geographical Information Systems Technology Certificate)
Description: This course teaches principles of surveying utilizing artificial earth orbit satellites. (3 sch: 1 hr. lecture, 4 hr. lab)
Prerequisite: Elementary Surveying (DDT 1413)

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Course Name: Pipe Drafting
Course Abbreviation: DDT 2523
Classification: Vocational-Technical Elective (Architectural; General Drafting)

Description: Instruction in the basic knowledge needed to create process piping drawings using individual piping components. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: Fundamentals of Drafting (DDT 1114) and Principles of CAD (DDT 1313)

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Course Name: Highway Drafting
Course Abbreviation: DDT 2533
Classification: Vocational-Technical Elective (Architectural; General Drafting)
Description: A basic study of highway drafting. Horizontal alignment of route surveys in the plan view, vertical alignment of route surveys in the profile view, typical sections, cross sections, and area calculations and estimation of quantities. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: Fundamentals of Drafting (DDT 1114) and Intermediate CAD (DDT 1323)

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Course Name: Steel Ship Building and Design
Course Abbreviation: DDT 2543
Classification: Vocational-Technical Elective (General Drafting)
Description: Instruction in the basic steel ship building and the process of ship design and planning. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: Fundamentals of Drafting (DDT 1114)

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Course Name: Architectural Design II
Course Abbreviation: DDT 2623
Classification: Vocational-Technical Core (Architectural; General Drafting Certificate); Vocational-Technical Elective (General Drafting Associate Degree)
Description: Emphasizes standard procedures and working drawings. Details involving architectural, mechanical, electrical, and structural drawings are covered, along with presentation of drawings and computer-aided design assignments. (3 sch: 1 hr. lecture, 4 hr. lab)
Prerequisite: Architectural Design I (DDT 1613) and Intermediate CAD (DDT 1323) or by consent of instructor

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Course Name: Fundamentals of Multimedia
Course Abbreviation: DDT 2713
Classification: Vocational-Technical Elective (Architectural; General Drafting)
Description: A general overview of current issues in multimedia. Study of how multimedia can assist in the work environment; provides a basis for further study in multimedia design and production. (3 sch: 1 hr. lecture, 4 hr. lab)
Prerequisite: None

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Course Name: Special Project
Course Abbreviation: DDT 291(1-3)
Classification: Vocational-Technical Core (General Drafting Certificate); Vocational-Technical Elective (Architectural; General Drafting Associate Degree)

Description: Practical application of skills and knowledge gained in other drafting courses. The instructor works closely with the student to insure that the selection of a project will enhance the student's learning experience. (1-3 sch: 2-6 hr. lab)
Prerequisite: Consent of instructor

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Course Name: Supervised Work Experience in Drafting and Design Technology
Course Abbreviation: DDT 292(1-6)
Classification: Vocational-Technical Elective (Architectural; General Drafting)
Description: Cooperative program between industry and education designed to integrate the student’s technical studies with industrial experience. Variable credit is awarded on the basis of one semester hour per 45 industrial contact hours. (1-6 sch: 3-18 hr. externship)
Prerequisite: Consent of instructor and the completion of at least one semester of advanced coursework in the drafting program.

Geographical Information Systems Technology Option Courses

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Course Name: Cartography and Computer Map Reading
Course Abbreviation: GIT 1253
Classification: Vocational-Technical Core (Geographical Information Systems Technology)
Description: An introduction to the preparation and interpretation of data in cartographic form and the use of computers for map compilation, design, and production. Includes principles of global positioning (GPS), methods of map making, and principles of digital cartography. (3 sch: 2 hrs. lecture, 2 hrs. lab)
Pre/corequisite: Fundamentals of Geographical Information Systems (GIS) (GIT 2123)

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Course Name: Database Construction and Maintenance
Course Abbreviation: GIT 2113
Classification: Vocational-Technical Core (Geographical Information Systems Technology); Vocational-Technical Elective (Architectural; General Drafting Associate Degree)
Description: A course designed to introduce database concepts and goals of database management systems, and relational, hierarchical, and network models of data. Methods for organizing data are introduced and discussed. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: None

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Course Name: Fundamentals of Geographical Information Systems (GIS)
Course Abbreviation: GIT 2123
Classification: Vocational-Technical Core (Geographical Information Systems Technology Programs); Vocational-Technical Elective (Architectural; General Drafting Associate Degree)
Description: This course includes the use of computer mapping and databases in multiple applications. Included are incorporation of imagery and data into a graphical oriented database system. Also included are the fundamentals of geographical information systems techniques, approaches, and applications. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: None

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Course Name: Principles of Image Processing
Course Abbreviation: GIT 2133
Classification: Vocational-Technical Core (Geographical Information Systems Technology Associate Degree); Vocational-Technical Elective (Geographical Information Systems Technology Certificate; Architectural; General Drafting Associate Degree)
Description: This course includes fundamentals of remotely sensed data including scale, feature identification, and symbolization. Includes fundamentals of interpretation techniques of various image products, including topographic and thematic maps, aerial photographs, sensor images, and satellite images. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: Remote Sensing (GIT 2273)

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Course Name: Advanced Geographical Information Systems
Course Abbreviation: GIT 2263
Classification: Vocational-Technical Core (Geographical Information Systems Technology); Vocational-Technical Elective (Architectural; General Drafting Associate Degree)
Description: This is an integrated course that encompasses geographical data inputs, processing, analyses, and presentation. (3 sch: 1 hr. lecture, 4 hr. lab)
Prerequisite: Mapping and Topography for GIS (GIT 2423) or Mapping and Topography (DDT 2423); Database Construction and Maintenance (GIT 2113) or Mapping and Topography (DDT 2423)

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Course Name: Remote Sensing
Course Abbreviation: GIT 2273
Classification: Vocational-Technical Core (Geographical Information Systems Technology); Vocational-Technical Elective (Architectural; General Drafting Associate Degree)
Description: This course includes a discussion of a variety of remote sensing data collections methods. The course deals with manual interpretation data from photographs and other imagery. (3 sch: 1 hr. lecture, 4 hr. lab)
Prerequisite: None

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Course Name: Mapping and Topography for GIS
Course Abbreviation: GIT 2423
Classification: Vocational-Technical Core (Geographical Information Systems Technology Certificate); Vocational-Technical Elective (Geographical Information Systems Technology Associate Degree)
Description: Selected drafting techniques are applied to the problem of making maps, traverses, plot plans, plan drawings, and profile drawings using maps, field survey data, aerial photographs, and related references and materials including symbols, notations, and other applicable standardized materials. (3 sch: 2 hr. lecture, 2 hr. lab)
Pre/corequisite: Elementary Surveying (DDT 1413) and Intermediate CAD (DDT 1323)

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Course Name: Special Problem in Geographical Information Systems Technology
Course Abbreviation: GIT 291(1-3)
Classification: Vocational-Technical Elective (Geographical Information Systems Technology)
Description: A course to provide students with an opportunity to utilize skills and knowledge gained in other Geographical Information Systems courses. The instructor and student work closely together to select a topic and establish criteria for completion of the project. (1-3 sch: 2-6 hr. lab)
Prerequisite: Consent of instructor

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Course Name: Supervised Work Experience in Geographical Information Systems Technology
Course Abbreviation: GIT 292(1-6)
Classification: Vocational-Technical Elective (Geographical Information Systems Technology)
Description: A course to provide students with an opportunity to utilize skills and knowledge gained in other Geographical Information Systems courses. The instructor and student work closely together to select a topic and establish criteria for completion of the project. (1-3 sch: 2-6 hr. lab)
Prerequisites: Consent of instructor

MACHINE TOOL TECHNOLOGY

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Course Name: Power Machinery I
Course Abbreviation: MST 1114-6
Classification: Vocational-Technical Core
Description: This course provides instruction of general shop safety as well as the operation of power machinery which includes instruction and practice in the safe operation of lathes, power saws, drill presses, and vertical mills. (4-6 sch: 2 hr. lecture, 4-8 hr. lab)
Prerequisite: None

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Course Name: Power Machinery II
Course Abbreviation: MST 1124-6
Classification: Vocational-Technical Core
Description: A continuation of Power Machinery I with emphasis on advanced applications of lathes, mills, shapers, and precision grinders. (4-6 sch: 2 hr. lecture, 4-8 hr. lab)
Prerequisite: Power Machinery I (MST 1114-6)

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Course Name: Machine Tool Mathematics
Course Abbreviation: MST 1313
Classification: Vocational-Technical Core
Description: An applied mathematics course designed for machinists which includes instruction and practice in algebraic and trigonometric operations. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: None

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Course Name: Blueprint Reading
Course Abbreviation: MST 1413
Classification: Vocational-Technical Core
Description: Plans and specifications interpretation designed for machinists. Includes instruction and practice in reading plans and applying specifications. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: None

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Course Name: Advanced Blueprint Reading
Course Abbreviation: MST 1423
Classification: Vocational-Technical Core
Description: A continuation of Blueprint Reading with emphasis on advanced features of plans and specifications. Includes instruction on the identification of various projections, views, and assembly components. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: Blueprint Reading (MST 1413)

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Course Name: Precision Layout
Course Abbreviation: MST 1613
Classification: Vocational-Technical Core
Description: Precision layout for machining operations which includes instruction and practice in the use of layout instruments. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: None

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Course Name: Power Machinery III
Course Abbreviation: MST 2135
Classification: Vocational-Technical Core (Machine Tool Two-Year Certificate and Associate Degree)
Description: A continuation of Power Machinery II with emphasis on safety, and advanced applications of the engine lathe, milling, and grinding machine. (5 sch: 2 hr. lecture, 6 hr. lab)
Prerequisite: Power Machinery II (MST 1124-6)

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Course Name: Power Machinery IV
Course Abbreviation: MST 2144
Classification: Vocational-Technical Core (Machine Tool Two-Year Certificate and Associate Degree)
Description: A continuation of Power Machinery III with emphasis on highly advanced safe operations on the radial arm drill, milling machine, engine lathe, and precision grinder. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: Power Machinery III (MST 2135)

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Course Name: Computer Numerical Control Operations I
Course Abbreviation: MST 2714
Classification: Vocational-Technical Core (Machine Tool Two-Year Certificate and Associate Degree)
Description: An introduction of computer numerical control (CNC) and computer assisted manufacturing (CAM) techniques and practices. Includes the use of the Cartesian coordinate system, programming codes and command, and tooling requirements for CNC/CAM machines. (4 sch: 3 hr. lecture, 2 hr. lab)
Prerequisite: None

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Course Name: Computer Numerical Control Operations II
Course Abbreviation: MST 2724-5
Classification: Vocational-Technical Core (Machine Tool Two-Year Certificate and Associate Degree)

Description: A continuation of Computer Numerical Control Operations I. Includes instruction in writing and editing CNC programs, machine setup and operation, and use of CAM equipment to program and operate CNC machines (CNC lathes, CNC mills, CNC machine centers, and wire EDM). (4-5 sch: 2 hr. lecture, 4-6 hr. lab)
Prerequisite: Computer Numerical Control Operations I (MST 2714)

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Course Name: Metallurgy
Course Abbreviation: MST 2812
Classification: Vocational-Technical Elective
Description: Concepts of metallurgy including instruction and practice in safety, metal identification, heat treatment, and hardness testing. (2 sch: 1 hr. lecture, 2 hr. lab)
Prerequisite: None

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Course Name: Special Problem in Machine Tool Technology
Course Abbreviation: MST 291(1-3)
Classification: Vocational-Technical Elective
Description: A course to provide students with an opportunity to utilize skills and knowledge gained in other Machine Tool Technology courses. The instructor and student work closely together to select a topic and establish criteria for completion of the project. (1-3 sch: 2-6 hr. lab)
Prerequisite: Consent of instructor

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Course Name: Supervised Work Experience in Machine Tool Technology
Course Abbreviation: MST 292(1-6)
Classification: Vocational-Technical Elective (Machine Tool Two-Year certificate and Associate Degree)
Description: A course which is a cooperative program between industry and education designed to integrate the student's technical studies with industrial experience. Variable credit is awarded on the basis of one semester hour per 45 industrial contact hours. (1-6 sch: 3-18 hr. externship)
Prerequisite: Consent of instructor and completion of at least one semester of advanced coursework in Machine Tool Technology.

MARINE ENGINE MECHANICS (GASOLINE)

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Course Name: Fundamentals of Outboard Marine Engine Repair
Course Abbreviation: MAV 1115
Classification: Vocational-Technical Core
Description: Theory, operation, and skills related to the repair and maintenance of the basic outboard marine engine. (5 sch: 2 hr. lecture, 6 hr. lab)
Prerequisite: None

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Course Name: Advanced Outboard Marine Engine Repair
Course Abbreviation: MAV 1126
Classification: Vocational-Technical Core
Description: This course is a continuation of Fundamentals of Outboard Marine Engine Repair to include the inspection, repair, and rebuilding of 2-stroke outboard engines. (6 sch: 2 hr. lecture, 8 hr. lab)
Prerequisite: Fundamentals of Outboard Marine Engine Repair (MAV 1115)

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Course Name: Inboard Gasoline Engines
Course Abbreviation: MAV 1216
Classification: Vocational-Technical Core
Description: This course includes the maintenance and repair of the basic engine block of a four-stroke cycle inboard marine engine to include engine disassembly, inspection, maintenance/repair, and reassembly. (6 sch: 2 hr. lecture, 8 hr. lab)
Prerequisite: Fundamentals of Outboard Marine Engine Repair (MAV 1115)

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Course Name: Marine Fuel Systems
Course Abbreviation: MAV 1222
Classification: Vocational-Technical Core
Description: This course includes the functions, maintenance, and service of fuel tanks, pumps, carburetors, intake manifolds, flame arresters, filters, and fuel injection systems of marine engines. (2 sch: 1 hr. lecture, 2 hr. lab)
Prerequisite: Inboard Gasoline Engines (MAV 1216)

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Course Name: Marine Engine Lubrication Systems
Course Abbreviation: MAV 1232
Classification: Vocational-Technical Core
Description: This course covers lubrication systems used on 2- and 4-stroke marine engines to include the types of lubrication systems, lubricants, service, and maintenance of the systems. (2 sch: 1 hr. lecture, 2 hr. lab)
Prerequisite: Inboard Gasoline Engines (MAV 1216)

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Course Name: Marine Engine Cooling Systems
Course Abbreviation: MAV 1242
Classification: Vocational-Technical Core
Description: This course covers maintenance of cooling systems for marine engines including open-style and closed-style systems. (2 sch: 1 hr. lecture, 2 hr. lab)
Prerequisite: Inboard Gasoline Engines (MAV 1216)

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Course Name: Inboard Transmissions
Course Abbreviation: MAV 1253
Classification: Vocational-Technical Core
Description: This course covers disassembly, maintenance, repair, and reassembly/installation of the three major types of transmissions commonly associated with inboard marine engines. (3 sch: 1 hr. lecture, 4 hr. lab)
Prerequisite: Fundamentals of Outboard Marine Engine Repair (MAV 1115)

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Course Name: Outdrives
Course Abbreviation: MAV 1264
Classification: Vocational-Technical Core
Description: This course includes the operation and maintenance of outdrive units associated with inboard marine engines including components, functions, outdrive steering, shifting systems, alignment, and repair. (4 sch: 1 hr. lecture, 6 hr. lab)
Prerequisite: Fundamentals of Outboard Marine Engine Repair (MAV 1115)

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Course Name: Marine Accessories
Course Abbreviation: MAV 1312
Classification: Vocational-Technical Elective
Description: This course includes the installation and repair of accessories commonly found on a pleasure craft including bilge pumps, ventilation systems, horns, instruments, lights, and other accessories. (2 sch: 1 hr. lecture, 2 hr. lab)
Prerequisite: None

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Course Name: Boat Maintenance and Repair
Course Abbreviation: MAV 1424
Classification: Vocational-Technical Elective
Description: This course covers the repair of boats including instruction in the minor repair of hull and structure damage. (4 sch: 1 hr. lecture, 6 hr. lab)
Prerequisite: None

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Course Name: Trailers
Course Abbreviation: MAV 1511
Classification: Vocational-Technical Elective
Description: This course covers rigging and maintenance of trailers used to transport a pleasure craft including rigging, wheel bearings, lighting, and positioning boats. (1 sch: 2 hr. lab)
Prerequisite: None

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Course Name: Electrical Systems
Course Abbreviation: MAV 1612
Classification: Vocational-Technical Core
Description: This course covers electrical systems associated with marine engines to include theory of operation and maintenance/repair. (2 sch: 1 hr. lecture, 2 hr lab)
Prerequisite: Fundamentals of Outboard Marine Engine Repair (MAV 1115)

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Course Name: Tune-up and Troubleshooting
Course Abbreviation: MAV 1718
Classification: Vocational-Technical Core
Description: This course covers tune-up and diagnosis of problems associated with a variety of marine engines including operation of test equipment, system diagnosis, and tune-up procedures. (8 sch: 16 hr. lab)
Prerequisite: Fundamentals of Outboard Marine Engine Repair (MAV 1115), Inboard Gasoline Engines (MAV 1216), and Electrical Systems (MAV 1612)

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Course Name: Special Project in Marine Engine Mechanics (Gasoline)
Course Abbreviation: MAV 191(1-3)
Classification: Vocational-Technical Elective
Description: This course is a practical application of skills and knowledge related a specific instructor-approved topic. Teacher and student work closely together in planning and conducting the project. (1-3 sch: 2-6 hr. lab)
Prerequisite: Fundamentals of Outboard Marine Engine Repair (MAV 1115), Inboard Gasoline Engines (MAV 1216), and Electrical Systems (MAV 1612)

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Course Name: Supervised Work Experience in Marine Engine Mechanics (Gasoline)
Course Abbreviation: MAV 192(1-6)
Classification: Vocational-Technical Elective
Description: This course is a cooperative program between industry and education and is designed to integrate the student's technical studies with industrial experience. Variable credit is awarded on the basis of one semester hour per 45 industrial contact hour. (1-6 sch: 3-18 hr. internship)
Prerequisite: Consent of teacher

RESIDENTIAL CARPENTRY TECHNOLOGY

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Course Name: Foundations
Course Abbreviation: CAV 1116
Classification: Vocational-Technical Core
Description: This course includes site selection, site preparation, site layout, building forms, and construction of foundations. (6 sch: 2 hr. lecture, 8 hr. lab)
Prerequisites: None

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Course Name: Forming Applications
Course Abbreviation: CAV 1123
Classification: Vocational-Technical Elective
Description: This course includes forming applications for foundations, flatwork, reinforcing concrete, patented forms, and tilt-up wall systems. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisites: Foundations (CAV 1116**)**

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Course Name: Blueprint Reading
Course Abbreviation: CAV 1133
Classification: Vocational-Technical Core
Description: This course includes the elements of residential plans and how to prepare a bill of materials from a set of plans. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisites: None

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Course Name: Floor and Wall Framing
Course Abbreviation: CAV 1236
Classification: Vocational-Technical Core
Description: This course is designed to give the student experience in floor and wall framing. (6 sch: 2 hr. lecture, 8 hr. lab)
Prerequisites: None

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Course Name: Ceiling and Roof Framing
Course Abbreviation: CAV 1245
Classification: Vocational-Technical Core
Description: This course will apply the techniques of cutting and assembly of framing materials based on predetermined specifications. (5 sch: 1 hr. lecture, 8 hr. lab)
Prerequisites: None

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Course Name: Interior Finishing and Cabinet Making

Course Abbreviation: CAV 1316
Classification: Vocational-Technical Core
Description: This course includes thermal and sound protection, types of interior ceilings, wall coverings, floor coverings, trim work, and cabinet construction. (6 sch: 2 hr. lecture, 8 hr. lab)
Prerequisites: None

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Course Name: Roofing
Course Abbreviation: CAV 1413
Classification: Vocational-Technical Core
Description: This course covers types of roofs, types of roofing materials, and their application. Also covered are basic roofing techniques, including material selection, roof styles, cost estimation, and installation procedures. (3 sch: 1 hr. lecture, 4 hr. lab)
Prerequisites: None

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Course Name: Exterior Finishing
Course Abbreviation: CAV 1513
Classification: Vocational-Technical Core
Description: This course includes the installation and finishing of wall coverings, cornices, and exterior trim. (3 sch: 1 hr. lecture, 4 hr. lab)
Prerequisites: None

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Course Name: Principles of Multi-family and Light Commercial Construction
Course Abbreviation: CAV 2113
Classification: Vocational-Technical Core (Two-Year Certificate; Associate Degree)
Description: This course examines the fundamentals of multi-family and light commercial construction. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisites: None

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Course Name: Advanced Cabinet Making
Course Abbreviation: CAV 2133
Classification: Vocational-Technical Elective
Description: This course includes principles of building and installation of cabinets, drawers, and shelves. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisites: Interior Finishing and Cabinet Making (CAV 1316)

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Course Name: Advanced Interior Finishing
Course Abbreviation: CAV 2313
Classification: Vocational-Technical Elective
Description: This course includes procedures for advanced ceiling and wall interior finishing and for stair calculation and construction. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisites: Interior Finishing and Cabinet Making (CAV 1316)

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Course Name: Special Problem in Residential Carpentry Technology
Course Abbreviation: CAV 291(1-3)
Classification: Vocational-Technical Elective
Description: A course to provide students with an opportunity to utilize skills and knowledge gained in other Residential Carpentry Technology courses. The instructor and student work closely together to select a topic and establish criteria for completion of the project. (1-3 sch: 2-6 hr. lab)
Prerequisites: Sophomore standing in Residential Carpentry Technology or consent of the instructor

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Course Name: Supervised Work Experience in Residential Carpentry Technology
Course Abbreviation: CAV 292(1-6)
Classification: Vocational-Technical Elective
Description: A course which is a cooperative program between industry and education designed to integrate the student's technical studies with industrial experience. Variable credit is awarded on the basis of one semester hour per 45 industrial contact hours. (1-6 sch: 3-18 hr. externship)
Prerequisites: Consent of instructor and completion of at least one semester of advanced coursework in Residential Carpentry.

TOOL AND DIE TECHNOLOGY

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Course Name: Safety and Fundamentals of Die Fabrication
Course Abbreviation: TDT 1113
Classification: Vocational-Technical Core
Description: Fundamentals of tool and die fabrication procedures including an orientation to metallurgy and instruction of die fabrication. (3 sch: 1 hr. lecture, 4 hr. lab)
Prerequisite: None

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Course Name: Die Repair
Course Abbreviation: TDT 1123
Classification: Vocational-Technical Elective
Description: Repair and maintenance of industrial dies, including practice using industrial dies. (3 sch: 1 hr. lecture, 4 hr. lab)
Prerequisite: None

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Course Name: Die Design I
Course Abbreviation: TDT 1133
Classification: Vocational-Technical Core (Tool and Die Technology Associate Degree)
Description: Basic design of industrial dies which includes instruction and practice in calculations and processes of die design. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: None

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Course Name: Die Fabrication I
Course Abbreviation: TDT 1144
Classification: Vocational-Technical Core
Description: Die fabricating procedures which includes instruction and safe practice in fabrication, heat treatment, and finishing dies. (4 sch: 1 hr. lecture, 6 hr. lab)
Prerequisite: Safety and Fundamentals of Die Fabrication (TDT 1113)

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Course Name: Die Design II
Course Abbreviation: TDT 2153
Classification: Vocational-Technical Core (Tool and Die Technology Associate Degree)
Description: Continuation of Die Design I which includes instruction and practice in designing different types of dies used in industry. (3 sch: 1 hr. lecture, 4 hr. lab)
Prerequisite: Die Design I (TDT 1133)

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Course Name: Die Fabrication II

Course Abbreviation: TDT 2164
Classification: Vocational-Technical Core (Tool and Die Technology Associate Degree)
Description: Continuation of Die Fabrication I with emphasis on safe fabrication of complex types of dies. (4 sch: 1 hr. lecture, 6 hr. lab)
Prerequisite: Die Fabrication I (TDT 1144)

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Course Name: Die Fabrication III
Course Abbreviation: TDT 2174
Classification: Vocational-Technical Core (Tool and Die Technology Associate Degree)
Description: Specialized skills associated with the design and fabrication of work holding devices including jigs, fixtures, and other tools. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: None

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Course Name: Jigs, Fixtures, and Tools
Course Abbreviation: TDT 2183
Classification: Vocational-Technical Elective
Description: Specialized skills associated with the design and fabrication of work holding devices including jigs, fixtures, and other tools. (3 sch: 1 hr. lecture, 4 hr. lab)
Prerequisite: None

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Course Name: Computer Numerical Control Operations III
Course Abbreviation: TDT 2233
Classification: Vocational-Technical Core (Tool and Die Technology Associate Degree)
Description: Continuation of Computerized Numerical Operations II with special emphasis on die fabrication. The course includes instruction and safe practices in the use of the wire electrical discharge machine (WEDM). (3 sch: 1 hr. lecture, 4 hr. lab)
Prerequisite: Computer Numerical Control Operations II (MST 2724-5)

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Course Name: Special Problem in Tool and Die Technology
Course Abbreviation: TDT 291(1-3)
Classification: Vocational-Technical Elective
Description: A course to provide students with an opportunity to utilize skills and knowledge gained in other Tool and Die Technology courses. The instructor and student work closely together to select a topic and establish criteria for completion of the project. (1-3 sch: 2-6 hr. lab)
Prerequisite: Consent of instructor

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Course Name: Supervised Work Experience in Tool and Die Technology
Course Abbreviation: TDT 292(1-6)
Classification: Vocational-Technical Elective (Tool and Die Technology Associate Degree)

Description: A course which is a cooperative program between industry and education designed to integrate the student's technical studies with industrial experience. Variable credit is awarded on the basis of one semester hour per 45 industrial contact hours. (1-6 sch: 3-18 hr. externship)
Prerequisite: Consent of instructor and completion of at least one semester of advanced coursework in Tool and Die Technology.

WELDING AND CUTTING TECHNOLOGY

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Course Name: Shielded Metal Arc Welding I
Course Abbreviation: WLV 1116
Classification: Vocational-Technical Core
Description: This course is designed to teach students welding techniques using E-6010 electrodes. (6 sch: 1 hr. lecture, 10 hr. lab)
Prerequisites: None

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Course Name: Gas Metal Arc Welding (GMAW)
Course Abbreviation: WLV 1124
Classification: Vocational-Technical Core
Description: This course is designed to give the student experience in various welding applications with the GMAW welder including short circuiting and/or pulsed transfer. (4 sch: 1 hr. lecture, 6 hr. lab)
Prerequisites: None

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Course Name: Gas Tungsten Arc Welding (GTAW)
Course Abbreviation: WLV 1136
Classification: Vocational-Technical Core
Description: This course is designed to give the student experience in various welding applications using the GTAW process. (6 sch: 1 hr. lecture, 10 hr. lab)
Prerequisites: None

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Course Name: Flux Cored Arc Welding (FCAW)
Course Abbreviation: WLV 1143
Classification: Vocational-Technical Core
Description: This course is designed to give the student experience using FCAW process. (3 sch: 1 hr. lecture, 4 hr. lab)
Prerequisites: None

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Course Name: Pipe Welding
Course Abbreviation: WLV 1155
Classification: Vocational-Technical Elective
Description: This course is designed to give the student experience in pipe welding procedures. (5 sch: 1 hr. lecture, 8 hr. lab)
Prerequisites: Shielded Metal Arc Welding I (WLV 1116), Shielded Metal Arc Welding II (WLV 1226)

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Course Name: Gas Metal Arc Aluminum Welding
Course Abbreviation: WLV 1162
Classification: Vocational-Technical Elective
Description: This course is designed to give the student experience in Gas Metal Aluminum Welding. (2 sch: 1 hr. lecture, 2 hr. lab)
Prerequisites: None

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Course Name: Welding Safety, Inspection and Testing Principles
Course Abbreviation: WLV 1171
Classification: Vocational-Technical Core
Description: This course is designed to give the student experience in safety procedures, inspection and testing of welds. (1 sch: 2 hr. lab)
Prerequisites: None

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Course Name: Shielded Metal Arc Welding II
Course Abbreviation: WLV 1226
Classification: Vocational-Technical Core
Description: This course is designed to teach students welding techniques using E-7018 electrodes. (6 sch: 1 hr. lecture, 10 hr. lab)
Prerequisites: None

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Course Name: Drawing and Welding Symbol Interpretation
Course Abbreviation: WLV 1232
Classification: Vocational-Technical Core
Description: This course is designed to give the student experience in reading welding symbols and drawings. (2 sch: 1 hr. lecture, 2 hr. lab)
Prerequisites: None

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Course Name: Advanced Pipe Welding
Course Abbreviation: WLV 1252
Classification: Vocational-Technical Elective
Description: This course is designed to give the student advanced pipe welding techniques using shielded metal arc and gas tungsten arc welding processes. (2 sch: 1 hr. lecture, 2 hr. lab)
Prerequisites: Pipe Welding (WLV 1155)

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Course Name: Cutting Processes
Course Abbreviation: WLV 1314
Classification: Vocational-Technical Core

Description: This course is designed to give the student experience in oxyfuel cutting principles and practices, air carbon cutting and gouging, and plasma arc cutting. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisites: None

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Course Name: Special Problem in Welding and Cutting Technology
Course Abbreviation: WLV 191(1-3)
Classification: Vocational-Technical Elective
Description: A course to provide students with an opportunity to utilize skills and knowledge gained in other Welding and Cutting Technology courses. The instructor and student work closely together to select a topic and establish criteria for completion of the project. (1-3 sch: 2-6 hr. lab)
Prerequisites: Consent of instructor

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Course Name: Supervised Work Experience in Welding and Cutting Technology
Course Abbreviation: WLV 192(1-6)
Classification: Vocational-Technical Elective
Description: A course which is a cooperative program between industry and education designed to integrate the student's technical studies with industrial experience. Variable credit is awarded on the basis of one semester hour per 45 industrial contact hours. (1-6 sch: 3-18 hr. externship)
Prerequisite: Consent of instructor and completion of at least one semester of advanced coursework in Welding and Cutting Technology.

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Course Name: Welding Metallurgy
Course Abbreviation: WLV 2812
Classification: Vocational-Technical Elective
Description: This course is designed to give the student experience in the concept of metallurgy and how metals react to internal and external strains and temperature changes. (2 sch: 2 hr. lec, 1 lab)
Prerequisites: None

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Course Name: Welding Code
Course Abbreviation: WLV 2913
Classification: Vocational-Technical Core
Description: This course is designed to give the student experience in the various welding codes and the experience in interpretation of these codes. (3 sch: lecture)
Prerequisites: None

WELL CONSTRUCTION

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Course Name: Maintenance Mechanics
Course Abbreviation: WDT 1113
Classification: Vocational-Technical Core
Description: This course includes the functions and demonstrates the maintenance of levers, inclined planes, cams, mechanical linkages, pulleys, belts, sprockets, gears, and drives. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: None

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Course Name: Rotary Drilling Safety
Course Abbreviation: WDT 1123
Classification: Vocational-Technical Clective
Description: This course explores the safety requirements of rotary drilling including rig, shop, welding, and related equipment safety. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: None

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Course Name: Rotary Rig and Related Equipment
Course Abbreviation: WDT 1136
Classification: Vocational-Technical Core
Description: This course is a study of all facets of rotary rigs and related equipment. (6 sch: 2 hr. lecture, 8 hr. lab)
Prerequisite: None

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Course Name: Operation of Rotary Rig and Related Equipment
Course Abbreviation: WDT 1146
Classification: Vocational-Technical Core
Description: This course includes the operation of the rotary rig and related equipment. (6 sch: 2 hr. lecture, 8 hr. lab)
Prerequisite: None

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Course Name: Drilling Fluids
Course Abbreviation: WDT 1314
Classification: Vocational-Technical Core
Description: This course includes the functions and properties of drilling fluids. Included are the different types of mud and methods of controlling densities and viscosities of muds. (4 sch: 2 hr. lecture, 4 hr. lab)
Prerequisite: None

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Course Name: Geological Formations
Course Abbreviation: WDT 1513
Classification: Vocational-Technical Core
Description: This is a basic course in investigating the occurrence of ground water. Included are basic geology and hydrology and formations related to ground water. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: None

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Course Name: Metal Fabrication for Well Drilling
Course Abbreviation: WDT 1613
Classification: Vocational-Technical Core
Description: This course includes welding safety, gas and electric welding, and basic machine shop operation as related to well construction operations. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: None

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Course Name: Pump Theory and Installation
Course Abbreviation: WDT 2223
Classification: Vocational-Technical Core (Associate Degree)
Description: This course includes the selection of pumps for specific applications, installation of pumps, servicing of pumps, and maintenance of pump components. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: None

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Course Name: Well Testing and Completion
Course Abbreviation: WDT 2233
Classification: Vocational-Technical Core (Associate Degree)
Description: This course is a detailed study of different well completion methods and their applications. (3 sch: 1 hr. lecture, 4 hr. lab)
Prerequisite: None

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Course Name: Down-hole Problems
Course Abbreviation: WDT 2333
Classification: Vocational-Technical Core (Associate Degree)
Description: This is a course which addresses problems of maintaining a straight hole when drilling. Included are fishing for lost tools, lost circulation zones, and other down-hole problems. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: None

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Course Name: Water Well Construction
Course Abbreviation: WDT 2423
Classification: Vocational-Technical Core (Associate Degree)
Description: This course is a detailed study of the drilling, development, and production of water supply wells. Included are the legal responsibilities of a drilling contractor and investigation of the sanitary aspects of a well. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: None

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Course Name: Environmental and Geotechnical Drilling
Course Abbreviation: WDT 2433
Classification: Vocational-Technical Core (Associate Degree)
Description: This is a detailed course covering all aspects of environmental drilling. Included are hazardous materials recognition, identification, and safe handling. A study of the various methods of soil sampling used in geological and environmental investigations. (3 sch: 2 hr. lecture, 2 hr. lab)
Prerequisite: None

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Course Name: Special Problem in Well Construction Technology
Course Abbreviation: WDT 291(1-3)
Classification: Vocational-Technical Elective
Description: A course to provide students with an opportunity to utilize skills and knowledge gained in other Well Construction Technology courses. The instructor and student work closely together to select a topic and establish criteria for completion of the project. (1-3 sch: 2-6 hr. lab)
Prerequisite: Consent of instructor

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Course Name: Supervised Work Experience in Well Construction Technology
Course Abbreviation: WDT 292(1-6)
Classification: Vocational-Technical Elective
Description: A course which is a cooperative program between industry and education designed to integrate the student's technical studies with industrial experience. Variable credit is awarded on the basis of one semester hour per 45 industrial contact hours. (1-6 sch: 3-18 hr. externship)
Prerequisite: Consent of instructor and completion of at least one semester of advanced coursework in Well Construction Technology.

WORK-BASED LEARNING

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Course Name: Work-Based Learning I, II, III, IV, V, and VI
Course Abbreviation: WBL 191(1-3), WBL 192(1-3), WBL 193(1-3), WBL 291(1-3), WBL 292(1-3), and WBL 293(1-3)
Classification: Free Elective
Description: A structured work-site learning experience in which the student, program area teacher, Work-Based Learning Coordinator, and worksite supervisor/mentor develop and implement an educational training agreement. Designed to integrate the student's academic and technical skills into a work environment. May include regular meetings and seminars with school personnel and employers for supplemental instruction and progress reviews. (1-3 sch: 3-9 hours externship)
Prerequisite: Concurrent enrollment in vocational-technical program area courses