North Carolina

Standard Course of Study GUIDE

Agricultural Education

Business and Information Technology Education

Career Development

Family and Consumer Sciences Education

Health Occupations Education

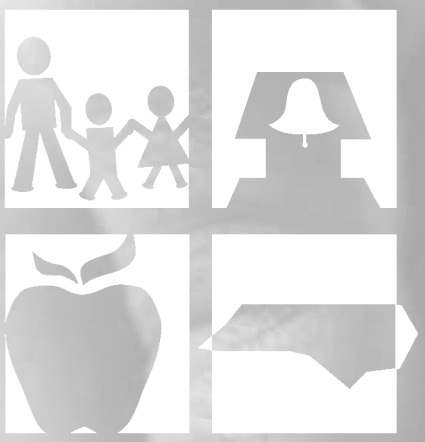
Marketing Education

Middle Grades Education

Technology Education

Trade and Industrial Education

Support Services
Career Development Coordination
Special Populations Services



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FOREWORD

This document has been prepared to assist local school systems in planning effective and comprehensive career-technical education programs. It contains information about planning, required resources, instructional guidelines, and program area offerings.

This document reflects the need for local school systems to have flexibility to accommodate varying local patterns of organization, resources, and needs. It has been prepared with input from over 170 business/industry representatives, 424 local school administrators, 323 students enrolled in career-technical programs and approximately 3,100 teachers. We appreciate their invaluable input and suggestions.

We believe that this document will have a positive influence on thousands of North Carolina students who take career-technical courses. As a result, the economic development of our State will also be enhanced.

June S. Atkinson, Director
Division of Instructional Services

PREFACE

The *North Carolina Standard Course of Study Guide* is to be used to plan career-technical education programs beginning with the 2004-05 school year.

Part I provides a program description for career-technical education programs. Subparts include information related to planning, resources, work-based learning, other delivery approaches, and local course options.

Part II highlights specific planning information for each career-technical program area. The content is outlined by program descriptions, major program objectives, scope and sequence, and course descriptions.

Part III describes support services to be made available for students in career-technical programs. The Career Development Coordination section lists major functions and describes major program outcomes. Special Populations sections has a program description, objectives, description of eligible target groups, definitions of disabling conditions, service delivery strategies, and enrollment guidelines.

Career-technical student organizations (CTSOs) are an integral part of career-technical programs. Appendix A includes information about each of the eight CTSOs that serve students enrolled in career-technical progams.

Some local situations may require other modifications in the offering of career technical courses. When these occur, a modification procedure has been developed and necessary forms for submitting a modification request is found in Appendix B. Career-technical student organizations (CTSOs) are also described in the appendices.

CAREER-TECHNICAL EDUCATION
STANDARD COURSE OF STUDY GUIDE
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Note: Work-based learning methods such as internships, cooperative education, and apprenticeships may be a part of any course in grades 9-12.

Career-Technical Education Course Offerings
Grades 6-12

Program Areas	Grades 6-8	High School Levels			
		Level 1	Level 2	Level 3	Level 4
Family and Consumer Sciences Education	Exploring Life Skills	Teen Living		Life Management	Family and Consumer Sciences Adv. Studies
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Note: Work-based learning methods such as internships, cooperative education, and apprenticeships may be a part of any course in grades 9-12.

Career-Technical Education Course Offerings
Grades 6-12

Program Areas	High School Levels			
	Level 1	Level 2	Level 3	Level 4
Trade and Industrial Education	Introduction to Trade & Industrial Education			Trade and Industrial Education Advanced Studies
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Note: Work-based learning methods such as internships, cooperative education, and apprenticeships may be a part of any course in grades 9-12.

Part I
Career-Technical Education In North Carolina

A. PLANNING FOR CAREER-TECHNICAL EDUCATION

MISSION AND PURPOSE

The mission of career-technical education (CTE) is to help empower students for effective participation in an international economy as world-class workers and citizens.

Career-technical education fulfills this mission by:

1. Preparing students for postsecondary education in career-technical fields and lifelong learning.
2. Preparing students for initial and continued employment.
3. Assisting students in making educational and career decisions.
4. Applying and reinforcing related learning from other disciplines.
5. Assisting students in developing decision-making, communication, problem-solving, leadership, and citizenship skills.
6. Preparing students to make informed consumer decisions and apply practical life skills.
7. Making appropriate provisions for students with special needs to succeed in career-technical education programs.

PROGRAM AREAS

Competency-based courses are offered in eight program areas, with each area having school-based, work-based, or community-based learning opportunities.

1. Agricultural Education
2. Business and Information Technology Education
3. Career Development Education
4. Family and Consumer Sciences Education
5. Health Occupations Education
6. Marketing Education
7. Technology Education
8. Trade and Industrial Education

Combined with other academic offerings, career-technical education assists all enrollees with career goals and high school graduation requirements. Students are to have a career development plan outlining courses to be taken to meet a tentative career objective and obtain a high school diploma.

COMMON GOALS*

All programs in career-technical education are designed to contribute to the broad educational achievement of students. These programs contribute to students being able to

COMMON GOALS* (continued)

1. Identify, organize, plan, and allocate resources – time, money, materials and facilities, and human resources.
2. Work with others by participating as a team member, serving clients/customers, negotiating, and working with diversity.
3. Acquire and use information.
4. Work with and operate effectively within social organizations and technological systems.
5. Work with a variety of technologies.
6. Contribute to the development of reading, writing, listening, speaking, and mathematical skills.
7. Contribute to the development of thinking creatively, making decisions, solving problems, and reasoning.

* These goals are based on the Secretary's Commission on Achieving Necessary Skills (SCANS) Report.

STATE BOARD OF EDUCATION RESPONSIBILITIES

The State Board of Education is responsible for providing direction and leadership to career-technical education. The State Board of Education's guidelines are outlined in the *ABCs of Public Education, Basic Education Program,* and the *Master Plan for Career-Technical Education.*

The ABCs has three major emphases:

1. Accountability: Schools are held accountable for student progress. The teachers and principal at each school are responsible for how well they teach children.
2. Basics: Schools are to focus on the care of a good, solid education: reading, writing, and mathematics.
3. Control: Individual schools are given maximum flexibility to decide where to channel their efforts and their resources to achieve success.

The *Basic Education Program* for North Carolina's Public Schools outlines the curriculum which should be provided in all schools throughout the state. Career-technical education is one of the curriculum areas included.

MASTER PLAN

The *Master Plan for Career-Technical Education* establishes the philosophy and framework of the State Board of Education for career-technical education. The framework of the State Board of Education includes the following:

1. Courses should be available to students without regard to race, sex, national origin, or handicap.
2. Teaching transferable and thinking skills is important in preparing students to adapt to a changing work environment.
3. Instruction should provide opportunities for students to apply communication, computational, scientific, and other academic skills to specific areas.

MASTER PLAN (continued)

4. Input from local advisory committees, employment data, community surveys, student surveys, and student follow-up are necessary in planning, implementing, and evaluating local programs.
5. Students are provided opportunities to earn industry credentials or certifications documenting specific competencies achieved through participation in a career-technical education program.
6. Counselors and teachers should coordinate programs with business and industry to ensure that educational objectives match work requirements. Additionally, work experiences achieved through shadowing, internships, cooperative on-the-job training, or apprenticeships ensure an easy transition from a student to a competent, wage earner.
7. All students in career-technical programs have an opportunity to develop and extend their learnings through participation in active career-technical student organizations. The program of work for each organization should be based on instructional competencies and be an integral part of the program.
8. Strong career development, guidance, counseling, job placement, and follow-up services are to be available to assist students in planning for their careers and enrolling in appropriate courses. All students should have tentative career development plans.
9. Parents are to be actively involved in helping their children choose courses.
10. Full cooperation, communication, and coordination between secondary schools and community colleges are necessary for each student advancing to a higher education level.

CAREER-TECHNICAL STUDENT ORGANIZATIONS (CTSOs)

A career-technical student organization (CTSO) is an integral part of each program area's curriculum. The CTSOs are

Agricultural Education -- (FFA)
Business and Information Technology Education -- Future Business Leaders of America (FBLA)
Family and Consumer Sciences Education -- Family, Career and Community Leaders of America (FCCLA)
Health Occupations Education -- Health Occupations Students of America (HOSA)
Marketing Education -- (DECA)
Middle Grades Students -- Career Exploration Clubs of North Carolina (CECNC)
Technology Education -- Technology Student Association (TSA)
Trade and Industrial Education -- (SkillsUSA)

Any student enrolled in a career-technical course is eligible for membership in the career-technical student organization associated with that program.

(CTSOs) (continued)

CTSOs develop character, citizenship, technical, leadership, and teamwork skills essential for students who are preparing for the workforce and further education. They enhance students' civic awareness and provide opportunities for developing social competencies and a wholesome attitude about living and working.

CTSOs provide a unique instructional method for attaining the competency goals and objectives identified in each course. Their activities are considered a part of the instructional day when they are directly related to the competencies and objectives in the course blueprints.

DETERMINING PROGRAM OFFERINGS

Career-technical education planners determine local program offerings by considering the following:

1. Availability of resources.
2. Changes in population characteristics.
3. Labor needs in new and emerging occupations, including small business ownership.
4. Labor needs in existing occupations and career pathways with greater than average anticipated growth.
5. Rates of increase in employment projected for the service sector of the public and private economy.
6. Projected increase in occupations requiring technical skills.
7. Impact of technology on consumer decision making.
8. Impact of managing personal, family, and work lives.
9. Community and technical college offerings.
10. Availability of technology.
11. Student and employment demand in career pathways.

When determining local program offerings for a school or a total school system, local planning personnel should organize a comprehensive and appropriate sequence of career-technical education offerings for students enrolled in grades 6-12. These offerings should be based on an assessment of student needs, interests and aspirations and labor market demands and projections.

EVALUATING PROGRAM ACCOMPLISHMENTS

Consistently high quality local programs can be ensured through a system of continuing qualitative and quantitative evaluation and reporting of programs, services, and activities. The State Board of Education has the primary responsibility for statewide evaluation of career-technical education programs.

Local program evaluation is based on the State Board of Education's adopted performance measures and standards. These measures include: academic and technical attainment, credentials, placement and follow-up, and nontraditional enrollment and completion. All enrollees, including members of special populations, are assessed by

these measures and standards at the local level. Annually, local school systems must determine if these standards are met, or if substantial progress is being made to meet the standards. Local evaluations are disaggregated by courses, programs, sites, gender, and special population categories.

STUDENT ACHIEVEMENT AND PROGRESS

Student achievement and progress may be evaluated by using criterion-referenced measures such as:

- Written and oral pre- and post-assessments.
- Performance tests with teacher or employer rating checklists.
- Performance gains.
- Observation of performance in class and on-the-job settings by teachers and job supervisors.
- Evaluation of projects and products completed by the student, using checklists and rating scales.
- Follow-up studies with students and employers.

Testing instruments and procedures may be designed locally or obtained from another source. Sources include the computerized competency/test-item banks available from Career-Technical Education, North Carolina Department of Public Instruction. This resource is a part of the Career-Technical Education Instructional Management System, which is called VOCATs.

Reports of enrollment, student and employer follow-up, and performance measures and standards constitute data bases for local program planners and state staff. Other sources include labor market, demographic, teacher, student, and program data. These data sets should be used in making programmatic decisions, for program review and improvement, for guidance, and as a basis for marketing career-technical education to internal and external audiences.

PARTNERSHIPS WITH COMMUNITY AND TECHNICAL COLLEGES

COORDINATION

Coordinating secondary and community and technical college programs is important in helping students make a smooth transition from one level of instruction to another without their experiencing delays or loss of credit. Articulation models include time-shortened, advanced skills, and technical preparation associate degree programs.

TIME-SHORTENED PROGRAMS

Time-shortened programs eliminate unnecessary redundancy in educational experiences. They grant advanced placement to high school students entering a postsecondary program. As a result, students complete an occupational specialty or associate degree more quickly than a normal postsecondary program would allow.

ADVANCED SKILLS PROGRAMS

Advanced skills programs streamline educational experiences for grades 11-14 in order to incorporate more advanced training than a traditional program would provide. It allows students who have mastered academic or technical skills in high school to bypass some introductory postsecondary courses, thus allowing more time for advanced skills courses.

COLLEGE TECH PREP

A college tech prep program is a sequential course of study designed to meet the need for graduates to have more technically-oriented educational preparation. Through a blending of higher level academic and career-technical courses, college tech prep prepares students for increasingly sophisticated technical occupations. It combines English, mathematics, science, career-technical course sequences, and other graduation requirements.

College tech prep combines secondary and postsecondary programs that:

- Provide technical preparation in at least one field of engineering technology, applied science, mechanical, industrial, or practical art or trade, or agriculture, health, or business.
- Build student competence in mathematics, science, and communications (including applied academics) through a sequential course of study.
- Lead to placement in employment.

Any model should have:

- Leadership and commitment from top administrators.
- Early faculty involvement.
- Written articulation agreements.
- Open and frequent communications.
- Clearly defined responsibilities and goals.
- Clearly identifiable courses of study.
- Competency-based curriculum.
- Common focus on mutual goals.
- Integration of academic and career-technical education.
- Curriculum alignment.
- Career and development counseling.
- Assessment and evaluation.
- Parental involvement.
- Work-based learning.

B. RESOURCES

PERSONNEL

Local boards of education are responsible for securing the persons best qualified for their career-technical education programs. CTE staff include teachers, administration, and support personnel such as career development, special populations, and VoCATS coordinators. Selection must be subject to licensure standards approved by the State Board of Education.

Additional information related to licensure may be obtained by referring to the licensure guidelines available from the Division of Human Resource Management.

TEACHER RESPONSIBILITIES

Career-technical teachers should have the personal qualities, professional preparation, appropriate license, and work experience to carry out their teaching responsibilities effectively. The number and variety of course offerings determine the number of career-technical teachers needed in a school. Single teacher staffing can and will limit the number of courses offered. A sequence which extends from introductory study to specialized occupational areas usually requires multiple staffing.

The major duties of career-technical education teachers include:

- Preparing and implementing instructional plans.
- Working with business/industry representatives.
- Evaluating student progress.
- Implementing career-technical student organizations (CTSOs) leadership and instructional activities in and out of the classroom.
- Organizing and maintaining tools, equipment, and the facility.

An increasing number of teachers also have responsibility for using work-based learning activities such as cooperative on-the-job training, internships, apprenticeships, and supervision of school-based enterprises.

Sponsoring CTSOs requires planning meetings, both at the local and regional levels, which may occur in the evening or on weekends. One lead advisor should be appointed to coordinate CTSO activities and responsibilities for each program area.

Each of these major categories requires adequate time for preparation, often prior to school and after regular instructional time. Additional time should be provided if the teacher maintains laboratory equipment or coordinates work-based learning. Teachers should have adequate time for instructional preparation.

PROFESSIONAL DEVELOPMENT

A school system should have a professional development program which assures that:

PROFESSIONAL DEVELOPMENT (continued)

1. Activities are provided in accordance with identified professional, skill area, and individual growth and development needs of personnel.
2. An assessment has been conducted to identify staff development needs of career-technical education personnel.
3. The selection of in-service topics and activities is based on identified needs within the instructional program.
4. Teachers and other concerned personnel are informed regarding staff development opportunities available within and outside the local administrative unit, including colleges, universities, businesses and postsecondary institutions.
5. Teachers and other personnel are made aware of the components in the school system's staff development plan.
6. In-service activities offer practical methods to improve instruction and expedite job responsibilities.
7. Within reason, inservice activities are readily available and conveniently scheduled for participants.
8. Teacher and support staff are provided opportunities to participate in at least one annual staff development activity related to their teaching assignments and/or areas of licensure.

FACILITIES

Success of career-technical programs is dependent on adequate and well-equipped facilities which stay current with the business, industry, and other employment categories they represent. To assure successful learning, the physical facilities for each program should meet the following requirements:

1. Size and space for each program is adequate to accommodate the number of students enrolled.
2. Space is arranged for maximum flexibility and ease in teacher supervision of multiple activities.
3. Permanent furnishings and equipment are adequate in number and in good operating condition.
4. There is adequate provision for maintaining service systems in good working condition (e.g., electricity, water, light control).
5. Classrooms, laboratories, auxiliary areas (finish rooms, storage), and other facilities are adequate in design, suitability, and quantity to enable students to meet the specified objectives.
6. Each teacher is assigned a conveniently located, furnished, and equipped area for planning, record keeping, consultation, and administration.
7. All facilities meet the requirements of the Environmental Protection Agency (www.epa.gov) and Occupational Safety and Health Act (www.osha.gov).
8. Restrooms and dressing rooms are located to provide convenient access to students of either sex.
9. Facilities have been modified to accommodate disabled students.

FACILITIES (continued)

10. Adequate provisions exist for the safety and health of students and teachers.

For further information about facilities, refer to the Career-Technical Education Facilities Planner, (http://www.schoolclearinghouse.org/pubs/facguid.pdf)

EQUIPMENT, MATERIALS, AND SUPPLIES

Students differ widely in interests, abilities, background, learning styles, prerequisite knowledge, and skills. The variations which exist in students make it equally important that a wide range of current and bias-free instructional materials be made available to students.

If students are to get the most out of occupational and practical life skills, they must have the opportunity to practice the tasks involved. This means that an appropriate quantity of consumable supplies must be available to students for practice and demonstration activities.

Rapid changes in technology require a regular updating of tools, equipment, and even raw materials. The school system must respond to modern technological advances by maintaining an on-going schedule for updating all tools, equipment, and materials used by students in laboratory activities. In general, the school system should plan to have the following available for each program:

1. Basic equipment and instructional aids in adequate quantity, quality, and currency to permit appropriate practice in laboratory instruction.
2. A budget that permits adding, replacing, and updating equipment and materials.
3. A budget that permits consumable supplies (such as food, lumber, ingredients for mortar, etc.) to be made available in sufficient quantities and at appropriate times.
4. Currently-adopted textbooks (or their equivalent) and pertinent supplementary books readily available in adequate supply and in usable condition.
5. A variety of bias-free instructional materials that can accommodate a great diversity of student interests.

Also, the school system should make sure that all tools and equipment are kept repaired and in good working order. Adequate instructional support and resource materials should be available at each teaching station or easily obtained from the media center or other central location.

For further information about specific equipment, refer to the Equipment Standards for Career-Technical Education.
(NCPublicSchools.org/workforce_development/publications/equipment_standards/index.html)

FUNDING

Career-technical education programs are funded through a combination of state, federal, and local resources. The State Board of Education is committed to a funding formula which provides state funds for the support of a statewide secondary program. Federal career-technical education funds allocated to local boards of education are to be spent according to federal criteria and purposes.

Local boards of education receive state and federal funds on the basis of a continuing plan and an annual application for career-technical education. This plan is to be developed with the advice of local advisory committees and is to be consistent with criteria set up by legislation and State Board of Education policy. The career-technical monies may be used to:

1. Employ CTE instructional and supportive personnel.
2. Purchase CTE instructional materials, supplies, and equipment.
3. Conduct certain other activities which contribute to the state and local goals/objectives of the career-technical program and which are consistent with criteria for their use.

State and federal career-technical funds made available are to be used to supplement the amount of local funds that would, in the absence of career-technical funds, be made available for career-technical education and in no case supplant funds.

All career-technical education courses identified in the course descriptions sections of this document are eligible for career-technical funding when offered in an approved scope and sequence and according to the guidelines in the *Career-Technical Education Fiscal and Policy Guide*. (www.NCPublicSchools.org/workforce_development/management/index.html)

CURRICULUM PLANNING

It is critical to the success of a program's implementation or expansion that planning precede student enrollment. This planning time is to be used by administrative personnel to:

1. Conduct student interest, community, and employment surveys to determine if there is a need for the program.
2. Review industry credentials, where available.
3. Select an advisory committee composed of business, industry, and lay community representatives who jointly collaborate with educators in the decision-making process.
4. Assess whether the program will contribute to graduation requirements specified by the State Board of Education adopted in June 2000. (e.g. contribution to a career pathway requirement of the Career Prep and College Tech Prep courses of study.)
5. Select a licensed teacher who can begin contributing to the organizational operation of the program. □

CURRICULUM PLANNING (continued)

6. Design and organize classroom/laboratory facilities and obtain equipment, supplies, books, and materials.
7. Assure that local administrators and other school personnel understand and support the total program.
8. Interpret the program to students and the school community.

Course blueprints, with competencies and objectives, and test-item banks, serve as guides for planning and evaluating instruction. Available from the CTE state office, these materials help teachers identify and assess student achievement.

In addition, teachers may need time to develop on-the-job skills and the knowledge required for teaching the course.

ENROLLMENT

Enrollment in each class is to be of a size that ensures effective instruction as prescribed in the individual course descriptions in Part II of this *North Carolina Standard Course of Study Guide.*

Recommended maximum student enrollment is established to maintain proper instructional management and to assure a safe and healthful teaching/learning environment. Maximum figures are suggested for each course of instruction based on the:

1. Degree to which student safety is involved in the learning process.
2. Desired level of learning outcomes for students in the course.
3. Type of instructional activities involved.
4. Type, quantity, and size of instructional equipment, materials, and supplies.
5. Amount of space needed by students and teachers for instructional purposes.

Factors influencing the number of students for any particular course should take into consideration availability of shops and laboratories, availability of qualified instructors, adequacy of preparation time, cooperative on-the-job placement, internship arrangements, number of classroom work stations, and class scheduling requirements.

INSTRUCTIONAL ORGANIZATION AND CONTENT

Course offerings within each program area are both competency-based and individualized. Teachers within a program should cooperatively develop a single, comprehensive instructional plan for each course and program in the school and in the school system. Teachers are also responsible for evaluating competencies established for the program. Where appropriate, discussions about gender equity should be incorporated into the curriculum.

C. WORK-BASED LEARNING

OVERVIEW

Work-based learning strategies allow schools to go beyond the classroom and into the community to develop student competence. An essential component of any work-based learning is connecting the workplace to school-based learning. See www.NCPublicSchools.org for State Board of Education policies governing work-based learning.

APPRENTICESHIP

Apprenticeship is one of the oldest methods of job training. This method is an industry-driven education and career training program based on recognized industry standards. It is a means by which employers address current and projected employment needs. This program is a partnership among business, industry, education, North Carolina Department of Labor (DOL), parents and youth apprentices. Some apprenticeship characteristics are

- Use of a skilled journeyman to help instruct the apprentice.
- Combination of classroom-related instruction with structured work-based learning.
- Employment by an employer who has a direct need for trainees in the occupation.
- Incremental pay scale that increases with skill and knowledge development.
- Training of a highly skilled technician or craft person.
- Appropriate for occupations that do not require a college degree but require a high level of skill and knowledge.
- Registration by the North Carolina Department of Labor, Apprenticeship and Training Division. The Division provides free assistance to the employer and to the apprentice and certifies both the training program and the newly trained journeyman.
- Application of high school apprenticeship hours and experience toward an adult apprenticeship leading to a completed journeyman certificate.
- On-the-job training for each year of participation during high school. The high school student can begin when he/she turns 16 years of age and is part of the high school apprenticeship program. For additional information, refer to North Carolina State Board of Education Policies for work-based learning methods receiving academic credit.

COOPERATIVE EDUCATION

Cooperative career-technical education provides on-the-job training for students through a cooperative agreement among the school, the employer, the parents/guardian, and the student. A cooperative education coordinator is responsible for providing classroom instruction related to the occupation in which the student is placed and for contact with the student and the appropriate supervisor at the training site. Written training agreements and written training plans between the school and the employers are cooperatively developed and available. Such agreements include:

COOPERATIVE EDUCATION (continued)

- Provisions for the employment of student workers in conformity with federal, state, and local laws and regulations and in a manner not resulting in exploitation of such student workers for private gain.
- Related occupational instruction in school.
- Payment of the prevailing wage for employment to student workers and awarding school credit for on-the-job training.

In the classroom, students should receive instruction related to their on-the-job training experiences. A training plan jointly developed by the teacher-coordinator and employer outlines the sequential classroom instruction and on-the-job training a student receives. The training plan is the base for evaluating the student's progress on the job and in the classroom. Each cooperative student is coordinated and supervised by a teacher coordinator.

INTERNSHIPS

Internships allow for additional development of career-technical competencies. Internships are an essential way for today's youth to experience the value of work, develop pride in work, and mature personally. Many communities have opportunities for students to intern in an industry or to work with some community organization addressing a particular problem or need of the business/industry sector.

Internships allow students to observe and participate in daily operations, develop direct contact with job personnel, ask questions about particular careers, and perform certain job tasks. This activity is exploratory and allows the student to get hands-on experience in a number of related activities.

Possibilities are limited only by the imagination of the students, the staff, and the employment community. The teacher, student, and the business community jointly plan the organization, implementation, and evaluation of an internship, regardless of whether it is an unpaid or paid internship.

SCHOOL-BASED ENTERPRISES

A school-based enterprise engages students in providing services or the production of goods for sale through a school sponsored activity. Individual or sequenced high school courses are set up as actual student-run businesses. Participants learn entrepreneurship, application of skills and knowledge from other courses, and enhance their personal development.

Production work activities are also school-based and are performed by career-technical classes under contract with a second party for remuneration. These activities (e.g., live projects) have always been a vital part of the career-technical education delivery system and are among the most effective instructional methods for developing student competence.

JOB SHADOWING

Job shadowing is an unpaid short term activity that exposes the student to the workplace. The student is allowed to observe an experienced skilled worker in an actual work setting. Job shadowing heightens student understanding of potential career opportunities and depicts a clear connection between the classroom and the workplace. The duration of this activity could be a half day or longer depending on the needs of the student and work place.

SERVICE LEARNING

Service learning is a method by which students learn and develop through active participation in thoughtfully organized service and community service experiences. This method provides students with opportunities to use newly acquired skills and knowledge in real-life situations in their own communities.

D. OTHER DELIVERY APPROACHES

CAREER ACADEMIES

Career academies are designed to integrate academic and career-technical curricula organized around a theme (health careers, electronics, banking, etc.) They encompass a set of jobs ranging from those that require no postsecondary education to those that require advanced degrees. Academies have the following common characteristics:

- Each academy is organized as a "school within a school" where students take a sequence of courses together.
- Each academy has a particular career, occupational or industrial theme.
- Each academy enlists the active involvement in the related sector of local employers.

Local employers are involved in the development and implementation of the curriculum. Employers may also provide equipment, serve as mentors and offer summer work experiences.

CONTRACTS AND AGREEMENTS

Where conditions are not feasible to establish a regular in-school career-technical program, the following alternatives are available:

- Establish a contract or agreement with a private industry, business, training agency, or community and technical college.
- Employ temporary, part-time, hourly personnel for short-term instructional needs.

All contracts, agreements, and part-time or hourly personnel must meet the procedures outlined in the *Career-Technical Education Fiscal and Policy Guide. (www.dpi.state.nc.us/workforce_development/management/index.html)*

E. LOCAL COURSE OPTIONS

Career-technical education courses may be offered in grades 6-12. Course descriptions are given in Part II.

A local education agency may request authorization for offering a course not listed on the course offerings chart by following the procedures outlined in Appendix B. ***This request must be prepared only once when courses are offered in a school system for the first time.***

The following criteria should be used to help a local education agency determine whether to offer a specialized course.

1. The new course will satisfy a currently unfilled community need.
2. The new course is desired by local community and business leaders.
3. The career potential of this new course is permanent and not transitory or temporary in nature and is of sufficient size to assure employment opportunities to students.
4. The course offers attractive career and wage benefits to potential concentrators.
5. A qualified instructor is available.
6. Facilities, equipment, and appropriate instructional materials are available.
7. A curriculum framework is or can be developed which includes:
   - Competency and objective listing (blueprint) verified by business and industry.
   - Content outline.
   - Postassessment.

PART II
Specific Planning Information For Each Career-Technical Education Program Area

AGRICULTURAL EDUCATION

PROGRAM DESCRIPTION

Today, many definitions exist for the term "agriculture." In its vision, agricultural education in North Carolina employs the phrase "food, fiber and environmental systems" to describe a very broad field, best defined by the National Research Council as, "A field that encompasses the production of agricultural commodities, including food, fiber, wood products, horticulture crops, and other plant and animal products. The terms also include financing, processing, marketing and distribution of agricultural products; farm production supply and service industries; health, nutrition and food consumption; the use and conservation of land and water resources; development and maintenance of recreational resources; and related economic, sociological, political, environmental and cultural characteristics of the food and fiber system." This new phrase was chosen in an effort to be inclusive of and to harness the potential of the total agricultural community. *With this in mind, the mission of the agricultural education program is to prepare students for success in the food, fiber and environmental systems*.

Agricultural Education provides students with the opportunity to participate in an integrated educational model that focuses students on careers in the food, fiber and environmental systems. The program is designed to develop technical, leadership and management expertise needed by secondary school students for success in the industry.

DESIGN

The agricultural education program is built on the three core areas of classroom/laboratory instruction, supervised agricultural experience programs and FFA student organization activities/opportunities. The program is designed for delivery through these three components as follows:

- Classroom/Laboratory Instruction – quality instruction in and about agriculture that utilizes a "learning by doing" philosophy.
- Supervised Agricultural Experience Programs – all students are expected to have an agriculturally related work-based learning experience while enrolled in agricultural education courses.
- FFA Student Organization activities/opportunities – FFA activities are an integral part of the agricultural education program that all agricultural education students should participate in if they are to fully benefit from their enrollment in the program.

A quality agricultural education program has a balanced utilization of these three core components. These components are best carried out when the following strategies are employed:

- Community-Based Planning – involvement of the school administration and community in the planning and coordination of the program is essential to success.

- Professional Development – agriculture teachers take advantage of opportunities for professional development and growth.
- Partnerships – the development of alliances with community and business leaders are essential for program success.
- Marketing – every agricultural education program needs a successful marketing strategy in place to attract and retain students and the support of the community that is being served.

When these components and strategies are in place, program success will occur.

MAJOR PROGRAM OUTCOMES

The major program outcomes for students enrolled in an agricultural education program are as follows:

1. Opportunity to explore career options available in agriculturally-related fields to assist them in planning for a future career.
2. Technical skills training for success in an agriculturally-related career.
3. Connectivity of school-based instruction with work-based learning.
4. Leadership and personal development training needed to succeed in an agriculturally-related career including teamwork, problem-solving, and communications.
5. Competitive advantage for students to succeed in an international economy.
6. Commitment to community development and service through projects that require interaction with parents, agribusiness leaders, civic organizations, etc.
7. Development of skills necessary for lifelong learning in agriculture leading to career advancement and success.

PROGRAM UNIQUENESS

The agricultural education program includes program offerings for students in grades 7-12. Students may choose to enter and progress through one of several agricultural education sequences in order to achieve their career goals. The determination of offerings should be based on an assessment that includes a combination of student needs/interests, program enrollment, qualified teaching faculty, industry needs, and community interest/resources.

Exploring Biotechnology may be offered in grades 7-8 as a part of a middle grade career-technical education program. Agriscience Applications is a recommended entry level course for students enrolled in grades 9 through 12. Agricultural Advanced Studies is offered to agricultural education students in their senior year as a course option to demonstrate their ability to use content and apply knowledge to a real-world situation in a career pathway.

COURSE OFFERINGS* Agricultural Education course offerings, grades 7-12, are the following:

Grades 7-8	Levels			
	Level 1	**Level 2**	**Level 3**	**Level 4**
Exploring Biotechnology	Agriscience Applications			Agricultural Advanced Studies
		Agricultural Mechanics I	Agricultural Mechanics II	
			Agricultural Mechanics II- Small Engines	
		Agricultural Production I	Agricultural Production II	
		Animal Science I	Animal Science II	
			Animal Science II - Small Animal	
		Equine Science I	Equine Science II	
		Biotechnology and Agriscience Research I	Biotechnology and Agriscience Research II	
		Environmental and Natural Resources I	Environmental and Natural Resources II	
		Horticulture I	Horticulture II	
			Horticulture II - Turf Grass	
			Horticulture II - Landscape Construction	

*Note: Work-based learning methods such as internships, cooperative education, and apprenticeships may be a part of any course in grades 9-12.

Agricultural Education Course Descriptions

Agricultural Advanced Studies

Course Number: 6899
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

This is a three-phased exit course for seniors that is career focused in agricultural education. The three components of the program include a research paper, a product, and a presentation. Students demonstrate their ability to use content and apply knowledge to real-world situations in a career major. In addition, they will also demonstrate their ability to write, speak, apply knowledge, problem-solve, and use life skills such as time management, planning, follow-through, and organization. Students work under the guidance of a teacher-facilitator in collaboration with community members, business representatives and other school-based personnel. FFA leadership activities are integral components of the course and provide many opportunities for practical application of instructional competencies.

Prerequisite: Three technical credits in Agricultural Education.

Agricultural Mechanics I

Course Number: 6831
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course develops knowledge and technical skills in the broad field of agricultural machinery, equipment, and structures. The primary purpose of this course is to prepare students to handle the day-to-day problems, accidents, and repair needs they will encounter in their chosen agricultural career. Topics include agricultural mechanics safety, agricultural engineering career opportunities, hand/power tool use and selection, electrical wiring, basic metal working, basic agricultural construction skills related to plumbing, concrete, carpentry, basic welding, and leadership development. Skills in physics, geometry, and algebra are reinforced in this course. Work-based learning strategies appropriate for this course are agriscience projects, field trips, shadowing, and supervised agricultural experience. Supervised agricultural experience programs and FFA leadership activities are integral components of the course and provide many opportunities for practical application of instructional competencies.

Prerequisite: None

Agricultural Mechanics II

Course Number: 6832
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course expands upon the knowledge and skills learned in Agricultural Mechanics I. The topics of instruction emphasized are non-metallic agricultural fabrication techniques, metal fabrication technology, safe tool and equipment use, human resource development, hot/cold metal working skills and technology, advanced welding and metal cutting skills, working with plastics, and advanced career exploration/decision-making. Skills in physics, geometry, and algebra are reinforced in this course. Work-based learning strategies appropriate for this course are agriscience projects, internships, cooperative education, apprenticeship, and supervised agricultural experience. Supervised agricultural experience programs and FFA leadership activities are integral components of the course and provide many opportunities for practical application of instructional competencies.

Prerequisite: Agricultural Mechanics I

Agricultural Mechanics II-Small Engines

Course Number: 6833
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

This course provides hands-on instruction and emphasizes small engine systems including the compression, fuel, electrical, cooling and lubrication systems. Troubleshooting methods are emphasized. In addition, students learn how to select engines for specific applications. Materials will be covered to prepare students for the Master Service Technician Exam. Safety skills will be emphasized as well as leadership development and work-based learning. Opportunities exist for students to conduct internships or apprenticeships as small engine technicians.

Prerequisite: Agricultural Mechanics I

Agricultural Production I

Course Number: 6811
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course focuses on the basic scientific principles and processes related to the production of plants and animals for the food and fiber systems. Topics of instruction include basic understanding of the livestock/poultry industry and its various components, career opportunities, soil science, crop science/agronomy, weed science, basic agricultural machinery and related industry careers, environmental stewardship, and leadership/personal development. Skills in algebra and biology are reinforced in this course. Work-based learning strategies appropriate for this course are agriscience projects, internships, and supervised agricultural experience. Supervised agricultural experience programs and FFA leadership activities are integral components of the course and provide many opportunities for practical application of instructional competencies.

Prerequisite: None

Agricultural Production II

Course Number: 6812
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course provides instruction that expands the scientific knowledge and technical skills gained in Agricultural Production I with heavy emphasis on topics including pesticide use and safety, herbicide use and safety, wildlife habitat concerns, irrigation, agricultural equipment technology and safety, global industry issues, career planning, and human resource development. Skills in algebra and biology are reinforced in this course. Work-based learning strategies appropriate for this course are agriscience projects, supervised agricultural experience, and apprenticeship. Supervised agricultural experience programs and FFA leadership activities are integral components of the course and provide many opportunities for practical application of instructional competencies.

Prerequisite: Agricultural Production I

Agriscience Applications

Course Number: 6810
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course focuses on integrating biological/physical sciences with technology as related to the environment, natural resources, food production, science and agribusiness. Topics of instruction include agricultural awareness and literacy, leadership and FFA, employability skills and introduction to all aspects of the total agricultural industry. Skills in biology, language, writing, computers, mathematics, and physics are reinforced in this course. Work-based learning strategies appropriate for this course are field trips, shadowing, agriscience projects, and supervised agricultural experience. Supervised agricultural experience programs and FFA leadership activities are integral components of the course and provide many opportunities for practical application of instructional competencies.

Prerequisite: None

Animal Science I

Course Number: 6821
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course focuses on the basic scientific principles and processes that are involved in animal physiology, breeding, nutrition, and care in preparation for an animal science career major. Topics include animal diseases, introduction to animal science, animal nutrition, animal science issues, career opportunities, and animal evaluation. Skills in biology, chemistry, and algebra are reinforced in this course. Work-based learning strategies appropriate for this course are agriscience projects, internships, and supervised agricultural experience. Supervised agricultural experience programs and FFA leadership activities are integral components of the course and provide many opportunities for practical application of instructional competencies.

Prerequisite: None

Animal Science II

Course Number: 6822
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course includes more advanced scientific principles and communication skills than were developed in Animal Science I. Topics include animal waste management, animal science economics, decision making, global concerns in the industry, genetics, and breeding. Content knowledge in biology, chemistry, and algebra are reinforced in this class. Work-based learning strategies appropriate for this course are agriscience projects, internships, cooperative education, apprenticeships and supervised agricultural experience. Supervised agricultural experience programs and FFA leadership activities are integral components of the course and provide many opportunities for practical application of instructional competencies.

Prerequisite: Animal Science I

Animal Science II-Small Animal

Course Number: 6823
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

This course provides instruction on animal husbandry topics related to small animals that are served by a veterinarian. Content related to the breeding, grooming, care and marketing of animals that fit into this category will be covered through this course. Opportunities for students to gain hands-on experience will be included in the course and reinforced through work-based learning and leadership experiences.

Prerequisite: Animal Science I

Biotechnology and Agriscience Research I

Course Number: 6871
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

This course provides instruction in the technologically advanced world of agriculture and life sciences. Students are exposed to the latest techniques and advances in plant and animal biotechnology with a strong emphasis on hands-on activities. The FFA student organization and work-based learning experiences are integrated throughout this course to bring the scientific information to students for real-life application. Agriscience Applications is a recommended prerequisite.

Prerequisite: None

Biotechnology and Agriscience Research II

Course Number: 6872
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

This course provides instruction in laboratory and safety skills needed by agricultural research scientists. Current applications of biotechnology in animal science, environmental science, food science and plant science are emphasized. Basic concepts of genetics and microbiology are applied to the agriculture industry and its success in providing food and fiber for the world. Opportunities exist for students to conduct individual or team research experiments. Hands-on laboratories and current topic discussions provide students an understanding of careers in agriscience research.

Prerequisite: Biotechnology and Agriscience Research I

Environmental and Natural Resources I

Course Number: 6851
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course provides an introduction to environmental studies, which includes topics of instruction in renewable and non-renewable natural resources, history of the environment, personal development, water and air quality, waste management, land use regulations, soils, meteorology, fisheries, forestry, and wildlife habitat. Skills in biology and algebra are reinforced in this class. Work-based learning strategies appropriate for this course are agriscience projects, field trips, shadowing, and supervised agricultural experience. Supervised agricultural experience programs and FFA leadership activities are integral components of the course and provide many opportunities for practical application of instructional competencies.

Prerequisite: None

Environmental and Natural Resources II

Course Number: 6852
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course covers instruction in best management practices in methods of environmental monitoring and conservation, air and water regulations, sampling methodologies, prescribing conservation techniques, and wildlife and forestry management. Skills in biology, chemistry, and algebra are reinforced in this class. Work-based learning strategies appropriate for this course are agriscience projects, field trips, shadowing, cooperative education, and supervised agricultural experience. Supervised agricultural experience programs and FFA leadership activities are integral components of the course and provide many opportunities for practical application of instructional competencies.

Prerequisite: Environmental and Natural Resources I

Equine Science I

Course Number: 6825
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course focuses on the basic scientific principles and processes related to equine physiology, breeding, nutrition and care in preparation for a career in the equine industry. Skills in biology, chemistry and mathematics are reinforced in this course. Opportunities for students to gain hands-on experience will be included in this course through work-based learning and leadership experiences. Supervised agricultural experience programs and FFA leadership activities are integral components of the course.

Prerequisite: None

Equine Science II

Course Number: 6826
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

The course focuses on more advanced applications of feeding, breeding, and management practices involved in the horse industry. Content knowledge in biology, chemistry, and algebra are reinforced in this class. Work-based learning strategies appropriate for this course are agriscience projects, internships, and supervised agricultural experience. Supervised agricultural experience programs and FFA leadership activities are integral components of the course and provide many opportunities for practical application of instructional competencies.

Prerequisite: Equine Science I

Exploring Biotechnology

Course Number: 6828
Recommended Maximum Enrollment: 18
Recommended Hours of Instruction: 67-90

This course focuses on the agricultural and medical industry with emphasis on the relationship of science and technology that affects agriculture, medicine and health care. Topics include career concepts in the agriculture and medical fields. Skills in mathematics, science and language arts are reinforced in the course. This course contributes to the development of a career development plan. Work-based learning activities appropriate for this course are projects, field trips, and job shadowing. Teaching strategies encourage the development of essential skills and knowledge of the world of work, careers and leadership in the agriculture and medical industries. FFA and CECNC leadership activities apply instructional competencies to authentic experiences.

Prerequisite: None

Horticulture I

Course Number: 6841
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course provides instruction on the broad field of horticulture with emphasis on the scientific and technical knowledge for a career in horticulture. Topics in this course include plant growth and development, plant nutrition, media selection, basic plant identification, pest management, chemical disposal, customer relations, career opportunities, and leadership development. Skills in biology, chemistry, and algebra are reinforced in this course. Work-based learning strategies appropriate for this course are agriscience projects, internships, and supervised agricultural experience. Supervised agricultural experience programs and FFA leadership activities are integral components of the course and provide many opportunities for practical application of instructional competencies.

Prerequisite: None

Horticulture II

Course Number: 6842
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course covers instruction that expands the scientific knowledge and skills to include more advanced scientific computations, and communication skills needed in the horticulture industry. Topics include greenhouse plant production and management, bedding plant production, watering systems, light effects, basic landscape design, installation and maintenance, lawn and turfgrass management, career planning, and leadership/personal development. Skills in biology, chemistry, and algebra are reinforced in this class. Work-based learning strategies appropriate for this course are agriscience projects, cooperative education, apprenticeships, and supervised agricultural experience. Supervised agricultural experience programs and FFA leadership activities are integral components of the course and provide many opportunities for practical application of instructional competencies.

Prerequisite: Horticulture I

Horticulture II-Landscape Construction

Course Number: 6882
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

This course provides hands-on instruction and emphasizes safety skills needed by landscape technicians in the field. This course is based on the North Carolina Landscape Contractor's Association skill standards for a Certified Landscape Technician. Students are instructed in interpreting landscape designs, identifying landscape plants, and planting/maintaining trees, shrubs and turf. Landscape construction is emphasized in the areas of grading and drainage, irrigation, paver installation and the use/maintenance of landscape equipment. Current topic discussions provide students an understanding of careers and the employability skills needed to enter the landscape industry. Opportunities exist for students to conduct internships or apprenticeships as landscape technicians.

Prerequisite: Horticulture I

Horticulture II-Turf Grass

Course Number: 6843
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

Turf Grass provides hands-on instruction and emphasizes eight units of instruction including: fundamentals of soils and pests; environmental issues related to turf management; landscape basics; lawn care and turf production; golf course management; sports turf and turf irrigation; turf equipment and maintenance; and human resources and financial management. Safety skills will be emphasized as well as leadership development and work-based learning. Opportunities exist for students to conduct internships or apprenticeships related to landscaping, lawn care, and golf course management.

Prerequisite: Horticulture I or Agricultural Production I

LOCAL COURSE OPTIONS

Schools may offer one or more specialized courses not included in the *Standard Course of Study*. These courses should meet a local economic need. Options may include:

Aquaculture
Floriculture

Refer to Part I, Local Course Options, and Appendix B for instructions on how to offer these courses.

FOR MORE INFORMATION

Agricultural Education
North Carolina State University
Department of Agricultural and Extension Education
Ricks Hall Box 7607
Raleigh, NC 27695-7607
(919) 515-4206

or

NC Department of Public Education
Instructional Services/ITHS
Agricultural Education
Career-Technical Education
6360 Mail Service Center
Raleigh, NC 27699-6360

BUSINESS AND INFORMATION TECHNOLOGY EDUCATION

PROGRAM DESCRIPTION

Business and Information Technology Education is a broad, comprehensive curriculum at the middle and high school levels that provides students with meaningful instruction for and about business. Instruction in Business and Information Technology Education encompasses business skills and techniques, an understanding of basic economics, and business attitudes essential to participate in the multinational marketplace as productive workers and consumers.

Business and Information Technology Education plays a major role in preparing a competent, business-literate, and skilled workforce. This program area is designed to integrate business and information technology skills into the middle and high school curriculum. Therefore, a Business and Information Technology Education course should be part of the curriculum for every student. Business and Information Technology Education has relevance and helps young adults manage their own financial affairs and make intelligent consumer and business-related choices.

DESIGN

Business and Information Technology Education is designed to prepare graduates as viable competitors in the business world and for advanced educational opportunities. The instructional program begins in the middle grades with the development of proficiency in operating a computer keyboard using the touch system and using basic computer software applications. Exploratory experiences in business technologies are also included in the middle school curriculum. This experience continues at the high school level with career majors that provide knowledge/skill development in:

- Accounting and Finance
- Business Administration
- Business Management and Small Business Entrepreneurship
- Information Technology
- Office Systems Technology

The basic skills of reading, writing, and computation are an integral part of the business and information technology program. Computer literacy and proficiency in the various applications are emphasized. Development of human relations/interpersonal, employability, economic, and entrepreneurial skills is a part of each of the career majors. Opportunities to develop and apply leadership, social, civic, and business-related skills are provided through Future Business Leaders of America (FBLA), the Career-Technical Student Organization for business and information technology education students. Integration of the entire business program with appropriate academic concepts/courses is strongly encouraged.

MAJOR PROGRAM OUTCOMES

Business and Information Technology Education prepares students for successful transition from school to work. It empowers them to use business principles and concepts while they manage their current and future responsibilities as informed consumers and productive workers. Upon completion of a Business and Information Technology Education career major, students should be able to do the following:

1. Function as economically literate citizens in domestic and multinational settings.
2. Develop an understanding of personal, societal, and governmental responsibility in the economic system.
3. Understand how businesses operate.
4. Demonstrate the interpersonal, teamwork, and leadership skills needed to function in diverse business and information technology settings.
5. Develop an awareness of career opportunities and lifelong learning skills that enable students to become employable in a variety of business and information technology careers.
6. Select and apply technology tools for making personal and business decisions.
7. Communicate effectively as writers, listeners, and speakers in diverse social and business settings.
8. Understand how accounting procedures can be applied to decisions about planning, organizing, and allocating personnel and financial resources.
9. Understand principles of law and ethics as they apply to personal and business settings.
10. Appreciate the value of entrepreneurial spirit, both in small business and the corporate environments.
11. Understand that the various functions of a business are not separate, but are interrelated, and that each impacts the others.
12. Apply critical thinking skills needed to function in students' multiple roles as citizens, consumers, workers, managers, business owners, and directors of their own economic futures.

NATIONAL VOLUNTARY SKILL STANDARDS

Sponsored by the United States Department of Education, the *Career Clusters in Information Technology (IT)* initiative is a partnership of Education Development Center, Inc. (EDC), the Information Technology Association of America (ITAA), and the National Alliance of Business (NAB). The goal of this initiative is to create a national model and career curricular framework for IT careers that involve the design, development, support, and management of hardware, software, multimedia, and systems integration services. North Carolina was one of the initial pilot sites for this project. This model and framework supports the development of curriculum in the *Business and Information Technology Education Standard Course of Study*.

A second national Career Cluster initiative has been used in the development of curriculum in the *Business and Information Technology Education Standard Course of Study*. The *Business, Management, and Administration Career Cluster Project* was a partnership involving states, schools, educators, employers, industry groups, and other stakeholders that created curiculum guidelines, academic and technical standards, assessments, and professional develoment materials for career concentrations in Business, Management, and Administration. North Carolina was one of the initial state sites involved in this effort.

NATIONAL CURRICULUM STANDARDS

The National Business Education Association developed the second edition of the *National Standards for Business Education* (2001) to ensure that students and adults are afforded equal access to fundamental business knowledge and skills and, therefore, an equal opportunity to success in life. The standards, first published in 1995, represent the leading edge of business and career education. The *National Standards for Business Education* are based on a comprehensive curriculum model that integrates 11 content areas: accounting, business law, career development, communication, computation, economics and personal finance, entrepreneurship, information technology, international business, management, and marketing.

STUDENT CREDENTIALING AND CERTIFICATION

Most businesses focus on skills acquired through course work and work-based learning experiences when deciding if prospective employees can perform in their workplace. Building a portfolio as students progress through the Business and Information Technology Education courses is one way to show the skills they can use effectively.

Students desiring a universally recognized credential that is information-technology related should enroll in courses that lead them to credentials such as Internet and Computing Core Certification (IC^3), Microsoft Office Specialist (MOS), A+ Certification, Net+, Certified Novell Administrator (CNA), Microsoft Certified Systems Engineer (MCSE), or Certified Cisco Network Administrator (CCNA). These high school credentials can be enhanced at postsecondary levels or may be used immediately in the workplace.

PROGRAM UNIQUENESS

Data input and manipulation skills are essential to success in all business occupations. These skills are essential if students are to interact with technology in the most effective manner.

Each course in Business Technologies requires the use of technology. For students to succeed in these courses, they must have keying skills and basic computer skills that allow them to perform at acceptable levels.

Local education agencies are encouraged to have students demonstrate competence in basic keying and technology usage. Through an assessment that focuses on speed, accuracy, formatting, and proper techniques, business educators can determine the level of competence in keyboarding and basic technology usage. By administering selected timed writings and formatting assessments to all students in middle/junior high, teachers can counsel students into proper courses in high school.

Keyboarding and Business Computer Technology are designed to develop keying and formatting skills, appropriate techniques, and basic technology applications. Keyboarding and Business Computer Technology should not be the sole provider of computer skill exposure in the middle grades. A combination of Keyboarding and Business Computer Technology is designed to reinforce and complement the computer skills being integrated throughout the elementary and middle grades curriculum.

The Business curriculum is designed broadly with foundational skills at levels 1 and 2. As the students progress into levels 3 and 4, they begin to specialize into a career major. These career majors are designed to allow the students to articulate into the postsecondary programs to gain the appropriate degree of specialized training they desire.

COURSE OFFERINGS*

Business and Information Technology Education course offerings, grades 6-12, are the following:

Grades 6-8	Levels			
	Level 1	Level 2	Level 3	Level 4
Business Computer Technology Exploring Business Technologies Keyboarding	Computer Applications I Foundations of Information Technology Digital Communication Systems Principles of Business and Personal Finance	Business and Electronic Communications Computer Applications II Computerized Accounting I Computer Programming I	Business Law Computerized Accounting II e-Commerce I Computer Programming II Networking I	Business Advanced Studies Business Management & Applications e-Commerce II Network Administration II -- Linux Network Administration II -- Microsoft Network Administration II -- Novell Small Business Entrepreneurship

*Note: Work-based learning methods such as internships, cooperative education, and apprenticeships may be a part of any course in grades 9-12.

Business and Information Technology Education Course Descriptions

Business Advanced Studies

Course Number: 6599
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

This culminating course is for seniors who are career focused in accounting and finance, business administration, business management and ownership, information technology, or office systems technology. The three parts of the course include writing a research paper, producing a product, and delivering a presentation. Students demonstrate their abilities to use content and apply knowledge to professional business situations in a selected career. In addition, they will also demonstrate their ability to write, speak, apply knowledge, problem solve, and use life skills such as time management and organization. Students work under the guidance of a teacher-advisor in collaboration with community members, business representatives, and other school-based personnel.

Prerequisite: Three technical credits in Business and Information Technology Education, grades 9-12.

Business and Electronic Communications

Course Number: 6535
Recommended Maximum Enrollment: 26
Recommended Hours of Instruction: 135-180

This course provides students essential competencies for oral and written communication in the technological workplace. Emphasis is placed on utilizing the computer to further develop written communication skills such as composing memos, letters, and reports; describing processes or mechanisms; and completing forms and responding to e-mail. Utilizing technology (presentation software and telecommunications) to further develop oral communication skills such as delivering oral presentations, giving instructions, interviewing for information, and presenting information/reports in an effective manner is reinforced in this course. Work-based learning strategies appropriate for this course are service learning, field trips, and job shadowing. Simulations, projects, teamwork, and FBLA leadership activities, meetings, conferences, and competitions provide opportunities for application of instructional competencies.

Prerequisite: Keyboarding Skill – defined as a minimum of 35 words per minute with errors corrected; format from rough draft copy of an announcement, memorandum, personal business letter, and unbound report; and exhibit proper keyboarding techniques.

Business Computer Technology

Course Number: 6400
Recommended Maximum Enrollment: 26
Recommended Hours of Instruction: 67-90

This course is designed to provide hands-on instruction in basic computer hardware components and software applications. Emphasis is placed on extending and reinforcing touch keying skills while providing experience for learning word processing, database, spreadsheet, graphics, multimedia, and telecommunications applications. Communication skills and basic mathematical concepts are reinforced in this course. Work-based learning strategies appropriate for this course are field trips and job shadowing. Simulations, projects, teamwork, and FBLA leadership activities, meetings, conferences, and competitions provide opportunities for application of instructional competencies.

Prerequisite: Keyboarding

Business Law

Course Number: 6215
Recommended Maximum Enrollment: 26
Recommended Hours of Instruction: 135-180

This course is designed to acquaint students with the basic legal principles common to business and personal activities. Topics include consumer concepts to assist students when evaluating contracts, purchasing with credit, purchasing appropriate insurance, and renting and owning real estate. Business concepts such as contracting, ethics, starting a business, hiring employees, managing employees, and representing other businesses and individuals in an agency capacity are included. Skills in critical thinking are reinforced in this course along with oral and written communication skills. Work-based learning strategies appropriate for this course are field trips and job shadowing. In addition to simulations, projects, and teamwork, FBLA leadership activities, meetings, conferences, and competitions provide opportunities for application of instructional competencies.

Prerequisite: None

Business Management and Applications

Course Number: 6225
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course covers the organizational functions of businesses including quality concepts, project management, and problem solving. Emphasis is placed on analyzing the social, technological, and organizational systems in businesses, such as human relations, communications, data management, and meeting and conference coordination. Skills in communications and mathematics are reinforced as the student uses the appropriate business technology to perform business applications. Work-based learning strategies appropriate to this course are school-based enterprises, internships, cooperative education, and apprenticeship. In addition to simulations, projects, and teamwork, FBLA leadership activities, meetings, conferences, and competitions provide opportunities for application of instructional competencies.

Prerequisite: Two technical credits in Business and Information Technology Education, grades 9-12.

Computerized Accounting I

Course Number: 6311
Recommended Maximum Enrollment: 26
Recommended Hours of Instruction: 135-180

This course is designed to help students understand the basic principles of the accounting cycle. Emphasis is placed on the analysis and recording of business transactions; preparation and interpretation of financial statements; accounting systems; banking and payroll activities; basic types of business ownership; and an accounting career orientation. Mathematics skills and critical thinking are reinforced. Work-based learning strategies appropriate to this course are school-based enterprises, internships, cooperative education, and apprenticeship. In addition to simulations, projects, and teamwork, FBLA leadership activities, meetings, conferences, and competitions provide opportunities for application of instructional competencies.

Prerequisite: None

Computerized Accounting II

Course Number: 6312
Recommended Maximum Enrollment: 26
Recommended Hours of Instruction: 135-180

This course is designed to provide students with an opportunity to develop in-depth knowledge of accounting procedures and techniques utilized in solving business problems and making financial decisions. Emphasis includes partnership accounting; adjustments and inventory control systems; budgetary control systems; cost accounting; and further enhancement of accounting skills. Mathematics skills and critical thinking are reinforced. Work-based learning strategies appropriate to this course are school-based enterprises, internships, cooperative education, and apprenticeship. Simulations, projects, teamwork, and FBLA leadership activities, meetings, conferences, and competitions provide opportunities for application of instructional competencies.

Prerequisite: Computerized Accounting I

Computer Applications I

Course Number: 6411
Recommended Maximum Enrollment: 26
Recommended Hours of Instruction: 135-180

This course is designed to help students master advanced skills in the areas of word processing, database management, spreadsheet, telecommunications, desktop publishing, and presentation applications. Emphasis is on data communications, Internet and e-mail, as well as skill development in the integration of software applications, ethical issues pertaining to information systems, and information technologies careers. Communication skills and critical thinking are reinforced through software applications. Work-based learning strategies appropriate for this course are service learning, field trips, and job shadowing. Simulations, projects, teamwork, and FBLA leadership activities, meetings, conferences, and competitions provide opportunities for application of instructional competencies.

Prerequisite: Keyboarding Skill – defined as a minimum of 35 words per minute with errors corrected; format from rough draft copy of an announcement, memorandum, personal business letter, and unbound report; and exhibit proper keyboarding techniques.

Computer Applications II

Course Number: 6412
Recommended Maximum Enrollment: 26
Recommended Hours of Instruction: 135-180

This course is designed to help students master advanced skills in the areas of integrating technology devices, Internet research strategies and uses, complex desktop publishing, multimedia production, and basic web page design. Emphasis is placed on skill development and refinement of skills in information technologies as well as economic, ethical, and social issues in the information technologies area. Communication skills and critical thinking are reinforced through software applications. Work-based learning strategies appropriate for this course are school-based enterprises, internships, cooperative education, and apprenticeship. Simulations, projects, teamwork, and FBLA leadership activities, meetings, conferences, and competitions provide opportunities for application of instructional competencies.

Prerequisite: Computer Applications I

Computer Programming I

Course Number: 6421
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction 135-180

This course is designed to introduce the concepts of programming, application development, and writing software solutions in the Visual Basic environment. Emphasis is placed on the software development process, principles of user interface design, and the writing of a complete Visual Basic program including event-driven input, logical decision making and processing, and useful output. Communication, critical thinking, and lifelong learning skills are reinforced through the completion of course activities. Work-based learning strategies appropriate to this course are internships, cooperative education, and apprenticeship. Simulations, projects, teamwork, and FBLA leadership activities, meetings, conferences, and competitions provide opportunities for application of instructional competencies.

Prerequisite: Algebra I recommended

Computer Programming II

Course Number: 6422
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

This project-based course is designed to teach students to access and manipulate data in a variety of data structures including Access, Structured Query Language (SQL), XML, and text files. Emphasis is placed on advanced functionality, packaging and deploying business solutions, and program life-cycle revision and maintenance. Communication, critical thinking, and lifelong learning skills are reinforced through the completion of course activities. Work-based learning strategies appropriate for this course are internships, cooperative education, and apprenticeship. Simulations, projects, teamwork, and FBLA leadership activities, meetings, conferences, and competitions provide opportunities for application of instructional competencies.

Prerequisite: Computer Programming I

Digital Communication Systems

Course Number: 6514
Recommended Maximum Enrollment: 26
Recommended Hours of Instruction: 135-180

This course is designed to teach basic digital input skills including keying using the touch method, speech recognition, and use of handheld devices. Emphasis is on the daily use and operation of commonly used digital communication devices to develop skill with concentrated application of those skills in the production of business communication and correspondence. Communication skills are reinforced as the students format, compose, and proofread. Work-based learning strategies appropriate for this course are service learning, field trips, and job shadowing. Simulations, projects, teamwork, and FBLA leadership activities, meetings, conferences, and competitions provide opportunities for application of instructional competencies.

Prerequisite: None

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e-Commerce I

Course Number: 6415
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

This course is designed to help students master skills in the design and construction of complex web sites for conducting business electronically. Emphasis is on skill development in advanced web page construction and entrepreneurial applications of conducting business electronically as well as economic, social, legal, and ethical issues related to electronic business. Students will plan, design, create, publish, maintain, and promote an electronic business website. Communication skills and critical thinking are reinforced through software applications. Work-based learning strategies appropriate for this course are school-based enterprises, internships, cooperative education, and apprenticeship. Simulations, projects, teamwork, and FBLA leadership activities, meetings, conferences, and competitions provide opportunities for application of instructional competencies.

Prerequisite: Computer Applications II

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e-Commerce II

Course Number: 6416
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

This course is designed to help students master advanced skills in electronic commerce security; payment infrastructure; secure electronic commerce transactions; and electronic commerce order entry, tracking and fulfillment. Emphasis is placed on marketing techniques for electronic commerce websites, tracking and using customer and sales data, and other uses of databases in electronic commerce sites. Communication skills, problem solving, research, and critical thinking skills are reinforced as students develop and enhance capstone projects. Work-based learning strategies appropriate to this course are internships, cooperative education, and apprenticeship. Simulations, projects, teamwork, and FBLA leadership activities, meetings, conferences, and competitions provide opportunities for application of instructional competencies.

Prerequisite: e-Commerce I

Exploring Business Technologies

Course Number: 6208
Recommended Maximum Enrollment: 18
Recommended Hours of Instruction: 67-90

This course is designed to explore the nature of business in an international economy and to study related careers in fields such as entrepreneurship, financial services, information technology, marketing, office systems technology, public relations and promotion, and travel and tourism. Emphasis is on using the computer while studying applications in these careers along with problem solving and thinking skills. Communication and mathematics skills are reinforced as students explore business applications and careers. Work-based learning strategies appropriate for this course are service learning, field trips, and job shadowing. Simulations, projects, teamwork, and FBLA leadership activities, meetings, conferences, and competitions provide opportunities for application of instructional competencies. This course contributes to the development of a career development plan.

Prerequisite: None

Foundations of Information Technology

Course Number: 6340
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course provides students with the essential competencies to pursue further study in information technology. Emphasis is on the career concentrations of network systems, information support and services, programming and software development, and interactive media. Students will study new and emerging developments in information technology basics, applications, and systems, while enhancing technical skills, academic foundations, communication, leadership, teamwork, ethics, and legal responsibilities. Communication skills, problem solving, research, and critical thinking are reinforced in this course. Work-based learning strategies appropriate to this course are service learning, field trips, and job shadowing. Simulations, projects, teamwork, and FBLA leadership activities, meetings, conferences, and competitions provide opportunities for application of instructional competencies.

Prerequisite: None

Keyboarding

Course Number: 6511
Recommended Maximum Enrollment: 26
Recommended Hours of Instruction: 67-90

This course is designed to teach middle grades students basic keying skills, which consist of fluent manipulation of letter, figure/symbol, and basic service keys by touch. Emphasis is on daily use of a computer system and appropriate software to provide integrated training through a learn/practice/sustain/assess plan of skill building. Communication skills are reinforced as students format, compose, and proofread. Work-based learning strategies appropriate for this course are service learning, field trips, and job shadowing. Simulations, projects, teamwork, and FBLA leadership activities, meetings, conferences, and competitions provide opportunities for application of instructional competencies.

Prerequisite: None

Networking I

Course Number: 6342
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course provides a broad-based foundation in the engineering and administration of computer network systems. Emphasis is on PC/network hardware and operating systems, architecture, protocols, design and security, and career development. Communication, mathematical, and critical thinking skills are strengthened throughout the course. Work-based learning strategies appropriate for this course are field trips and job shadowing. Simulations, projects, teamwork, and FBLA leadership activities, meetings, conferences, and competitions provide opportunities for application of instructional competencies.

Prerequisite: None

Network Administration II

Course Numbers:
Linux 6345
Microsoft 6347
Novell 6346
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

This course is the second of two courses of a certification program based on industry-validated skill standards. Topics of this course include networking security, administrator responsibilities, and documentation of work-based experiences. Critical thinking skills are taught. The expectation of this course sequence is for students to sit for the appropriate industry credentialling exam. Work-based learning strategies appropriate to this course are internships, cooperative education, and apprenticeship. Simulations, projects, teamwork, and FBLA leadership activities, meetings, conferences, and competitions provide opportunities for application of instructional competencies.

Prerequisite: Networking I

Principles of Business and Personal Finance

Course Number: 6200
Recommended Maximum Enrollment: 26
Recommended Hours of Instruction: 135-180

This course introduces the major principles and concepts that are the foundation for future study of business and management. Topics of study include basic business principles, personal finance concepts, management concepts, systems thinking, quality management, and the current environment for business in a multinational marketplace. Communication skills and basic mathematical concepts are reinforced in this course. Work-based learning strategies appropriate for this course are field trips and job shadowing. Simulations, projects, teamwork, and FBLA leadership activities, meetings, conferences, and competitions provide opportunities for application of instructional competencies.

Prerequisite: None

Small Business Entrepreneurship

Course Number: 6235
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction 135-180

This course introduces students to the rewards and risks of owning or operating a business enterprise. Emphasis is placed on the mastery of skills needed to plan, organize, manage, and finance a small business. Skills in communication, technical writing, mathematics, research, and problem-solving are reinforced as each student prepares his/her own business plan. Work-based learning strategies appropriate for this course include cooperative education and paid/unpaid internships. Simulations, projects, teamwork, and FBLA leadership activities, meetings, conferences, and competitions provide opportunities for application of instructional competencies.

Prerequisite: Two technical credits in the same career pathway.

LOCAL COURSE OPTIONS

Schools may offer one or more specialized courses not included in the *Standard Course of Study*. These courses should meet a local economic need. Options may include:

Data Base Programming and Administration
International Business

Refer to Part I, Local Course Options, and Appendix B for instructions on how to offer these courses.

PARTNERING OPPORTUNITIES

The following are external nationally recognized programs. The participants must be members of schools of these organizations and follow the curriculum requirements of these partnerships. NCDPI will not provide any curriculum materials for these programs.

- Advanced Placement (AP) Computer Science
- International Baccalaureate (IB) Business Management
- International Baccalaureate (IB) Information Technology
- National Academy Foundation (NAF) Academy of Finance
- National Academy Foundation (NAF) Academy of Information Technology

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FOR MORE INFORMATION

NC Department of Public Instruction
Instructional Services
Business and Information Technology Education
Career-Technical Education
6358 Mail Service Center
Raleigh, NC 27699-6358

CAREER DEVELOPMENT EDUCATION

PROGRAM DESCRIPTION

Career development is a process that involves students, parents, teachers, counselors, and the community. The goal is to help students make good decisions about themselves and their future. The process includes helping students develop and implement an individual career development plan. Coordinating the process is the responsibility of the Career Development Coordinator.

DESIGN

The Career Development program area provides both instructional courses and career services to students enrolled in Career-Technical Education courses.

Instructional Courses:
The two instructional courses include Exploring Career Decisions (6-8) and Career Management (9-12). Both courses include competencies in leadership development, critical and creative thinking, decision-making, problem-solving, teamwork and technology, as well as opportunities for the application of skills. The courses are based on the National Career Development Guidelines and focus on the North Carolina identified career pathways.

Students enrolled in Exploring Career Decisions also have opportunities to enhance their skills by participating in Career Exploration Clubs of North Carolina (CECNC).

Career Development Services:
Career Development Coordinators provide leadership and support activities in three broad areas:

- Academic Development
- Career Development
- Personal/Social Development

Within these areas, functions include:

- Preparatory services
- Case management services
- Transition services
- Business, industry, and education partnership services
- Promotional services

School-wide and group activities are provided with a focus on career-technical education students. In addition, concentrators in Career-Technical Education may be served for a period of one year after graduation.

MAJOR PROGRAM OUTCOMES

The career development curriculum is designed to help students understand the lifelong, sequential process of determining self and career identity. Students will have opportunities to learn how to make good decisions about education, work, and life roles; how to secure employment; and how to succeed in a rapidly changing world of work. The Career Management curriculum enables students in grades 9 through 12 to:

1. Analyze the influence of a positive self-concept.
2. Apply positive interaction skills.
3. Evaluate the impact of growth and development.
4. Analyze the relationship between educational achievement and career planning.
5. Analyze the need for positive attitudes toward work and learning.
6. Apply skills to locate, evaluate, and interpret career information.
7. Apply skills to prepare to seek, obtain, maintain, and change jobs.
8. Determine how societal needs and functions influence the nature and structure of work.
9. Apply problem solving skills to make decisions.
10. Consider the interrelationship of life roles as related to career planning.
11. Appraise the continuous changes in male/female roles as related to career planning.
12. Apply skills in personal career planning.

NATIONAL STANDARDS

Curriculum development and service functions are based on the National Career Development Guidelines, endorsed by the North Carolina State Board of Education. Other national standards that influence this program area include the National Standards for School Counseling Programs. One-third of the North Carolina Comprehensive School Counseling program is focused on career development competencies.

PROGRAM UNIQUENESS

Career development is a process in which skills are acquired, applied, and transferred from one activity or job to another throughout the life span. Continuous learning and up-dating will be required. Knowing the career planning process will assure that citizens know how to obtain and use quality career information.

COURSE OFFERINGS

Career Development Course offerings, grades 6-12, are the following:

Grades 6-8	Levels			
	Level 1	Level 2	Level 3	Level 4
Exploring Career Decisions	Career Management			

CAREER DEVELOPMENT EDUCATION
Course Descriptions

Exploring Career Decisions

Course Number 6158
Recommended Maximum Enrollment: 18
Recommended Hours of Instruction: 67-90

This course is designed to provide an orientation to the world of work. Experiences are designed to introduce students to the technical nature of today's world and the role of productive workers. Activities enable students to increase self-awareness and make wise educational and occupational decisions as they plan for careers. Work-based learning strategies appropriate for this course include job shadowing and field trips. Opportunities for leadership development and further application of instructional competencies are provided through Career Exploration Clubs of North Carolina (CECNC). The formal career development planning process often begins within this course.

Prerequisite: None

Career Management

Course Number 6145
Recommended Maximum Enrollment: 26
Recommended Hours Of Instruction: 135-180

This course is designed to prepare students to locate, secure, keep, and change careers. Competencies for this course are based on the National Career Development Guidelines. Strategies for this course include teamwork, technology, problem-solving, decision-making, goal-setting, and self-management.

Prerequisite: None

FOR MORE INFORMATION

NC Department of Public Instruction
Instructional Services/BHC
Career Development
Career-Technical Education
6359 Mail Service Center
Raleigh, NC 27699-6359

FAMILY AND CONSUMER SCIENCES EDUCATION

PROGRAM DESCRIPTION

Family and Consumer Sciences Education prepares students for careers working with individuals and families, as well as for competence in the work of their own families. The concept of work, whether in a family or career, is central to the program area. The program's unique focus is on families, work, and their interrelationships. Family and Consumer Sciences Education prepares individuals for family and career.

DESIGN

Family and Consumer Sciences Education is founded on eight distinct core areas. The areas are

- Consumer Education and Resource Management
- Early Childhood Education and Services
- Family and Interpersonal Relationships
- Food Production and Services
- Foods, Nutrition, and Wellness
- Housing, Interiors, and Design
- Parenting Education and Human Development
- Textiles, Apparel, and Fashion

Developmentally appropriate courses incorporate these eight core areas, as well as academic integration and workplace applications, to prepare students to successfully manage individual, family, work, and community roles. Examples of workplace applications include basic skills, thinking skills, and personal qualities. Ultimately, students prepare to enter paid employment and to advance within a career with additional training and/or education.

MAJOR PROGRAM OUTCOMES

Family and Consumer Sciences Education prepares students for successful life management, employment, and career development. The overall program empowers students to:

1. Balance personal, home, family, and work lives.
2. Strengthen the well-being of individuals and families across the life span.
3. Become responsible citizens and leaders in family, community, and work settings.
4. Promote optimal nutrition and wellness across the life span.
5. Manage resources to meet the material needs of individuals and families.
6. Use critical and creative thinking skills to address problems in diverse family, community, and work environments.
7. Prepare for successful life management, employment, and career development.
8. Function as providers and consumers of goods and services.
9. Appreciate human worth and accept responsibility for one's actions and success in family and work life.

NATIONAL VOLUNTARY OCCUPATIONAL SKILL STANDARDS

The United States Departments of Education and Labor have initiated public-private partnerships to develop voluntary skill standards for various industries. These standards identify skills and performance levels needed by the American workforce to be competitive.

Family and Consumer Sciences Education links with the skill standards projects described below:

Apparel and Textiles

- The Uniform and Textile Service Association (UTSA) sets skill standards for production workers and maintenance technicians in the industrial laundry. These skills apply to the apparel and textiles career area.

Community and Family Services

- The Human Services Research Institute (HSRI) sets skill standards for the human services position of community support worker. These skills apply to Family and Consumer Sciences Advanced Studies.

Culinary Arts and Hospitality

- The Council of Hotel, Restaurant, and Institutional Education (CHRIE) sets skill standards for the food service positions of host, server, busser, and cashier/counter person in the hospitality and tourism industry. These skill standards apply to Culinary Arts and Hospitality I & II.

- The National Grocers Association (NGA) sets skill standards for customer service/stock associate and front-end associate. These skill standards apply to Culinary Arts and Hospitality I & II.

Interior Design Services

- The Foundation for Industrial Modernization (FIM) sets skill standards for computer aided drafting and design. These skill standards apply to Housing and Interiors I and II.

STUDENT CREDENTIALING AND CERTIFICATION

North Carolina Early Childhood Credential

Students who complete both levels of Early Childhood Education may be recognized as "teachers" in accordance with G.S. 110-91(8); 143 B-168.3. The Child Day Care Rules of North Carolina define "teacher" as the care giver who has responsibility for planning and implementing the daily program of activities for each group of children in a day care facility. These completers are entitled to the same benefits and are bound by the same requirements as other teachers in child care centers.

ServSafe® Food Service Manager Certification

Food Handling Certification is offered by county health departments, county extension offices and independent consultants. To receive the credential, students must satisfactorily complete the "ServSafe® Food Service Manager Certification" course developed and promoted by the National Restaurant Association.

STUDENT CREDENTIALING AND CERTIFICATION

Two areas in Family and Consumer Sciences Education have industry regulations. In both courses of study, compliance is recommended to meet public standards, therefore mitigating liability.

Culinary Arts and Hospitality

- The NC Department of Labor cites regulations on the use of equipment, and the NC Department of Environment, Health, and Natural Resources cites regulations regarding sanitation. These regulations assure the protection of public health. On an annual basis, food service establishments are inspected by county officials with the resulting sanitation grade posted. The establishments are issued grades of A, B, and C based on their compliance level.

Early Childhood Education

- The NC Department of Health and Human Resources, Division of Child Development, Regulatory Services, cites regulations related to child care and safety. Child care licensure is obtained by submitting an application for a license, passing inspections, and providing written operational plans and records. Licenses are renewed annually. A "one-star" rated license is required for operation. A center may also obtain a national accreditation from the National Association for the Education of Young Children.

PROGRAM UNIQUENESS

Further, in all on-the-job work opportunities, students are bound by the same regulations as other employees, such as those regarding health certificates or immunizations. The Fair Labor Standards Act including Child Labor Law Requirements and the NC Wage and Hour Act also apply.

COURSE OFFERINGS*

Family and Consumer Sciences Education course offerings, grades 7-12, are the following:

Grades 7-8	Levels			
	Level 1	Level 2	Level 3	Level 4
Exploring Life Skills	Teen Living		Life Management	Family and Consumer Sciences Adv. Studies
		Housing and Interiors I	Housing and Interiors II	
	Foods I - Fundamentals	Foods II - Advanced	Foods II - Food Science	
			Culinary Arts and Hospitality I	Culinary Arts and Hospitality II
		Apparel Development I	Apparel Development II	
	Parenting and Child Development		Early Chldhood Education I	Early Childhood Education II

* Note: Work-based learning methods such as internships, cooperative education, and apprenticeships may be a part of any course in grades 9-12.

Family and Consumer Sciences Education
Course Descriptions

Apparel Development I

Course Number: 7035
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

This course examines clothing production in the areas of preparation for clothing construction, basic clothing construction techniques, consumer decisions, textiles, historical perspectives and design, and career opportunities. Emphasis is placed on students applying these construction and design skills to apparel and home fashion. Skills in art, communication, mathematics, science, and technology are reinforced in this course. Work-based learning strategies appropriate for this course include field trips, job shadowing, and services learning. FCCLA leadership activities provide the opportunity to apply instructional competencies and workplace readiness skills to authentic experiences.

Prerequisite: None

Apparel Development II

Course Number: 7036
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

This course focuses on advanced clothing and housing apparel development. The use of fibers and fabrics is combined with design and construction techniques to develop and produce a clothing or housing apparel product. A real or simulated business apparel enterprise and FCCLA activities allow students to apply instructional strategies and workplace readiness skills to an authentic experience and to develop a portfolio. Skills in science, mathethematics, management, communication, and teamwork are reinforced in this course. Work-based learning strategies approrpiate for the course include school-based enterprises, field trips, job shadowing, and service learning.

Prerequisite: Apparel Development I or Housing and Interiors I

Culinary Arts and Hospitality I

Course Number: 7121
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 270-360

This is a two-block course which introduces students to basic food production, management, and service activities in both the back and the front of the "house." Emphasis is placed on sanitation, safety, and basic food preparation. Skills in mathematics, science, and communication are reinforced in this course. Comprising 50 percent of the course work, work-based learning strategies appropriate for this course include school-based enterprises, internships, cooperative education, and apprenticeship. FCCLA leadership activities provide the opportunity to apply instructional competencies and workplace readiness skills to authentic experiences. Foods I - Fundamentals is a recommended prerequisite for this course.

Prerequisite: None

Culinary Arts and Hospitality II

Course Number: 7122
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 270-360

This two-block course provides advanced experiences in food production, management, and service. Topics include menu planning, business management, and guest relations. Skills in mathematics, communication, creative thinking, and entrepreneurship are reinforced in this course. Comprising 50 percent of the course work, work-based learning strategies appropriate for this course include school-based enterprises, internships, cooperative education, and apprenticeship. FCCLA leadership activities provide the opportunity to apply instructional competencies and workplace readiness skills to authentic experiences.

Prerequisite: Culinary Arts and Hospitality I

Early Childhood Education I

Course Number: 7111
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 270-360

This is a two-block course prepares students to work with children birth to age 8. Emphasis is placed on enhancing the development of young children while providing early education and care. Topics include stages of development, health, safety, guidance, and developmentally appropriate activities. This course is a two-credit course with work-based learning comprising over 50 percent of the required coursework. Students who will be participating in work-based learning experiences in child care centers should be 16 years of age prior to the beginning of the work-based placement (North Carolina Child Care General Statute 110.91, Section 8). The work-based learning strategies appropriate for this course include school-based enterprises, internships, cooperative education, service learning, field trips, job shadowing, and apprenticeships. Industry skill development and FCCLA leadership activities provide the opportunity to apply instructional competencies and career management skills to authentic experiences. Parenting and Child Development is a recommended prerequisite for this course.

Prerequisite: None

Early Childhood Education II

Course Number: 7112
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 270-360

This is a two-block course prepares students to work with children birth to twelve years of age in child care, preschool, and/or after school programs. Students are encouraged to continue their education at a community college or university. Students receive instruction in child care pertaining to teaching methods, career development, program planning and management, health and safety issues, entrepreneurship skills, and technology. This course is a two-credit course with work-based learning comprising over 50 percent of the required coursework. Students who successfully complete this course and are 18 years of age will be eligible to apply for the North Carolina Early Childhood Credential (NCECC) through the Division of Child Development. The work-based learning strategies appropriate for this course include school-based enterprises, internships, cooperative education, field trips, job shadowing, and apprenticeships. SCAN (industry) skill development

and FCCLA leadership activities provide the opportunity to apply instructional competencies and career management skills to authentic experiences.

Prerequisite: Early Childhood Education I

Exploring Life Skills

Course Number: 7018
Recommended Maximum Enrollment: 18
Recommended Hours of Instruction: 67-90

This course explores life skills essential for the adolescent now and in the future. Units include resource management, relationships, nutrition and wellness, child care, and career pathways. Resource management includes decision-making, interior design, and managing a sewing project. Relationships focus on personal and social responsibilities with emphasis on the family across the life span. The focus is on developing a foundation for the application of life management skills. Skills in applying basic academics, problem solving, decision making, and creative and critical thinking are reinforced in this course. This course also contributes to the development of the career development plan. Work-based learning strategies appropriate for this course include field trips, job shadowing, and service learning. Life skill development and FCCLA leadership activities provide the opportunity to apply instructional competencies and workplace readiness skills to authentic experiences.

Prerequisite: None

Family and Consumer Sciences Advanced Studies

Course Number: 7199
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

This culminating course is for seniors who are career focused in the apparel design, community and family services, culinary arts and hospitality, early childhood education, food science, dietetics, and nutrition; or interior design career areas. The three parts of the course include a research paper, a product, and a presentation. Students demonstrate their abilities to use content and apply knowledge to authentic situations in a selected career. In addition, they will also demonstrate their abilities to write, speak, solve problems, and to use life skills such as time management and organization. Students work under the guidance of a teacher-facilitator in collaboration with community members, business representatives, and other school-based personnel. FCCLA leadership activities provide the opportunity to apply instructional competencies and workplace readiness skills to authentic experiences.

Prerequisite: Three technical credits in Family and Consumer Sciences Education.

Foods I - Fundamentals
Course Numbers: 7045
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course examines the nutritional needs of the individual. Emphasis is placed on the relationship of diet to health, kitchen and meal management, and food preparation. Skills in science and mathematics are reinforced in this course. Work-based learning strategies appropriate for this course include field trips, job shadowing, and service learning. FCCLA leadership activities provide the opportunity to apply instructional competencies and workplace readiness skills to authentic experiences.

Prerequisite: None

Foods II - Advanced

Course Number: 7046
Recommended Maximum Enrollment: 16 or 4 per laboratory kitchen
Recommended Hours of Instruction: 135-180

This course focuses on advanced food preparation techniques while applying nutrition, food science, and test kitchen concepts using new technology. Food safety and sanitation receive special emphasis, with students taking the exam for the ServSafe® credential from the National Restaurant Association. Students develop skills in preparing foods such as beverages, salads and dressing, yeast breads, and cake fillings and frostings. A real or simulated in-school food business component allows students to apply instructional strategies and workplace readiness skills to an authentic experience to develop a portfolio and to enhance FCCLA activities. Skills in science, math, management, and communication are reinforced in this course. Work-based learning strategies appropriate for this course include school-based enterprises, field trips, job shadowing, and service learning.

Prerequisite: Foods I - Fundamentals or Culinary Arts and Hospitality I

Foods II - Food Science
Course Numbers: 7075
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course develops laboratory skills in the scientific evaluation of food, product development, and food preservation. Topics include the investigation of matter, electrolyte solutions, energy, properties, mixtures, and systems as they relate to food. Skills in science and mathematics are reinforced in this course. Work-based learning strategies appropriate for this course include field trips, job shadowing, and internships. FCCLA leadership activities provide the opportunity to apply instructional competencies and workplace readiness skills to authentic experiences. A recommended prerequisite for this course is Food II - Advanced.

Prerequisite: Foods I - Fundamentals or Culinary Arts and Hospitality I

Housing and Interiors I

Course Number: 7055
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course examines housing and interior decisions that individuals and families make based on their needs, the environment, and technology. Emphasis is placed on selecting goods and services and creating functional and pleasing living environments based on sound financial decisions and design principles. Skills in mathematics, technology, and art are reinforced in this course. Work-based learning strategies appropriate for this course include field trips, job shadowing, service learning, and school-based enterprises. FCCLA leadership activities provide the opportunity to apply instructional competencies and workplace readiness skills to authentic experiences.

Prerequisite: None

Housing and Interiors II

Course Number: 7056
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 270-360

This two-block course prepares students for opportunities in the residential and non-residential interior design fields for entry-level and technical jobs. Topics include application of design theory to interior plans and production, selection of materials, and examination of business procedures. Skills in technology, art, mathematics, and communication are reinforced in this course. Comprising 50 percent of the course work, work-based learning strategies appropriate for this course include field trips, job shadowing, school-based enterprises, internships, cooperative education, and apprenticeships. FCCLA leadership activities provide the opportunity to apply instructional competencies and workplace readiness skills to authentic experiences.

Prerequisite: Housing and Interiors I or Apparel Development I

Life Management

Course Number: 7085
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course is designed to empower students to take action for the well-being of themselves and others in the family, workplace, and community. Topics include financial management, personal development, parenting, relationships, career development, and wellness and nutrition. The focus is on what students need to know and be able to do to manage work and family responsibilities within the first five years after high school. Skills in decision making, problem solving, critical thinking, interpersonal relationships, technology, workplace readiness, and communication are reinforced in this course. Work-based learning strategies appropriate for this course include field trips and service learning. FCCLA leadership activities provide the opportunity to apply instructional competencies and workplace readiness skills to authentic experiences.

Prerequisite: None

Parenting and Child Development

Course Number: 7065
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course introduces students to responsible nurturing and basic applications of child development theory. Emphasis is on the parents' responsibilities and the influences they have on children while providing care and guidance. Skills in communication, resource management, and problem solving are reinforced in this course. Work-based learning strategies appropriate for this course include field trips and service learning. FCCLA leadership activities provide the opportunity to apply instructional competencies and workplace readiness skills to authentic experiences.

Prerequisite: None

Teen Living

Course Number: 7015
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course examines life management skills in the areas of personal and family living; wellness, nutrition, and foods; financial management; living environments; appropriate child development practices; fashion and clothing; and job readiness. Emphasis is placed on students applying these skills during their teen years. Through simulated experiences, they learn to fulfill their responsibilities associated with the work of the family and community. Skills in mathematics, communication, science, technology, and personal and interpersonal relationships are reinforced in this course. Work-based learning strategies appropriate for this course include field trips and service learning. FCCLA leadership activities provide the opportunity to apply instructional competencies and workplace readiness skills to authentic experiences.

Prerequisite: None

LOCAL COURSE OPTIONS

Schools may offer one or more specialized courses not included in the *Standard Course of Study*. These courses should meet a local economic need. Options may include:

Family and Interpersonal Relationships
Consumer Education and Resource Management

Refer to Part I, Local Course Options, and Appendix B for instructions on how to offer these courses.

FOR MORE INFORMATION

NC Department of Public Instruction
Instructional Services/ITHS
Family and Consumer Sciences
Career-Technical Education
6360 Mail Service Center
Raleigh, NC 27699-6360

HEALTH OCCUPATIONS EDUCATION

PROGRAM DESCRIPTION

The comprehensive Health Occupations Education program seeks to meet present and predicted needs for health care workers within a health care delivery system that is characterized by diversity and changing technologies. It is a program that recruits qualified and motivated students and prepares them for pursuit of appropriate health careers.

DESIGN

Based on natural and social sciences, the humanities, and a researched body of knowledge, the curriculum is designed to offer a foundation of knowledge and skills necessary to health career preparation. Curriculum concepts incorporate technological advances related to the health care delivery system, including ethics, professionalism, prevention (wellness), patient/client diagnosis, treatment, care, and rehabilitation as a result of disease/disorders. Teaching/learning strategies integrate appropriate workplace basic skills that assist students to use resources and technologies, function as effective members within a complex system, and to access and use appropriate information/data.

Guiding students to make relevant connections between abstract theories and concrete applications is emphasized throughout the curriculum. This is especially practiced through team teaching with health professionals and on-site practicums (mentorships/internships).

Opportunities for expanded leadership, management, technical, and citizenship development are available through membership in a co-curricular student organization, Health Occupations Students of America (HOSA). The organization includes local, regional, state, and national levels. Activities integrate curriculum competencies and objectives. Healthy competition through organized and judged skill events assists in strengthening those skills that make students more marketable as potential health care workers. Interaction with health professionals also guides members in the selection of health careers. HOSA seeks to instill an attitude of pride, commitment, and professionalism in its members, and strives to build self-esteem and confidence.

MAJOR PROGRAM OUTCOMES

Health Occupations Education programs are designed to enable students to:

1. Select health career majors suited to their individual needs, aptitudes, abilities, and career development plan.

MAJOR PROGRAM OUTCOMES (Cont'd.)

2. Develop a sound preprofessional and pretechnical multiskilled foundation based on National Health Care Skill Standards.

3. Successfully pursue advanced education and/or entry-level employment in a health career cluster.

4. Develop basic workplace skills as applied to adapting to technological change, transferring of skills to different environments, and functioning as ethical and moral health team members.

5. Acquire and use information relevant to remaining technologically abreast of their chosen health career majors and the health field in general.

6. Develop a professional philosophy as evidenced in personal qualities and practices, that improves the delivery of quality health care and health maintenance to consumers.

7. Become knowledgeable consumers of health care in a consistently changing technological environment.

NATIONAL SKILL STANDARDS

Through a United States Department of Education federal grant managed by Far West Laboratory on Research and Development and in partnership with the National Consortium on Health Science and Technology Education (NCHSTE), voluntary National Health Care Skill Standards have been validated. There are 31 core standards configured into six subsets that address what health care workers need to know and be able to do. Research conducted by North Carolina State University (1995-1996) has provided significant evidence that the secondary Health Occupations Education body of knowledge has integrated each of the standards.

STUDENT CREDENTIALING AND CERTIFICATION

Cardiopulmonary Resuscitation (CPR) and Basic First Aid Certification

- Students who successfully complete Allied Health Sciences I and II or Medical Sciences II may acquire American Red Cross or American Heart Association CPR and Basic First Aid Certification.

Standard Precautions Proficiency Certification

- The Occupational Safety and Health Act (OSHA) requires all health care workers who may come in contact with body fluids must demonstrate proficiency in tasks/procedures referred to as "Standard Precautions." Students must demonstrate such

STUDENT CREDENTIALING AND CERTIFICATION (Cont'd.)

proficiency prior to their Health Occupations Education clinical internships or mentorships. Evaluation and certification may be given by either local health agency personnel or by a licensed secondary Health Occupations Education teacher.

Nurse Aide, Level I Certification

- A student may acquire Nurse Aide Level I certification if the student:

1. Successfully completes selected core competencies in Allied Health Sciences I or Medical Sciences I, Allied Health Sciences II and supplemental competencies identified in the state approved Nurse Aide, Level I curriculum.

2. Is taught by a state approved teacher (Registered Nurse) in a state approved program.

3. Scores at least 85 percent on a written examination and 100 percent on a performance assessment within a health care agency.

Students' names and demographic data are entered into the North Carolina Nurse Aide Central Nurse Registry that is electronically accessible statewide to potential employers.

DAMON Medical Terminology Certification

- Students who successfully complete the DAMON Medical Terminology course may receive certification awarded by the local Health Occupations Education program and an approved teacher. The DAMON system is recognized by health agencies and by postsecondary Health Occupations Education programs.

PROGRAM UNIQUENESS

Work-based experiences include an individualized approach with either a minimum of 65 hours in a clinical internship in health agencies, or a minimum of a 45-hour mentorship with a health care professional. Medical liability insurance for negligent acts in health agencies are afforded to students prior to clinical experiences. Health agencies may require testing for tuberculosis and/or other diseases, and a criminal record check for felonies related to drugs.

COURSE OFFERINGS*

Health Occupations Education course offerings, grades 7-12, are the following:

Grades 7-8	Levels			
	Level 1	Level 2	Level 3	Level 4
Exploring Biotechnology	Health Team Relations Biomedical Technology	Allied Health Sciences I Medical Sciences I	Allied Health Sciences II Medical Sciences II	Health Sciences Adv. Studies

NOTE: Due to the nature of the required liability insurance, the sequencing of Health Occupations Education courses should result in having juniors/seniors only in Allied Health Sciences II and Medical Sciences II.

* NOTE: Work-based learning methods such as internships, cooperative education and apprenticeships may be a part of any course Level 3 or 4 in grades 11-12.

Health Occupations Education Course Descriptions

Allied Health Sciences I

Course Number: 7211
Recommended Maximum Enrollment: 26
Recommended Hours of Instruction: 135-180

This course investigates the health care delivery system, its services, occupations, and related sciences. Topics include the study of the language of medicine, medical mathematics, microbiology, anatomy and physiology, diseases/disorders, diagnoses, treatments, patient/client care regimens, career development, and future technological innovations. Work-based learning strategies include service learning, field trips, and job shadowing. Skills in science, mathematics, communications, social studies and health are reinforced in this course. Projects, teamwork, demonstrations, and HOSA competitive events serve as instructional strategies that reinforce the curriculum content. Biology and Health Education are recommended prerequisites.

Prerequisites: None

Allied Health Sciences II

Course Number: 7212
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 270-360

This course is designed to prepare potential health care workers, preferably seniors, to become effective and efficient multiskilled health team members. Emphasis is placed on the development of proficiency in employability skills, emergency care skills, safety skills, clerical skills, and health care skills. The work-based learning strategy appropriate for this course is a minimum 65-hour clinical internship where student interns deliver health care in local hospitals, medical/dental/veterinarian offices, nursing/convalescent/retirement facilities, wellness centers, etc. Skills in science, mathematics, communications, health, and social studies are reinforced in this course. HOSA activities support networking with health care agencies and professionals through the development of clinical expertise and volunteerism.

Prerequisites: Allied Health Sciences I or Medical Sciences I

Biomedical Technology

Course Number: 7200
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This survey course challenges students to investigate current and 21st century medical and health care practices using computerized databases, the Internet, media, and visiting health team professionals. Topics include the world of biomedical technology, the language of medicine, present and evolving biomedical specialties, biomedical ethics: crises and alternatives, and health career development. Work-based learning strategies include service learning, field trips, and job shadowing. Skills in science, mathematics, communications, health, and social studies are reinforced in this course. HOSA membership provides opportunities for personal and experiential growth.

Prerequisite: None

Exploring Biotechnology

Course Number: 6828
Recommended Maximum Enrollment: 18
Recommended Hours of Instruction: 67-90

This course focuses on the agricutural and medical industry with emphasis on the relationship of science and technology that affects agriculture, medicine and health care. Topics include career concepts in the agriculture and medical fields. Skills in mathematics, science, and language arts are reinforced in the course. This course contributes to the development of a career development plan. Work-based learning activities appropriate for this course are projects, field trips, and job shadowing. Teaching strategies encourage the development of essential skills and knowledge of the world of work, careers and leadership in the agriculture and medical industries. FFA and CECNC leadership activities apply instructional competencies to authentic experiences.

Prerequisite: None

Health Science Advanced Studies

Course Number: 7299
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

This culminating course is for seniors who are career-focused in a health or medical career. The three parts of the course include a research paper, a product, and a presentation. Students demonstrate their abilities to use content and apply knowledge to real-world situations in a selected career. In addition, they will also demonstrate their abilities to write, speak, apply knowledge, problem solve, and use life skills such as time management and organization. Students work under the guidance of a teacher-facilitator in collaboration with community members, business representatives, and other school-based personnel. HOSA membership provides avenues for applying leadership skills, reinforcing writing and speaking skills, and participating in volunteer activities.

Prerequisites: Three credits in Health Occupations Education

Health Team Relations

Course Number: 7210
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course is designed to assist potential health care workers in their role and function as health team members. Topics include terminology, the history of health care, health care agencies, ethics, legal responsibilities, careers, holistic health, human needs, change, cultural awareness, communication, medical math, leadership, and career decision-making. Work-based learning strategies include service learning, field trips, and job shadowing. Basic academic skills, employability skills, critical thinking skills, teamwork, and the use of technology are reinforced in this course. HOSA leadership activities provide many opportunities for practical application of instructional competencies.

Prerequisite: None

Medical Sciences I

Course Number: 7221
Recommended Maximum Enrollment: 26
Recommended Hours of Instruction: 135-180

This course uses advanced investigative approaches to the study of human and social sciences as related to medicine and health care. Emphasis includes the language of medicine, body chemistry, anatomy and physiology, and the current and futuristic study of diseases and disorders. Work-based learning strategies include service learning, field trips, and job shadowing. Skills in science, mathematics, health, and social studies are reinforced in this course. HOSA competitive events serve as instructional strategies that reinforce the curriculum content. Biology, Algebra I, and Health Education are recommended prerequisites.

Prerequisites: None

Medical Sciences II

Course Number: 7222
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

This specialized course is designed to prepare potential health care workers, preferably seniors, for performance in an advanced technical or professional health career. Emphasis is placed on professional development, communications, safety, bioethical/legal practices, healthcare delivery systems, assessment and diagnostic practices, health maintenance practices, and problem-solving and decision-making. Skills in mathematics, science, and communications are reinforced in this course. Work-based learning strategies include the development of individualized clinical skills specifically related to a selected mentorship (minimum of 45 hours) with an exemplary health professional. HOSA activities support networking with health care agencies and professionals through the development of clinical expertise and volunteerism.

Prerequisites: Allied Health Sciences I or Medical Sciences I

FOR MORE INFORMATION

NC Department of Public Instruction
Instructional Services/BHC
Health Occupations Education
Career-Technical Education
6359 Mail Service Center
Raleigh, NC 27699-6359

MARKETING EDUCATION

PROGRAM DESCRIPTION

The purpose of the Marketing Education instructional program is to prepare students for advancement in marketing and management careers and future studies in community and technical colleges or four-year colleges or universities. Marketing is a vast and diverse discipline. It encompasses activities within production, as well as aspects of consumption. It is as specific as procedures for inventory control and, at the same time, as general as the creativity needed in effective promotion. The function of marketing occurs in all industries. Application of skills in reading, writing, mathematics, problem-solving, psychology, and critical thinking are found throughout the curriculum.

Based upon the National Marketing Education Standards and the National Curriculum Framework, courses in Marketing Education provide students with essential skills necessary to succeed in the workplace. The basic skills of reading, writing, and mathematics are an integral part of the Marketing Education curriculum. Skills in academic and technical areas are combined with the use of technology to provide students the foundation our business and industry leaders demand. Emphasis is placed on the development of competence in marketing functions and foundations, economic foundations, and human resource foundations to create a well-rounded education, enabling students to pursue further education in their chosen marketing career.

DESIGN

The high school scope and sequence of Marketing Education includes varied program offerings for students in grades 9-12 (levels 1-4). Students may enter the program and progress through the curriculum in one of seven career majors:

- Marketing Technologies
- Sales & Technical Services
- Travel, Tourism, and Recreation Marketing
- Business Management and Small Business Entrepreneurship
- Fashion Merchandising
- Business Administration
- Sports and Entertainment Marketing

Work-based learning strategies should be practiced throughout the Marketing Education curriculum.

Opportunities to develop and apply leadership, social, civic, and career-technical skills in marketing are provided through DECA, an association for Marketing Education students. As an integral part of the instructional program, students engage in performance activities to

demonstrate their mastery of knowledge to business and industry leaders. These organized activities help to interpret the Marketing Education program to the business community, faculty, parents, and other students.

MAJOR PROGRAM OUTCOMES

Marketing Education programs in the secondary schools are designed to enable students to:

1. Make realistic career choices regarding marketing careers.
2. Prepare for further education in the discipline of marketing.
3. Develop occupational and entrepreneurial skills necessary for initial employment and advancement in a marketing career.
4. Develop an understanding and appreciation of the social, civic, and economic values of the production, marketing, and consumption of goods and services.
5. Participate in work-based learning activities that allow skill application in a marketing-related field.
6. Develop initiative and leadership skills.
7. Develop and apply communication, computational, ethics, problem-solving, critical thinking, and planning competencies that will enable them to pursue further education and advance more rapidly in a chosen marketing career.

NATIONAL VOLUNTARY SKILL STANDARDS

National Skill Standards for the Hospitality and Tourism Industry

Through the Council of Hotel, Restaurant, and Institutional Education (CHRIE), in conjunction with the National Marketing Education Standards, skill standards for the hospitality and tourism industry have been developed. Food, lodging, travel-related, and recreational services are addressed in these standards. These standards are integrated into the Travel, Tourism, and Recreation Marketing curriculum.

National Retail Skill Standards

The National Retail Federation (NRF) developed skill standards for the retail sales associate to promote a high performance work organization at the point where the greatest number of jobs and the opportunity for driving profit coexist. These standards are addressed in the Marketing, Marketing Management, and Fashion Merchandising curricula through personal selling competencies.

National Voluntary Curriculum Standards

The North Carolina Marketing Education Curriculum is based on the National Marketing Education Curriculum Framework. This framework

NATIONAL VOLUNTARY SKILL STANDARDS Cont'd.

was developed through a joint effort of the U. S. Department of Education, the Marketing Education Resource Center, business and industry leaders, and marketing educators across the nation.

The Curriculum Framework is divided into four foundational areas and seven marketing functions. The four foundations support the seven marketing functions.

The four broad foundational areas include:

- Business, Management, and Entrepreneurship
- Communication and Interpersonal Skills
- Economics
- Professional Development

The seven specific functional areas include:

- Distribution
- Financing
- Marketing-Information Management
- Pricing
- Product/Service Management
- Promotion
- Selling

COURSE OFFERINGS*

Marketing Education course offerings, grades 7-12, are the following:

Grades 7-8	Levels			
	Level 1	**Level 2**	**Level 3**	**Level 4**
Exploring Business Technologies	Principles of Business and Personal Finance	Marketing Fashion Merchandising Sports and Entertainment Marketing I	Travel, Tourism, and Recreation Marketing Marketing Management Small Business Entrepreneurship Sports and Entertainment Marketing II	Marketing Advanced Studies Marketing Technology and Media Strategic Marketing

*NOTE: Work-based learning methods such as internships, cooperative education, and apprenticeships may be part of any course in grades 9-12.

Course Descriptions for Marketing Education

Exploring Business Technologies

Course Number: 6208
Recommended Maximum Enrollment: 18
Recommended Hours of Instruction: 67-90

This course is designed to explore the nature of business in an international economy and to study related careers in fields such as entrepreneurship, financial services, information technology, marketing, office systems technology, public relations and promotion, and travel and tourism. Emphasis is on using the computer while studying applications in these careers along with problem solving and thinking skills. Communication and mathematics skills are reinforced as students explore business applications and careers. Work-based learning strategies appropriate for this course are service learning, field trips, and job shadowing. Simulations, projects, teamwork, and FBLA or CECNC leadership activities, meetings, conferences, and competitions provide opportunities for application of instructional competencies. This course contributes to the development of a career development plan.

Prerequisite None

Fashion Merchandising

Course Number: 6631
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course is designed for students interested in the fashion industry and the merchandising of fashion. Topics include an overview of the fashion industry, evolution and movement of fashion, career development, merchandising, risk management, promotion, and fashion show production. Skills in research, mathematics, textile chemistry, and technical writing are reinforced in this course. Work-based learning strategies appropriate for this course include cooperative education or paid/unpaid internships. Marketing simulations, projects, teamwork, DECA leadership activities, meetings, conferences, and competitions provide many opportunities for application of instructional competencies.

Prerequisite None

Marketing

Course Number: 6621
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course is designed to help students develop basic knowledge, skills, and attitudes that will prepare them to enter the field of marketing. The course, which focuses on the National Marketing Education Standards and the National Curriculum Framework, emphasizes the foundations of business, management, and entrepreneurship; economics; professional development; and communication and interpersonal skills. Included in these foundations are concepts such as distribution, financing, selling, pricing, promotion, marketing-information management, and product/service management. Skills in communications, mathematics, and psychology are reinforced in this course. Work-based learning strategies appropriate for this course include job shadowing, paid/unpaid internships, school-based enterprises, field trips, and/or cooperative education.

Marketing simulations, projects, teamwork, DECA leadership activities, meetings, conferences, and competitions provide many opportunities for application of instructional competencies.

Prerequisite: None

Marketing Advanced Studies

Course Number: 6699
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

This is a culminating course for seniors who are career-focused in marketing technologies; sales and technical services; travel, tourism, and recreation marketing; business management and small business/entrepreneurship; fashion merchandising; business administration; or sports and entertainment marketing. The three components of the course include writing a research paper, producing a product, and delivering a presentation. Students demonstrate the ability to use content and apply knowledge to real-world situations in a career major. In addition, they will also demonstrate the ability to write, speak, apply knowledge, problem solve, and use life skills such as time management, planning, follow through, and organization. Students work under the guidance of a teacher facilitator in collaboration with community members, business representatives, and other school-based personnel. Simulations, projects, teamwork, DECA leadership activities, meetings, conferences, and competitions provide opportunities for application of instructional competencies.

Prerequisites: Three technical credits in Business, Marketing, or Information Technology Education

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Marketing Management

Course Number: 6622
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course is designed to continue the foundations covered in Marketing or Fashion Merchandising. Topics of study include recruiting, hiring, training and evaluating employees; information management; purchasing; pricing; ethics; sales management; and financing. Skills in math, human relations, communications, and technical writing are reinforced in this course. Work-based learning strategies appropriate for this course are school-based enterprises, cooperative education, paid/unpaid internships, and apprenticeships. Marketing simulations, projects, teamwork, DECA leadership activities, meetings, conferences, and competitions provide many opportunities for application of instructional competencies.

Prerequisite: Marketing or Fashion Merchandising

Marketing Technology and Media

Course Number: 6665
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

This course is designed to couple the marketing and economic skills students have mastered with the latest technology in marketing sales, mass media, research, and customer service presentation techniques. Emphasis is placed on creating a professional, polished approach to marketing products and services. Skills in technical writing, communications, mathematics, and application of current computer software are reinforced in this course. Work-based learning strategies appropriate for this course include paid/unpaid internships and apprenticeships. Marketing

simulations, projects, teamwork, DECA leadership activities, meetings, conferences, and competitions provide many opportunities for application of instructional competencies.

Prerequisites: Marketing, Fashion Merchandising, or Strategic Marketing, and Computer Applications I.

Principles of Business and Personal Finance

Course Number: 6600
Recommended Maximum Enrollment: 26
Recommended Hours of Instruction 135-180

This course introduces the major principles and concepts that are the foundation for future study of business and management. Topics of study include basic business principles, personal finance concepts, management concepts, systems thinking, quality management, and the current environment for business in a multinational marketplace. Communication skills and basic mathematical concepts are reinforced in this course. Work-based learning strategies appropriate for this course are field trips and job shadowing. Simulations, projects, teamwork, and DECA leadership activities, meetings, conferences, and competitions provide opportunities for application of instructional competencies.

Prerequisite: None

Small Business Entrepreneurship

Course Number: 6615
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course introduces students to the rewards and risks of owning or operating a business enterprise. Emphasis is placed on the mastery of skills needed to plan, organize, manage, and finance a small business. Skills in communication, technical writing, mathematics, research, and problem-solving are reinforced as each student prepares his/her own business plan. Work-based learning strategies appropriate for this course include cooperative education and paid/unpaid internships. Simulations, projects, teamwork, and DECA leadership activities, meetings, conferences, and competitions provide opportunities for application of instructional competencies.

Prerequisite: The student must have completed two technical credits in the same career pathway.

Sports and Entertainment Marketing I

Course Number: 6670
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course is designed for students interested in sports, entertainment, and event marketing. Emphasis is placed on the following principles as they apply to the industry: branding, licensing, and naming rights; business foundations; concessions and on-site merchandising; economic foundations; promotion; safety and security; and human relations. Skills in communications, human relations, psychology, and mathematics are reinforced in this course. Work-based learning strategies appropriate for this course include cooperative education, paid/unpaid internships, or school-based enterprises. Marketing simulations, projects, teamwork, DECA leadership activities, meetings, conferences, and competitions provide many opportunities for application of instructional competencies.

Prerequisite: None

Sports and Entertainment Marketing II

Course Number: 6671
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course is designed for students interested in an advanced study of sports, entertainment, and event marketing. Emphasis is placed on the following principles as they apply to the industry: Business management, career development options, client relations, ethics, events management, facilities management, legal issues and contracts, promotion, and sponsorships. Skills in communications, human relations, mathematics, psychology, and technical writing are reinforced in this course. Work-based learning strategies appropriate for this course include cooperative education, paid/unpaid internships, or school-based enterprises. Marketing simulations, projects, teamwork, DECA leadership activities, meetings, conferences, and competitions provide many opportunities for application of instructional competencies.

Prerequisite: Sports and Entertainment Marketing I

Strategic Marketing

Course Number: 6626
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This fast-paced course challenges students by combining into one course the content taught in the Marketing and Marketing Management courses. The curriculum, activities, and resources utilized in this course are written at the freshman college level. Topics include economics, marketing research and decision making, domestic and international markets and influences, human resource development, ethics, management, and financial analysis. Skills in mathematics, research, and critical thinking are reinforced in this course. Work-based learning strategies appropriate for this course include cooperative education and paid/unpaid internships. Marketing simulations, projects, teamwork, DECA leadership activities, meetings, conferences, and competitions provide many opportunities for application of instructional competencies.

Prerequisite: None

Travel, Tourism, and Recreation Marketing

Course Number: 6645
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course is designed to provide a foundation for students interested in a career in travel, tourism, and recreation marketing. Emphasis is placed on the hospitality/tourism industry, customer relations, travel destinations, tourism promotion, economics, and career development. Skills in mathematics, psychology, geography, and communications are reinforced in this course. Work-based learning strategies appropriate for this course include cooperative education or paid/unpaid internships. Marketing simulations, projects, teamwork, DECA leadership activities, meetings, conferences, and competitions provide many opportunities for application of instructional competencies.

Prerequisite: Marketing

LOCAL COURSE OPTIONS

Schools may offer one or more specialized courses not included in the *Standard Course of Study*. These courses should meet a local economic need. Options may include:

Fashion Merchandising and Management
International Marketing

Refer to Part I, Local Course Options, and Appendix B for instructions on how to offer these courses.

PARTNERING OPPORTUNITIES

The following are external nationally recognized programs. The participants must be member schools of these organizations and follow the curriculum requirements of these partnerships. NCDPI will not provide any curriculum materials for these programs.

- International Baccalaureate (IB) Business Management
- National Academy Foundation (NAF) Academy of Finance
- National Academy Foundation (NAF) Academy of Travel and Tourism

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FOR MORE INFORMATION

NC Department of Public Instruction
Instructional Services
Marketing Education
Career-Technical Education
6358 Mail Service Center
Raleigh, NC 27699-6358

MIDDLE GRADES EDUCATION

PROGRAM DESCRIPTION

Career development is a lifelong process by which individuals develop and refine their self-identity as it relates to life and employment decisions. Middle grades students have reached a critical age when they can explore career decision making and develop future educational plans. Career development experiences for middle grades students are designed to be exploratory in nature and do not develop specific skills, except in Business Computer Technology and Keyboarding. However, in the other five middle grades courses, students will develop a knowledge of self and the world of work and begin a career development planning process for bringing the two together.

DESIGN

Curriculum design, materials, and teaching strategies take into account the characteristics, nature, and learning styles of the middle grades student. Teaching strategies recommended for all course offerings include:

1. Hands-on approaches
2. Cooperative learning
3. Inquiry methods
4. Community involvement
5. Integration of academic skills

Commonalities among all course offerings include:

1. Critical and creative thinking
2. Communication skills
3. Problem solving
4. Leadership/citizenship
5. Career information and planning
6. Impact of technology

It is recommended that Exploring Career Decisions be included in any given sequence. Local school systems should select courses that will provide a continuum of experiences for the middle grades learner. These courses will provide building blocks from which students may choose based on the results of their interest inventories and assessments. Development of an individual career development plan should be the outcome of the middle grades experience.

Opportunities for leadership development and further application of instructional competencies are provided through student participation in Career Exploration Clubs of North Carolina (CECNC) or a program area career-technical student organization. Options include: FBLA, FFA, FCCLA, or TSA.

PROGRAM UNIQUENESS

Keyboarding and Business Computer Technology taught at the middle school level are designed to develop keying and formatting skills, appropriate techniques, and basic technology applications.

Keyboarding and Business Computer Technology should not be the sole provider of computer skill exposure at the middle grades. A combination of Keyboarding and Business Computer Technology is designed to reinforce and compliment the computer skills being integrated throughout the elementary and middle school curriculum.

MAJOR PROGRAM OUTCOMES

The career development program at the middle grades level is designed to assist students in:

1. Making wise decisions about choices related to themselves and to the world of work.

2. Developing an individual career development plan.

NATIONAL CURRICULUM STANDARDS

In 1986, the National Occupational Information Coordinating Committee (NOICC) launched the National Career Development Guidelines initiative. These guidelines have been endorsed by the North Carolina State Board of Education and are being implemented in educational programs throughout the state. The guidelines reflect professional consensus in three main areas:

1. Competencies and indicators for individual growth in self knowledge, educational and occupational exploration, and career planning.

2. Organizational capabilities to support competency-based career development programs.

3. Professional competencies that counselors and other staff must possess to deliver an effective career development program.

Education is a continuum that helps us take advantage of the opportunities in the workplace and to adapt to changing skill needs. Career development plays a key role in this continuum and the National Career Development Guidelines clearly recognize that need.

COURSE OFFERINGS Middle Grades Course Offerings, Grades 6-8, are the following:

Grades 6-8	Grades 7-8
Exploring Career Decisions	Business Computer Technology
Keyboarding	Exploring Biotechnology
	Exploring Business Technologies
	Exploring Life Skills
	Exploring Technology Systems

Courses are shown at the first grade level at which they may be offered.

Course Descriptions for Middle Grades

Business Computer Technology

Course Number: 6400
Recommended Maximum Enrollment: 26
Recommended Hours of Instruction: 67-90

This course is designed to provide hands-on instruction in basic computer hardware components and software applications. Emphasis is placed on extending and reinforcing touch keying skills while providing experience for learning word processing, database, spreadsheet, graphics, multimedia, and telecommunications applications. Communication skills and basic mathematical concepts are reinforced in this course. Work-based learning strategies appropriate for this course are field trips and job shadowing. In addition to simulations, projects, and teamwork, FBLA leadership activities, meetings, conferences, and competitions provide opportunities for application of instructional competencies.

Prerequisite: Keyboarding

Exploring Biotechnology

Course Number: 6828
Recommended Maximum Enrollment: 18
Recommended Hours of Instruction: 67-90

This course focuses on the agricultural and medical industry with emphasis on the relationship of science and technology that affects agriculture, medicine and health care. Topics include career concepts in the agriculture and medical fields. Skills in mathematics, science, and language arts are reinforced in the course. This course contributes to the development of a career development plan. Work-based learning activities appropriate for this course are projects, field trips, and job shadowing. Teaching strategies encourage the development of essential skills and knowledge of the world of work, careers and leadership in the agriculture and medical industries. FFA and CECNC leadership activities apply instructional competencies to authentic experiences.

Prerequisite: None

Exploring Business Technologies

Course Number: 6208
Recommended Maximum Enrollment: 18
Recommended Hours of Instruction: 67-90

This course is designed to explore the nature of business in an international economy and to study related careers in fields such as entrepreneurship, financial services, information systems, marketing, office systems technology, public relations and promotion, and travel and tourism. Emphasis is on using the computer while studying applications in these careers along with problem solving and thinking skills Communication and mathematics skills are reinforced as students explore business applications and careers. Work-based learning strategies appropriate for this course are service learning, field trips, and job shadowing. In addition to simulations, projects, and teamwork, FBLA leadership activities, meetings, conferences, and competitions provide opportunities for application of instructional competencies. This course contributes to the development of a career development plan.

Prerequisite: None

Exploring Career Decisions

Course Number: 6158
Recommended Maximum Enrollment: 18
Recommended Hours of Instruction: 67-90

This course is designed to provide an orientation to the world of work. Experiences are designed to introduce students to the technical nature of today's world and the role of productive workers. Activities enable students to increase self-awareness and make wise educational and occupational decisions as they plan for careers. Work-based learning strategies appropriate for this course include job shadowing and field trips. Opportunities for leadership development and further application of instructional competencies are provided through Career Exploration Clubs of North Carolina (CECNC). The formal career development planning process often begins within this course.

Prerequisite None

Exploring Life Skills

Course Number: 7018
Recommended Maximum Enrollment: 18
Recommended Hours of Instruction: 67-90

This course explores life skills essential for the adolescent now and in the future. Units include resource management, relationships, nutrition and wellness, childcare, and career pathways. Resource management includes decision-making, interior design, and managing a sewing project. Relationships focus on personal and social responsibilities with emphasis on the family across the life span. The focus is on developing a foundation for the application of life management skills. Skills in applying basic academics, problem-solving, decision-making, and creative and critical thinking are reinforced in this course. This course also contributes to the development of the career development plan. Work-based learning strategies appropriate for this course include field trips, job shadowing, and service learning. Life skills development and FCCLA leadership activities provide the opportunity to apply instructional competencies and workplace readiness skills to authentic experiences.

Prerequisite None

Exploring Technology Systems

Course Number: 8108
Recommended Maximum Enrollment: 18
Recommended Hours of Instruction: 67-90

This course allows students to explore basic technological concepts and principles and related career fields. Topics include design and problem solving, technology assessment, technology systems, technical sketching, CAD, graphic design, modeling skills, computer systems, electronics, and audio/visual production. Activities are structured to integrate physical and social sciences, mathematics, and language and fine arts. This course contributes to the creation of a career development plan. Work-based learning strategies appropriate for this course include job shadowing and field trips. This course and TSA technical and leadership activities enhance the students' appreciation of technical and engineering career fields.

Prerequisite None

Keyboarding

Course Number: 6511
Recommended Maximum Enrollment: 26
Recommended Hours of Instruction: 67-90

This course is designed to teach middle grades students basic keying skills, which consist of fluent manipulation of letter, figure/symbol, and basic service keys by touch. Emphasis is on daily use of a computer system and appropriate software to provide integrated training through a learn/practice/sustain/assess plan of skill building. Communication skills are reinforced as students format, compose, and proofread. Work-based learning strategies appropriate for this course are service learning, field trips, and job shadowing. In addition to simulations, projects, and teamwork, FBLA leadership activities, meetings, conferences, and competitions provide opportunities for application of instructional competencies.

Prerequisite: None

FOR MORE INFORMATION

NC Department of Public Instruction
Instructional Services/BHC
Middle Grades Education
Career-Technical Education
6359 Mail Service Center
Raleigh, NC 27699-6359

TECHNOLOGY EDUCATION

PROGRAM DESCRIPTION

Technology Education helps students develop an appreciation and fundamental understanding of technology through the study and application of materials, tools, processes, inventions, structures and artifacts of the past and present. Technology may be defined as "How people modify their natural world to suit their purposes" (from Technology for All Americans). This series of courses allows students to apply knowledge, tools, skills, and insights to the solving of problems found in communication, manufacturing, structural, and transportation systems. To a lesser degree, the areas of biotechnology, agriculture, and medical technology also are addressed. Students learn about and from technology, by applying technological principles and concepts as well as abstract ideas and concepts of mathematics, science, language arts, the fine arts and social studies. Through this integrated study of technology, students develop an understanding of the importance and role of technology in our society and the economy and its impacts upon the environment.

DESIGN

Technology Education courses are an equal balance between hands-on laboratory experiences and knowledge and understanding. Students are given the opportunity to apply the principles and concepts addressed within the curriculum through experimentation and research, design, problem solving, formal and informal presentations, and virtual and physical modeling. The middle grades *Exploring Technology Systems* course offers students an overview of various technology systems as well as an opportunity to reflect upon technology occupations. At the high school level, communication skills and problem-solving are major focuses of the prerequisite course, *Fundamentals of Technology*. Emphasis is placed on continued skill development and the use of more complex tools central to *Technology Advanced Studies* and the systems courses. Topics include technical communication, problem-solving, modeling, safety, and technology assessment.

The systems courses (Communication, Manufacturing, Structural and Transportation) develop indepth skills and understandings in their respective areas. The two *principles of technology* courses provide students with a fundamental understanding of physics. These courses are laboratory based and are designed to permit students the opportunity to apply physics concepts to practical situations. The course series *scientific and technical visualization* (SciVis) allow students to develop complex graphic skills that have virtually universal application. While the primary focus is on science and technological subjects, students may easily transfer their work to such areas as business, social studies and the arts.

The culminating course *Technology Advanced Studies* offers students the opportunity to select and pursue a topic they find interesting and challenging using the skills and insights gained from their technology course work and general education experience. This systematic approach to learning about technology prepares students for the rapidly changing technological world by developing skills necessary for adapting to new technologies as they evolve. It increases the likelihood that they become full participants in the global economy and rewarded and productive citizens.

The Technology Student Association (TSA) is also an essential component of Technology Education. Through TSA, students learn and apply technical, leadership, social and civic skills. Students become effective team members through the use and development of interpersonal and technical skills. TSA activities are an integral part of the Technology Education program and relate directly to the program outcomes.

MAJOR PROGRAM OUTCOMES

Programs in Technology Education are designed to help students:

1. Acquire general technological literacy.
2. Access, process, and share information through the use of contemporary tools and processes.
3. Acquire and apply design, problem-solving, and leadership skills.
4. Assess the implications of technology upon society, the economy, and the environment.
5. Appreciate the importance of technology and its effect on all aspects of human behavior and systems.
6. Use simple and complex tools and concepts found in communication, manufacturing, structural, and transportation systems.
7. Apply physical and social sciences, mathematics, and language and fine arts concepts and principles in an authentic manner.
8. Make wise career decisions.
9. Become more knowledgeable citizens and consumers regarding issues of technology.
10. Become responsible, participating, and successful citizens.

NATIONAL VOLUNTARY CURRICULUM STANDARDS

The *Standards for Technological Literacy* were initiated by the International Technology Education Association (ITEA) and funded by the National Science Foundation (NSF) and the National Aeronautics and Space Administration (NASA). The project, *Technology for All Americans*, has created a rationale, structure, and framework for Technology Education K-12. These standards identify what all students should know and be able to do with respect to understanding technology. The North Carolina Technology Education Program has been designed to reflect the *Standards for Technological Literacy* standards and benchmarks.

PROGRAM UNIQUENESS

1. Technology Education develops an understanding of complex technologies through the systems approach to problem solving. Students participate in designing, developing, monitoring, assessing, correcting, and improving technological systems. Technology Education provides a foundation for students to make career decisions leading to other career-technical education courses of study.

2. Principles of Technology I or Principles of Technology II can count as a physical science credit required for graduation under these conditions:

    a. PT I can count as a science elective, a physical science credit, or as the course Physical Science (3010). The Physical Science Course (3010) would be subject to the EOC test.
    b. PT II can count as a science elective, a physical science credit, or as the course Physics (3060). The Physics Course (3060) would be subject to the EOC test.
    c. The NC University system recognizes PT I and II as a physical science credit for university admissions.

3. North Carolina has recognized a national pre-engineering program as an option in Technology Education. Project Lead The Way Inc. (PLTW) is a national program forming partnerships among public schools, higher education institutions and the private sector to increase the quantity and quality of engineers and engineering technologist graduating from our educational system.

    PLTW has developed a four-year sequence of courses for high schools which, when combined with traditional mathematics and science courses in high school, introduces students to the scope, rigor and discipline of engineering and engineering technology prior to entering college. The courses are Introduction to Engineering Design, Digital Electronics, Computer Integrated Manufacturing, Principles of Engineering, and Engineering Design and Development. Introduction at this level will attract more students to engineeering, and will allow students, while still in high school, to determine if engineering is the career they desire. The PLTW graduate will be better prepared for college engineering programs and more likely to be successful. School systems file a modification to use this program. For additional information visit: http://www.pltw.org.

    PLTW has also developed a middle school program, Gateway to Technology. The purpose of this middle school curriculum is to expose students to a broad overview of the field of technology and its related processes. Because engineers use mathematics, science, and technology to solve problems, the course has been designed to be "activity oriented." It incorporates four units, each designed to be

taught in a period of ten weeks. Each unit is an independent unit, developed specifically for the student's age and comprehension level. It is recommended that they be taught in the following order: Design and Modeling, The Magic of Electrons, The Science of Technology and Automation and Robotics. School systems file a modification to use this program. For additional information, visit: http://www.pltw.org.

COURSE OFFERINGS*

Technology Education course offerings, grades 7-12, are the following:

Grades 7-8	Academic Levels*			
	Levels 1	**Levels 2**	**Levels 3**	**Levels 4**
Exploring Technology Systems	Fundamentals of Technology	Communication Systems Manufacturing Systems Structural Systems Transportation Systems Principles of Technology I Scientific and Technical Visualization I	Principles of Technology II Scientific and Technical Visualization II	Technology Advanced Studies

*NOTE: Work-based learning methods such as internships, cooperative education, and apprenticeships may be a part of any course in grades 9-12.

Course Descriptions for Technology Education

Communication Systems

Course Number: 8125
Recommended Maximum Enrollment: 21
Recommended Hours of Instruction: 135-180

This course introduces students to classical and contemporary visual, audio and electronic communication using state-of-the-art technology. Emphasis is placed on analyzing, designing, testing and evaluating communication systems such as: computer operating systems, the Internet, electronic, optical and digital communication systems, and concentrated areas of study determined by students and their teacher. Activities are structured to integrate physical and social sciences, mathematics, language and fine arts, and technical studies. Work-based learning strategies appropriate for this course include school-based enterprise, job shadowing, and service learning projects. This course and TSA technical and leadership activities develop skills essential for students interested in pursuing technical or engineering careers in communication related fields.

Prerequisite: Fundamentals of Technology

Exploring Technology Systems

Course Number: 8108
Recommended Maximum Enrollment: 18
Recommended Hours of Instruction: 67-90

This course allows students to explore basic technological concepts and principles and related career fields. Topics include design and problem solving, technology assessment, technology systems, technical sketching, CAD, graphic design, modeling skills, computer systems, electronics, and audio/visual production. Activities are structured to integrate physical and social sciences, mathematics, and language and fine arts. This course contributes to the creation of a career development plan. Work-based learning strategies appropriate for this course include job shadowing and field trips. This course and TSA technical and leadership activities enhance the students' appreciation of technical and engineering career fields.

Prerequisite: None

Fundamentals of Technology

Course Number: 8110
Recommended Maximum Enrollment: 21
Recommended Hours of Instruction: 135-180

This course provides prerequisite hands-on experiences in principles and processes essential for the study of the technology systems courses and develops a foundation for students interested in any technical field of study. Emphasis is placed on problem-solving, design, technical communication, modeling, testing, evaluation, and implications of technology. Activities are structured to integrate physical and social sciences, mathematics, language and fine arts. Work-based learning strategies appropriate for this course include job shadowing and field trips. This course and TSA technical and leadership activities develop skills essential for students interested in technical or engineering career fields.

Prerequisite: None

Manufacturing Systems

Course Number: 8115
Recommended Maximum Enrollment: 21
Recommended Hours of Instruction: 135-180

This course introduces students to principles of past and present manufacturing systems. Emphasis is placed on computer modeling, flexible manufacturing systems and computer-aided manufacturing concepts. Students assess their solutions through mass property analysis and modification using contemporary manufacturing methods. Activities are structured to integrate physical and social sciences, mathematics, and language and fine arts. Work-based learning strategies appropriate for this course include school-based enterprise, job shadowing, and service-learning projects. This course and TSA technical and leadership activities develop skills essential for students interested in pursuing careers in manufacturing as a designer, drafter, industrial manager, technician, or engineer.

Prerequisite: Fundamentals of Technology

Principles of Technology I

Course Number: 8011
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

This course provides a hands-on approach to understanding the fundamental principles and concepts of physics and associated mathematics. Emphasis is placed on understanding mechanical, electrical, fluid, and thermal systems as they relate to work, force, rate, resistance, energy, and power. Activities are structured to integrate science, mathematics, and language arts. Work-based learning strategies appropriate for this course include job shadowing and field trips. This course and TSA technical and leadership activities enhance the skills of students interested in pursuing technical, engineering, or science related careers. Algebra I and Fundamentals of Technology are recommended prerequisites.

Prerequisite: None

Principles of Technology II

Course Number: 8012
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

A continuation of laboratory-based experiences, students focus on mechanical, electrical, fluid, and thermal systems as they relate to force transformers, momentum, waves and vibrations, energy convertors, transducers, radiation theory, optical systems, and time constants. Activities are structured to integrate science, mathematics, and language arts. Work-based learning strategies appropriate for this course include job shadowing, and field trips. This course and TSA activities further enhance the skills essential for success in technical, engineering, and science related fields.

Prerequisite: Principles of Technology I

Scientific and Technical Visualization I

Course Number: 8006
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This state-of -the-art course introduces students to the use of complex graphic tools. Emphasis is placed on the use of these tools to understand better technical, mathematical and/or scientific concepts. Emphasis is placed on the use of complex graphic tools to better understand a given mathematics, and/or scientific concept. Visualization activities may include graphics of mathematical models, molecular structures, topographical maps, stratospheric and climate models, and statistical analysis. Computer, communication, mathematics and scientific concepts are reinforced in this course. Job shadowing is an appropriate work-based learning strategy for this course. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development.

Prerequisite: None

Scientific and Technical Visualization II

Course Number: 8007
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course provides students with advanced skills in the use of complex visualization tools for the study of mathematical and/or sciences concepts. Students design and develop increasingly complex data and concept driven visualization models. Focusing on scientific and technical concepts, students learn how to communicate and analyze phenomena using statistical, graphic, and conceptual visualization computer applications. Communication, computer, technical, mathematics, and science skills are reinforced in this course. Work-based learning strategies appropriate for this course are apprenticeship, internships, and cooperative education. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development.

Prerequisite: Scientific and Technical Visualization I

Structural Systems

Course Number: 8141
Recommended Maximum Enrollment: 21
Recommended Hours of Instruction: 135-180

This course introduces students to architecture and civil, structural and environmental engineering. These concepts are studied through research, design project development, and assessment. Activities are structured to integrate physical and social sciences, mathematics, language and fine arts. Work-based learning strategies appropriate for this course include school-based enterprise, job shadowing, and service-learning projects. This course and TSA technical and leadership activities develop skills essential for students interested in pursuing careers in building trades, city planning, architecture, or civil engineering.

Prerequisite: Fundamentals of Technology

Technology Advanced Studies

Course Number: 8005
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

Students select and pursue a topic of interest using knowledge and skills gained from previous technical and academic courses. Emphasis is placed on having the students select, direct, and evaluate their own study while using complex technological tools. This study allows the integration of science, mathematics, or language arts, the fine arts, and social studies with the application of technology. This course is for students who have completed three technical credits in Technology Education. Work-based learning strategies appropriate for this course include school-based enterprise, job shadowing, service-learning projects, apprenticeship, cooperative education, and internship. This course and TSA technical and leadership activities allows students to pursue in-depth research and experimentation within virtually all fields of study including science technology, engineering and mathematics.

Prerequisite: Fundamentals of Technology

Transportation Systems

Course Number: 8126
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course introduces students to land, water, air, and space transportation through experimentation and model making. Emphasis is placed on interdisciplinary research and transportation analysis focused on the performance of transportation systems, and their impacts on mobility and economic growth. Activities are structured to integrate the physical sciences and mathematics. Work-based learning strategies appropriate for this course include school-based enterprise, job shadowing, and service-learning projects. This course and TSA technical and leadership activities develop skills essential for students interested in technical or engineering careers in transportation related fields.

Prerequisite: Fundamentals of Technology

For More Information

NC Department of Public Instruction
Instructional Services/ITHS
Technology Education
Career-Technical Education
6360 Mail Service Center
Raleigh, NC 27699-6360

TRADE AND INDUSTRIAL EDUCATION

PROGRAM DESCRIPTION

Trade and Industrial Education is a secondary program to prepare students for careers in six of the ten North Carolina Career Pathways. While completing course sequences in these pathways, students participate in instructional units that educate them in standardized industry processes related to: concepts, layout, design, materials, production, assembly, quality control, maintenance, troubleshooting, construction, repair and service of industrial, commercial and residential goods and products.

DESIGN

As a component of career-technical education, Trade and Industrial Education provides students the opportunity to advance in a wide range of trade and industrial occupations. They are prepared for initial employment, further education at the community college or university level, and/or business ownership. The career pathways in which Trade and Industrial Education are commercial and artistic production, construction, engineering, industrial, public service and transport systems technologies. A balanced program of classroom study and practical work experiences produces competent workers who can manage resources, work cooperatively, organize and use information, understand complex systems, and apply appropriate technology. Cooperative education, internship, and apprenticeship experiences are available through the Trade and Industrial Education program.

Opportunities to develop and apply interpersonal leadership, social, civic, and business-related skills are provided through SkillsUSA, the career-technical student organization for Trade and Industrial Education students. As an integral part of the Trade and Industrial Education program, SkillsUSA activities enhance classroom instruction through leadership and teamwork activities. These activities directly relate to the major objectives of Trade and Industrial Education.

MAJOR PROGRAM OUTCOMES

The major outcomes for Trade and Industrial Education are to

1. Develop basic manipulative and technological skills relative to industrial occupations through a combination of laboratory experiences and work-based learning experiences.

2. Provide technical information (principles and theory) with emphasis on the application of communications, mathematics, design, economics, science, and computer skills pertinent to employment and success in an industrial occupation.

MAJOR PROGRAM OUTCOMES (Cont'd.)

3. Provide instruction in such areas as human relations, safety and health, positive work habits, and employability skills.

4. Develop the skills needed to exercise and follow effective leadership in fulfilling occupational, social, and civic responsibilities.

NATIONAL VOLUNTARY SKILL STANDARDS

The United States Departments of Education and Labor have initiated public-private partnerships to develop voluntary skill standards for various industries. Skills and performance levels needed by the American workforce to be competitive have been identified.

The National Voluntary Occupational Skill Standards used as guides in Trade & Industrial Education follow:

Commercial & Artistic Production Technologies

- **Graphic Arts Education Research Foundation (GAERF)** Secondary and post-secondary printing graphics programs align their curriculum to PrintED, GAERF's National Certification Skill Standards for the Graphic Communication Industry.

Construction Technologies

- **National Center for Construction Education and Research (NCCER)** With construction technologies training programs nationwide, NCCER has created performance-based curricula to unite the construction industry with secondary and post-secondary construction technology (carpentry), masonry, electrical trades and welding technology programs.
- **National Electrical Contractors Association (NECA)** NECA's Codes and Standards group works to influence the content of regulatory codes, and develops and publishes National Electrical Installation Standards (NEIS), the first quality standards for Electrical Trades.
- **Woodlinks** is the furniture and cabinetmaking industry's skill standards and education organization. Student's participating in furniture and cabinetmaking work toward this set of international standards.

Engineering Technologies

- **CompTIA** is the information technology organization for vendor-neutral industry skill standards. CompTIA works to provide continuing and emerging technician's credentials for courses in computer engineering technology and network engineering technology.
- The **Electronic Industries Foundation (EIF)** sets skills standards for the electronics industries. These national skill standards are used in electronics.
- The **Foundation for Industrial Modernization (FIM)** sets skill standards for computer aided design (CAD) users. These national skill standards are used in Drafting I, Drafting II – Architectural, Drafting II – Engineering, Drafting III – Architecture and Drafting III – Engineering.

NATIONAL VOLUNTARY SKILL STANDARDS (Cont'd.)

Industrial Technologies

- The **American Welding Society (AWS)** sets skill standards for the welding trades. Its national skill standards are used in welding technology.
- The **National Institute for Metalworking Standards (NIMS)** sets skills standards for the machine-tool industry. Its national skill standards are used in metals manufacturing.

Public Service Technologies

- The **Board of Cosmetic Arts Examiners** sets both skill standards and work-based learning experience requirements. These standards and requirements affect students in cosmetology courses.

Transport System Technologies

- **National Automotive and Technicians Education Foundations, Inc. (NATEF)** NATEF sets skills for the automotive and collision repair courses. In North Carolina, Automotive Service Technology I, II, & III and Collision Repair Technology I & II are aligned to these national skill standards.

STUDENT CREDENTIALING AND CERTIFICATION

Nine industries offer national credentialing, certification, documentation and registry services to accredit high school Trade and Industrial Education programs. Each has rigid inspection, testing, and acceptance criteria and maintains a national registry that provides portable Credentials. These agencies are the American Welding Society (AWS), CompTIA, Board of Cosmetic Arts Examiners, Graphic Arts Education Research Foundation, National Automotive Technicians Education Foundation (Automotive Service Excellence, ASE), the National Center for Construction Education and Research (NCCER), the National Institute for Metalworking Skills (NIMS) and Woodlinks.

Students desiring a universally recognized credential for the workplace that is information technology related should enroll in a career major that leads them to credentials such as Internet and Computing Core Certification (IC^3), Microsoft Office Specialist (MOS), A+ Certification, Net+, Certified Novell Administrator (CNA), Microsoft Certified Systems Engineer (MCSE), or Certified Cisco Network Administrator (CCNA). These credentials can be enhanced at postsecondary levels or may be used immediately in the workplace.

North Carolina also requires certain trades, crafts, and technicians to be licensed. Licensure usually requires meeting age, education, experience, and examination criteria. Most Trade and Industrial Education programs provide the skills and knowledge appropriate to acquire licensure.

STUDENT CREDENTIALING AND CERTIFICATION (Cont'd.)

The North Carolina Department of Labor offers registered apprenticeship programs leading to the designation of journeyman in all trades and crafts offered by Trade and Industrial Education. They also maintain a registry and portable credential.

The following chart illustrates credentialing and certification offerings for the six major Trade and Industrial Education clusters. Other certifications are available.

HIGH SCHOOL PROGRAM	AWS	ASE	CA	CT	GAERF	NATEF	NIMS	NCCER	WL	L	A
COMMERCIAL AND ARTISTIC PRODUCTION TECHNOLOGIES											
Printing Graphics					*						*
CONSTRUCTION TECHNOLOGIES											
Construction Technology								*		*	*
Electrical Trades								*		*	*
Furniture and Cabinetmaking									*		*
Masonry								*			*
ENGINEERING TECHNOLOGIES											
Computer Engineering Technology				*							*
Electronics											*
Network Engineering Technology				*							*
INDUSTRIAL TECHNOLOGIES											
Metals Manufacturing Technology							*				*
Welding	*							*			*
PUBLIC SERVICE TECHNOLOGIES											
Cosmetology			*							*	*
TRANSPORT SYSTEMS TECHNOLOGIES											
Automotive Service Technology		*				*					*
Collision Repair Technology		*				*					*

CERTIFYING AGENCIES

KEY	CERTIFYING AGENCIES
AWS	American Welding Society
ASE	Automotive Service Excellence, National Automotive Technicians Education Foundation
CA	Board of Cosmetic Arts Examiners
CT	CompTIA
GAERF	Graphic Arts Education Research Foundation
NATEF	National Automotive and Technician's Education Foundation
NIMS	National Institute for Metalworking Skills
NCCER	National Center for Construction Education and Research
WL	Woodlinks
L	Licensure, State
A	Apprenticeship, Department of Labor (DOL)

PROGRAM UNIQUENESS

- The scope and sequence of Trade and Industrial Education includes program offerings in six career pathways with 17 distinct technologies represented.

- The majority of the apprenticeable occupations listed by the Department of Labor are related to technical skills contained in Trade and Industrial Education courses.

Trade and Industrial Education course offerings, grades 9-12, are:

COURSE OFFERINGS*

Academic Levels			
Level 1	**Level 2**	**Level 3**	**Level 4**
Introduction to Trade & Industrial Education			Trade and Industrial Education Advanced Studies
		Trade & Industrial Cooperative Training I	Trade & Industrial Cooperative Training II
	Commercial and Artistic Production Technologies		
	Digital Media I	Digital Media II	
	Printing Graphics I	Printing Graphics II	
	Construction Technologies		
	Construction Technology I	Construction Technology II	Construction Technology III
	Electrical Trades I	Electrical Trades II	
	Furniture and Cabinetmaking I	Furniture and Cabinetmaking II	
	Masonry I	Masonry II	Masonry III
	Engineering Technologies		
	Computer Engineering Technology I	Computer Engineering Technology II	
	Drafting I	Drafting II – Architectural	Drafting III – Architectural
		Drafting II – Engineering	Drafting III – Engineering
	Electronics I	Electronics II	
	Networking I	Network Engineering Technology II – Cisco	Network Engineering Technology III – Cisco
		Network Engineering Technology II – Nortel	Network Engineering Technology III – Nortel
	Scientific & Technical Visualization I	Scientific & Technical Visualization II	
	Industrial Technologies		
	Metals Manufacturing Technology I	Metals Manufacturing Technology II	
	Welding Technology I	Welding Technology II	
	Public Service Technologies		
	Cosmetology Introduction	Cosmetology I	Cosmetology II
	Transport Systems Technologies		
	Automotive Service Technology I	Automotive Service Technology II	Automotive Service Technology III
	Collision Repair Technology I	Collision Repair Technology II	

* Work-based learning methods such as internships, cooperative education, and apprenticeships may be a part of any course in grades 9-12.

Trade and Industrial Education Course Descriptions

Automotive Service Technology I

Course Number: 7511
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course introduces basic automotive skills and job opportunities in the auto repair industry. Topics include engine theory, automotive service preventive maintenance, brake repair, electrical systems trouble-shooting, safety, test equipment, and measuring. Skills in science, mathematics, thinking, and leadership are reinforced in this course. Work-based learning strategies for this course may include field trips, internships, job shadowing, and cooperative on-the-job training. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development. Algebra I is a recommended prerequisite.

Prerequisite: None

Automotive Service Technology II

Course Number: 7512
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 270-360

Automotive Service Technology programs in North Carolina are National Automotive Technician Education (NATEF) Certified. Automotive Service Excellence areas of brakes and electrical/electronics are taught in this course. The level II course helps prepare students for the Automotive Service Excellence (ASE) technician certification. Work-based learning experience strategies appropriate for this course are field trips, job shadowing, internships, cooperative on-the-job training, and apprenticeship. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development.

Prerequisite: Automotive Service Technology I

Automotive Service Technology III

Course Number: 7513
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 270-360

Automotive Service Technology III emphasizes advanced brakes and advanced electrical/electronics. Students will have accumulated 105 hours of instructional time in brakes and 230 hours of instructional time in electrical/electronics for the program to be NATEF certified. Students may receive community college credit for brakes and electronics. This course further prepares students for ASE certification. Skills in leadership, safety, problem solving, and planning are reinforced in this course. The work-based learning strategies appropriate for this course are cooperative on-the-job training, internships, and apprenticeships. A select number of Schools that are certified in four areas may apply to become an AYES (Automotive Youth Education System) site. These schools must have sufficient dealership support for apprenticeships. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development.

Prerequisite: Automotive Service Technology II

Collision Repair Technology I

Course Number: 7521
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

This course provides a basic introduction to collision repair work and the technical aspects of the collision repair industry. Topics include safety, hand and power tools and equipment, painting and refinishing, welding, cutting and panel repair. Skills in mathematics, science, reading, leadership, business and problem solving are reinforced. The work-based strategies appropriate for this course are job shadowing, internships, cooperative education, and apprenticeship. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development.

Prerequisite: None

Collision Repair Technology II

Course Number: 7522
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 270-360

This course covers basic collision repair practices, career information, and employment opportunities. Topics include welding, cutting, proper use of collision repair tools and equipment, and panel repairs using various substances. Skills in mathematics, science, reading, leadership, business and problem solving are reinforced. The work-based strategies appropriate for this course are job shadowing, internships, cooperative education, and apprenticeship. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development.

Prerequisite: Collision Repair Technology I

Computer Engineering Technology I

Course Number: 7991
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course introduces the essential hardware competencies for an entry-level PC service technician. This course focuses on the CompTIA A+ Core Hardware exam objectives. Students demonstrate basic knowledge of installing, configuring, upgrading, troubleshooting, and repairing microcomputer systems. The work-based strategy appropriate for this course is job shadowing. Hands-on experiences and SkillUSA leadership activities provide many opportunities to enhance classroom instruction and career development.

Prerequisite: None

Computer Engineering Technology II

Course Number: 7992
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

This course provides the essential operating systems competencies for an entry-level PC service technician. This course focuses on the CompTIA A+ Operating System Technologies exam objectives. Students demonstrate knowledge of installing, configuring, upgrading, troubleshooting, and repairing operating systems. Work-based strategies appropriate for this course are job shadowing, internship, cooperative education, and apprenticeship. Hands-on experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development.

Prerequisite: Computer Engineering Technology I

Construction Technology I

Course Number: 7721
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course provides a basic introduction to construction work and the technical aspects of carpentry. Topics include safety, measurement, and the identification, selection, and use of tools, equipment, lumber, materials, and fasteners. Basic skills, leadership, career development, thinking and reasoning skills, mathematics, and principles of technology are reinforced. Job shadowing is an appropriate work-based learning strategy for this course. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development.

Prerequisite: None

Construction Technology II

Course Number: 7722
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 270-360

This course covers in depth advanced technical aspects of carpentry with emphasis on development of skills introduced in level I. Topics include plans, framing, footings, foundations, wall sheathing, insulation, vapor barriers, gypsum board, and underlayment. Skills in measurement, leadership, safety, mathematics, and problem solving are reinforced in this course. Work-based learning strategies appropriate for this course are cooperative education and apprenticeship. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development. Geometry is a recommended prerequisite.

Prerequisite: Construction Technology I

Construction Technology III

Course Number: 7723
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 270-360

This course covers issues related to planning, management, finance, sales, labor, technology, community, health, environment, and safety. Topics include estimating, leveling instruments, forms, special framing, interior and exterior finishing, cabinets, built-ins, and metal studs. Skills in technical subjects, production, leadership, safety, problem solving, reading, and mathematics are reinforced in this course. Work-based learning strategies appropriate for this course are cooperative education and apprenticeship. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development.

Prerequisite: Construction Technology II

Cosmetology - Introduction

Course Number: 7810
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course introduces the basic principles and foundations of the cosmetology profession. Topics include: leadership, infection control, draping and shampooing, thermal styling, wet styling, long hair design, human physiology, facials, and natural nails. Skills in mathematics, science, biology, leadership, and problem solving are reinforced in this course. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities that enhance classroom instruction and career development.

Prerequisite: None

Cosmetology I

Course Number: 7811
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 600

This course introduces developmental skills, employment opportunities, and career information required for the cosmetology industry. Topics include facials, manicures, hair cutting, chemical relaxing and restructuring, wet hair styling, and hair coloring and lighting. Skills in mathematics, science, biology, leadership, and problem solving are reinforced in this course. The work-based learning strategy appropriate for this course is a school-based enterprise. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development.

Prerequisite: None

Cosmetology II

Course Number: 7812
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 600

This course provides advanced development of process, techniques, and skills introduced in Cosmetology I. Topics include hair coloring techniques, chemical servicing; identification and treatment of disorders of the skin, scalp and hair; manicuring; pedicuring; artificial nails; hair removal; and permanent waving techniques. Students receive 1200/1500 hours of training to prepare them for the Cosmetology Board Exam. Skills in chemistry, mathematics, business, thinking, and communication are reinforced in this course. The work-based learning strategy appropriate for this course is a school-based enterprise. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development.

Prerequisite: Cosmetology I

Digital Media I

Course Number: 7935
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course provides a broad-based foundation in the digital media field. An emphasis is placed on the fundamental concepts of audio and video design, various digital media technologies, non-linear editing, product development and design, and career development. Communication, mathematical, and critical thinking skills are strengthened throughout the course. Work-based learning strategies appropriate for this course are field trips and job shadowing. Local projects and SkillsUSA leadership activities, conferences, and competitions provide opportunities for the application of instructional competencies.

Prerequisite: None

Digital Media II

Course Number: 7936
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

This course provides students with more advanced knowledge in the digital and interactive media industry. Emphasis is placed on advanced audio and video non-linear editing techniques for the media; and commercial and emerging, web-based interactive media. Project planning, design and development prepare students for entry into various IT and communication industries. Work-based strategies appropriate for this course are cooperative education and apprenticeship. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development.

Prerequisite: Digital Media I

Drafting I

Course Number: 7921
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course introduces students to the use of simple and complex graphic tools used to communicate and understand ideas and concepts found in the areas of architecture, manufacturing, engineering, science, and mathematics. Topics include problem-solving strategies, classical representation methods such as sketching, geometric construction techniques, as well as CAD (computer assisted design), orthographic projection, and 3-D modeling. Skills in communication, mathematics, science, leadership, and problem-solving are reinforced in this course. Job shadowing is an appropriate work-based learning strategy for this course. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development.

Prerequisite: None

Drafting II - Architectural

Course Number: 7962
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

This course is focused on the principles, concepts, and use of complex graphic tools used in the field of architecture, structural systems, and construction trades. Emphasis is placed on the use of CAD tools in the creation of floor plans, wall sections, and elevation drawings. Mathematics, science, and visual design concepts are reinforced. Work-based learning strategies appropriate for this course are apprenticeship and cooperative education. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development.

Prerequisite: Drafting I

Drafting III- Architectural

Course Number: 7963
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

This course introduces students to advanced architectural design concepts. Emphasis is placed on the use of CAD tools in the design and execution of site and foundation plans as well as topographical information and detail drawings of stairs and wall sections. Teaming and problem-solving skills are reinforced in this course. Work-based learning strategies appropriate for this course are apprenticeship, internship, and cooperative education. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development. Geometry is a recommended prerequisite.

Prerequisite: Drafting II - Architectural

Drafting II - Engineering

Course Number: 7972
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

This course focuses on engineering graphics introducing the student to symbol libraries, industry standards, and sectioning techniques. Topics include coordinate systems, principles of machine processes and gearing, and the construction of 3-D wireframe models using CAD. Mathematics, science, and mechanical engineering concepts involving the working principles and design of cams and gears are reinforced in this course. Work-based learning strategies appropriate for this course are apprenticeship, internships, and cooperative education. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development.

Prerequisite: Drafting I

Drafting III - Engineering

Course Number: 7973
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

This course introduces the student to advanced engineering concepts using CAD tools. Topics studied include descriptive geometry, geometric tolerancing, and advanced engineering design concepts such as surface and solid modeling. Science and mathematic concepts are reinforced in this course. Work-based learning strategies appropriate for this course are apprenticeship, internships, and cooperative education. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development. Geometry is a recommended prerequisite.

Prerequisite: Drafting II - Engineering

Electrical Trades I

Course Number: 7741
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course introduces residential wiring, electrical installation, and service. Topics include basic electricity, electrical construction codes and practices, the National Electrical Code, the use of test equipment, and electrical hand and power tools. Skills in safety, mathematics, leadership, and problem solving are reinforced in this course. Job shadowing is an appropriate work-based learning strategy for this course. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development.

Prerequisite: None

Electrical Trades II

Course Number: 7742
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 270-360

This course provides advanced instruction in residential wiring and introduction to electrical theory including AC and DC circuits. Emphasis is placed on test equipment, electrical color coding, conduit bending and installation, electrical measurements, use of polyphase current, specialty tools, transformers, and generators. Skills in safety, leadership, reading, mathematics, and problem solving are reinforced in this course. Work-based learning strategies appropriate for this course are cooperative education and apprenticeship. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development. Geometry is a recommended prerequisite.

Prerequisite: Electrical Trades I

Electronics I

Course Number: 7631
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course covers electronic practices and fundamentals, roles of electronics in communications and industry, and career development. Topics include safety, tools, direct current, schematics, soldering, measuring electricity, Ohm's/Watt's/Kirchoff's Laws, power, and circuits. Leadership skills, science, thinking skills, and principles of technology are reinforced. Job shadowing and internships are appropriate work-based learning strategies for this course. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development. Algebra I is a recommended prerequisite.

Prerequisite: None

Electronics II

Course Number: 7632
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 270-360

This course covers advanced practices, principles, special equipment and materials. Topics include safety, alternating current, inductive/capacitive/RCL circuits, semiconductor devices, rectifier/filter circuits, and bipolar transistors. Skills in leadership, safety, mathematics, reading, problem solving, tools, and test equipment are reinforced. Work-based learning strategies appropriate for this course are job shadowing, cooperative education, and apprenticeship. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development.

Prerequisite: Electronics I

Furniture and Cabinetmaking I

Course Number: 7621
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

This course introduces career information, employment opportunities, and skills required for work in the furniture and cabinetmaking industry. Topics include tools and equipment, theory and practice, types of woods, finishes, styles, bonds and fastners. Skills in mathematics, reading, leadership, safety, and problem solving are reinforced in this course. Work-based learning strategies appropriate for this course are cooperative education and apprenticeship. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development. Geometry is a recommended prerequisite.

Prerequisite: None

Furniture and Cabinetmaking II

Course Number: 7622
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 270-360

This course covers development of more advanced knowledge and skills in the furniture and cabinetmaking industry. Emphasis is placed on construction principles as applied to mass production, and the construction and installation of cabinet drawers and doors. Skills in leadership, safety, mathematics, planning, and problem solving are reinforced in this course. Work-based strategies appropriate for this course are cooperative education and apprenticeship. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development.

Prerequisite: Furniture and Cabinetmaking I

Introduction to Trade and Industrial Education (ITIE)

Course Number: 7400
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course introduces students to as many as six career majors available in T & I Education. Students may rotate to different laboratories for instruction. Topics include level I objectives from each of the T & I courses being introduced. Skills in communication, science, mathematics, and leadership are reinforced in this course. Work-based learning strategies appropriate for this course are field trips and job shadowing. Hands-on work experiences and SkillsUSA leadership activities provide opportunities to enhance classroom instruction and career development.

Prerequisite: None

Masonry I

Course Number: 7711
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course introduces the nature of masonry technology, materials and supplies, and employability skills. Topics include safety, layout, tools, leveling, plumbing, use of straight-edge, and jointing brick and block in wall construction. Reading, mathematics, problem solving, and principles of technology are reinforced in this course. Job shadowing is an appropriate work-based learning strategy for this course. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development.

Prerequisite: None

Masonry II

Course Number: 7712
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 270-360

This course provides a continuation of masonry skills, estimating, blueprint reading, and building codes. Topics include constructing walls, corners, sills, and similar structures using a variety of bonds and materials. Skills in safety, leadership, reading, mathematics, problem solving, and career development are reinforced in this course. Work-based learning strategies appropriate for this course are cooperative education and apprenticeship. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development. Geometry is a recommended prerequisite.

Prerequisite: Masonry I

Masonry III

Course Number: 7713
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 270-360

This course provides advanced masonry skills, leadership development, and the preparation of technical presentations. Topics include constructing composite walls, steps, arches, lattice walls, sidewalks, brick and concrete pavers, window sills, chimneys, and fireplaces. Skills in safety, mathematics, reading, problem solving, and employability skills are reinforced in this course. Work-based learning strategies appropriate for this course are cooperative education and apprenticeship. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development.

Prerequisite: Masonry II

Metals Manufacturing Technology I

Course Number: 7641
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course introduces various manufacturing processes and job opportunities in manufacturing with emphasis on machining metal parts. Topics include safety, math, measurement, blueprint reading, layout, bench work, sawing, drilling, turning, and milling. Science, thinking skills, and principles of science are reinforced. Job shadowing and internships are appropriate work-based learning strategies for this course. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development.

Prerequisite: None

Metals Manufacturing Technology II

Course Number: 7642
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 270-360

This course provides advanced instruction in manufacturing and introduces computer assisted drafting/manufacturing and numerical control processes. Topics include safety, environmental protection, quality control, metallurgy, materials, layout, assembly, sawing, turning, milling, grinding, computer numerical control, computer-aided manufacturing, welding, and maintenance. Skills in leadership, safety, mathematics, reading, problem solving, blueprint reading, and precision measuring are reinforced. Work-based learning strategies appropriate for this course are job shadowing, cooperative education, and apprenticeship. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development. Geometry is a recommended prerequisite.

Prerequisite: Metals Manufacturing Technology I

Networking I

Course Number: 7980
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course provides a broad-based foundation in the engineering and administration of computer network systems. Emphasis is on PC/network hardware and operating systems, architecture, protocols, design and security, and career development. Communication, mathematical, and critical thinking skills are strengthened throughout the course. Work-based learning strategies appropriate for this course are field trips and job shadowing. In addition to simulations, projects, teamwork, SkillsUSA leadership activities, meetings, conferences, and competitions provide opportunities for application of instructional competencies.

Prerequisite: None

Network Engineering Technology II

Course Numbers:
Cisco 7981
Nortel 7983
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

This course introduces the fundamental principles of networks and their operation from an industry vendor's perspective. Emphasis is placed on the hands-on skills needed to design, set-up, maintain networks, install cabling, and configure vendor-specific routers and switches. Technical writing and binary mathematical skills are also emphasized. The expectation of this course sequence is for students to be better prepared for the appropriate industry credentialing exam. Work-based strategies appropriate for this course are job-shadowing, internships, cooperative education, and apprenticeship. Hands-on experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development.

Prerequisite: Networking I

Network Engineering Technology III

Course Numbers:
Cisco 7982
Nortel 7984
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

Through hands-on experiences, this course introduces the concepts of wide area networks, advanced router configurations, switched networks, VLANS, and simple vendor-specific network management protocols. Presentation and communication skills needed by a network engineer also will be emphasized. The expectation of this course sequence is for students to be better prepared for the appropriate industry credentialing exam. Work-based strategies appropriate for this course are internships, cooperative education, and apprenticeship. Hands-on experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development.

Prerequisite: Network Engineering Technology II

Printing Graphics I

Course Number: 7911
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course introduces graphic communications and imaging technology with emphasis on printing production, publishing, and packaging industries. Topics include safety, layout, design, electronic imaging, reproduction photography, image assembly, platemaking, duplicator operations, finishing, and binding. Thinking skills, science, leadership, and visual art concepts are reinforced in this course. Job shadowing and internships are appropriate work-based learning strategies for this course. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development.

Prerequisite: None

Printing Graphics II

Course Number: 7912
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 270-360

This course covers the entire printing graphic process, from design stage, to printing, bindery, and distribution stages. Topics include advanced safety, production planning layout, design, electronic imaging, reproduction photography, image assembly, platemaking, duplicator operations, finishing, binding, screen printing, and flexography. Skills in leadership, reading, math, safety, science, and visual art concepts are reinforced in this course. Work-based learning strategies appropriate for this course are apprenticeship, cooperative education, and internship. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development. Geometry and Art I are recommended prerequisites.

Prerequisite: Printing Graphics I

Scientific and Technical Visualization I

Course Number: 7901
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This state-of -the-art course introduces students to the use of complex graphic tools. Emphasis is placed on the use of these tools to understand better technical, mathematical and/or scientific concepts. Emphasis is placed on the use of complex graphic tools to better understand a given mathematical, and/or scientific concept. Visualization activities may include graphics of mathematical models, molecular structures, topographical maps, stratospheric and climate models, and statistical analysis. Computer, communication, mathematical and scientific concepts are reinforced in this course. Job shadowing is an appropriate work-based learning strategy for this course. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development.

Prerequisite: None

Scientific and Technical Visualization II

Course Number: 7902
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course provides students with advanced skills in the use of complex visualization tools for the study of mathematical and/or sciences concepts. Students design and develop increasingly complex data and concept driven visualization models. Focusing on scientific and technical concepts, students learn how to communicate and analyze phenomena using statistical, graphic, and conceptual visualization computer applications. Communication, computer, technical, mathematics, and science skills are reinforced in this course. Work-based learning strategies appropriate for this course are apprenticeship, internships, and cooperative education. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development.

Prerequisite: Scientific and Technical Visualization I

Trade and Industrial Advanced Studies

Course Number: 7999
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 135-180

This culminating, career-focused course for seniors in T & I programs includes a research paper, product, and presentation. Emphasis is on students demonstrating their abilities to use content and apply knowledge to real-world situations. Skills in leadership, writing, speaking, problem solving, mathematics, and science are reinforced in this course. It is important to connect work-based learning such as internship, apprenticeship, and cooperative education to this course. Students work under the guidance of a teacher-facilitator in collaboration with community members, business representatives, and other school-based personnel. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development.

Prerequisite: Three technical credits within Trade and Industrial Education.

Trade and Industrial Cooperative Training I

Course Number: 7821
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180
Plus paid work experience

This course combines classroom instruction with skilled on-the-job training in the areas of commercial and artistic production, construction, engineering, industrial, or transport systems technology. In the school-based learning part of the course, emphasis is placed on team development, quality service and products, customer satisfaction, employment acquisition, career analysis, safety standards, and leadership. Skills reinforced in this course are technical mathematics, measuring, reading, writing, and communication skills. Work-based learning strategies appropriate for this course include cooperative education and apprenticeships. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development.

Prerequisite: None

Trade and Industrial Cooperative Training II

Course Number: 7822
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135- 180
Plus paid work experience

This course provides skills necessary to become successful in a trade and industrial occupation. In the school-based learning part of the course, emphasis is placed on total quality teamwork, decision-making, running and controlling projects, communication skills, business ownership, and financial planning. Skills reinforced in this course are technical mathematics, reading, communication, and leadership. Work-based learning strategies appropriate for this course include cooperative education, apprenticeships, and internships. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development.

Prerequisite: Trade and Industrial Cooperative Training I

Welding Technology I

Course Number: 7661
Recommended Maximum Enrollment: 20
Recommended Hours of Instruction: 135-180

This course covers basic industrial and construction welding practices, occupation characteristics, and employment opportunities. Topics include safety, tools, print reading, measurement, thermal cutting processes, basemetal preparation and shielded metal arc welding (SMAW). Science, thinking skills, mathematics, leadership skills, and principles of technology are reinforced in this course. Job shadowing is an appropriate work-based learning strategy for this course. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development.

Prerequisite: None

Welding Technology II

Course Number: 7662
Recommended Maximum Enrollment: 16
Recommended Hours of Instruction: 270-360

This course introduces advanced welding and cutting practices used in industry and construction and emphasizes hands-on experience. Topics include weld fit-up and testing, metal properties, gas metal (GMAW), flux cored (FCAW), and shielded metal (SMAW) arc welding. Skills in leadership, safety, SMAW, mathematics, reading, and problem solving are reinforced in this course. Work-based learning strategies appropriate for this course are job shadowing, cooperative education, and apprenticeship. Hands-on work experiences and SkillsUSA leadership activities provide many opportunities to enhance classroom instruction and career development. Geometry is a recommended prerequisite.

Prerequisite: Welding Technology I

LOCAL COURSE OPTIONS

Schools may offer one or more specialized courses not included in the *Standard Course of Study*. These courses should meet a local economic need. Options may include:

Aerospace
Air Conditioning/Refrigeration
Commercial Art
Diesel Mechanics
Electro-Mechanical Technology
Law Enforcement
Marine Occupations
Photography
Plumbing
Textiles

Refer to Part I, Local Course Options, and Appendix B for instructions on how to offer these courses.

FOR MORE INFORMATION

NC Department of Public Education
Instructional Services/ITHS
Trade and Industrial Education
Career-Technical Education
6360 Mail Service Center
Raleigh, NC 27699-6360

PART III
Support Services
CAREER DEVELOPMENT COORDINATION

DESCRIPTION

Career Development Coordinators provide a variety of services to Career-Technical Education students in North Carolina public schools to help them make good career and educational decisions. Preparing Career-Technical Education students for careers is a developmental process that includes students, parents, teachers, counselors, and the community. Coordinating this process is the responsibility of the Career Development Coordinator.

MAJOR FUNCTIONS

The major functions of the Career Development Coordinator include:

- Preparatory services
- Case management services
- Transition services
- Business, industry, and education partnership services
- Promotional services

MAJOR PROGRAM OUTCOMES

Major responsibilities of career development coordinators include these core activities:

1. Coordinating the career development process.
2. Providing leadership for promoting career awareness, exploration and planning.
3. Introducing students to and assisting them with a career focus within a career pathway.
4. Coordinating the alignment of middle school courses and high school courses of study for Career-Technical Education students.
5. Providing educators with access to career development information, occupational information, and labor market information needed to assist students with educational and career plans.
6. Involving students in experiences designed to enable them to make a smooth transition from one level of education to another and from school to work or further education and training.
7. Promoting the advantages of Career-Technical Education among students, parents, and all segments of the community to facilitate the appropriate placement of Career-Technical Education concentrators.
8. Promoting the use of current technology for career research.
9. Serving as a liaison with the business, industry, education, and military community.
10. Maintaining and publicizing career development resources.
11. Assisting students with developing skills needed in the workplace;
12. Providing information to students, parents, educators, and community members about career development.

PROGRAM UNIQUENESS

Career Development Coordinators in North Carolina work in a variety of settings, including central offices, middle schools, and high schools. The individual work setting will affect the specific services that are provided.

FOR MORE INFORMATION

NC Department of Public Instruction
Instructional Services/BHC
Career Development
Career-Technical Education
6359 Mail Service Center
Raleigh, NC 27699-6359

SPECIAL POPULATIONS SERVICES

DESCRIPTION

The primary function of special populations coordination is to ensure that members of special populations receive services and job training.

Special services are provided for special populations to ensure equal access to recruitment, enrollment and placement activities. These supplementary services are essential to the successful participation of some disabled and disadvantaged students in career-technical education programs. Students with the greatest needs have top priority for services. Coordination with other service providers reduces the number of direct service contacts and the duplication of efforts. Being non-instructional personnel, Special Populations Coordinators have the major responsibilities for ensuring such coordination.

Coordination services begin with the identification of each member of special populations enrolled in the local education agency's career-technical education program. This approach allows the local education agency to meet the broad assurances of the law.

One such assurance, helping a student to enter a career-technical education program, enhances their chances of selecting an appropriate career pathway. Preparatory services are provided in the middle school or prior to a student's enrollment in a career-technical education program at high school. These services include, recruitment of potential career-technical education students, career guidance, vocational assessment, and monitoring.

After participation in the outreach and recruitment activities, each student's special needs are identified and coordinated to ensure success in completing their chosen course of study. Following the assessment process and career guidance, appropriate plans are developed.

The quality of a local career-technical education program is dependent upon its ability to meet the statewide core indicators of performance and/or local modifications.

MAJOR FUNCTIONS

The major functions of the position include:

1. Outreach and Recruitment
2. Assessment and Prescription
3. Coordination with Other Service Providers
4. Monitoring Access, Progress, and Success
5. Annual Accountability and Planning

Examples of appropriate activities for each of the major function includes the following:

OUTREACH AND RECRUITMENT

The outreach and recruitment function includes enrollment and placement activities, providing information about career-technical education opportunities and the development of a career development plan. In providing outreach and recruitment services, the Special Populations Coordinator should:

- Promote recruitment, enrollment and placement activities for special populations students.
- Provide information about career-technical education opportunities to special populations students and their parents.
- Coordinate/develop a career development plan for identified special populations students enrolled in career-technical education programs.

ASSESSMENT AND PRESCRIPTION

The assessment and prescription function includes the assessment of special needs of special populations students and the development of the Career Development Plan-Plus. In providing assessment and prescription services, the Special Populations Coordinator should:

- Identify members of special populations enrolled in career-technical education programs.
- Assess the special needs of special populations students enrolled in career-technical education programs.
- Develop and implement the Special Populations Component to the Career Development Plan (Career Development Plan-Plus).
- Participate in the Individualized Education Program Team for the development and implementation of the career-technical education and transition components of the Individual Education Plan (IEP).
- Coordinate special services for special populations students.
- Maintain a career-technical education resource laboratory for members of special populations and career-technical education teachers.
- Assist with transitional services for special populations students.
- Provide guidance and career development activities for special populations students.

COORDINATION WITH OTHER SERVICE PROVIDERS

The coordination with other service providers function includes working with other service providers to assure services to members of special populations. In providing coordination, the Special Populations Coordinator should:

- Collaborate with career-technical education teachers and other relevant service providers in providing services to special populations students.

COORDINATION WITH OTHER SERVICE PROVIDERS (Cont'd.)

- Coordinate with the provisions of the Workforce Investment Act (WIA), special education, vocational rehabilitation, community agencies, businesses/industry and significant others to provide appropriate supplementary services to members of special populations.
- Facilitate in-service training for individuals working with members of special populations to improve their abilities and techniques in meeting the special needs of these students.
- Monitor the career-technical education component of the IEP and Career Development Plan-Plus to ensure that appropriate supplementary services are provided and performance indicators are met.
- Coordinate work experiences and field trips for special populations students.

MONITORING ACCESS, PROGRESS AND SUCCESS

The monitoring access, progress and success function includes the maintenance of records documenting access to, progress through and successful completion of career-technical education for members of special populations. In monitoring access, progress and success services, the Special Populations Coordinator should:

- Maintain records documenting access to, progress through, and successful completion of career-technical education programs for special populations students.
- Analyze Vocational Education Information System (VEIS) data to determine maintenance and improvement of access, progress and success of members of special populations in career-technical education programs.
- Document the attainment of performance indicators for members of special populations.

ANNUAL ACCOUNTABILITY AND PLANNING

The annual accountability and planning function includes the maintenance of records documenting program needs and improvement of supplementary services. In providing annual accountability and planning services, the Special Populations Coordinator should:

- Identify programs that need improvement to assist special populations students in meeting the performance indicators.
- Describe strategies to improve supplementary services for members of special populations in meeting the performance indicators.
- Evaluate incentives and adjustments to determine if adequate services are being provided to members of special populations in meeting the performance indicators.
- Maintain relevant record keeping and inventory systems related to job responsibilities.

ANNUAL ACCOUNTABILITY AND PLANNING (Cont'd.)

- Coordinate with appropriate administrative personnel and service providers to develop a plan of work based on the evaluation and needs assessment results to ensure that members of special populations are receiving adequate supplementary services and career planning.

MAJOR SERVICE AREA OUTCOMES

As a result of providing special services and activities, members of special populations should improve in the areas of access to, progress through, and success in comprehensive career-technical education. Comprehensive career-technical education is comprised of preparatory programs and services; instructional programs and services; and transitional services.

PREPARATORY PROGRAMS AND SERVICES

Preparatory programs and services are provided in the middle school or prior to a student's enrollment in a career-technical education program at the secondary level. These services include, but are not limited to, outreach and recruitment of potential career-technical education students; career guidance; assessment of special needs; and, other appropriate services, programs or activities. Following the assessment process and guidance, appropriate plans are developed.

INSTRUCTIONAL PROGRAMS AND SERVICES

Instructional programs and services should ensure that members of special populations have equal access to the full range of career-technical education programs, make progress in basic and vocational skills through the use of supplementary services, and progress through their educational programs. Supplementary services must be documented on the Individual Education Plan for students enrolled in special education or on the Career Development Plan-Plus for special populations students not enrolled in special education.

TRANSITION SERVICES

Transition services are provided for students enrolled in special education who are 16 years old or older to assist them in the transition from secondary to postsecondary education or employment. Transition activities should be based upon the individual student's needs, taking into account community experiences, the development of employment and other post-school adult living objectives, and when appropriate, acquisition of daily living skills and functional vocational evaluation.

MEMBERS OF SPECIAL POPULATIONS

Members of special populations are

(A) Individuals with disabilities;
(B) Individuals from economically disadvantaged families, including foster children;
(C) Individuals preparing for nontraditional training and employment;
(D) Single parents, including single pregnant women;

MEMBERS OF SPECIAL POPULATIONS (Cont'd.)

(E) Displaced homemakers; and
(F) Individuals with other barriers to educational achievement, including individuals with limited English proficiency.

****

(A) Individuals with disabilities – individuals who have been certified under **Individual with Disabilities Education Act Amendments of 1997** as being:
Autistic
Behaviorally-Emotionally Disabled
Deaf-Blind
Hearing Impaired
Mentally Disabled
Multi-handicapped
Orthopedically Impaired
Other Health Impaired
Pregnant Students
Developmentally Delayed
Specific Learning Disabled
Speech-Language Impaired
Traumatic Brain Injury
Visually Impaired

(B) Individuals from economically disadvantaged families – individuals who are economically disadvantaged or from an economically disadvantaged family and qualify for any of the following:
Aid to Families with Dependent Children,
Food Stamps,
Free or reduced-price meals; and/or
Determined to be low-income according to the latest available data from the Department of Commerce or the Department of Health and Human Services Poverty Guidelines.

Foster Children – are students served by the North Carolina Department of Social Services. They have lost their families due to problems such as neglect, abuse, desertion, poverty, divorce, physical and emotional illness, and are placed in foster care.

(C) **Individuals preparing for nontraditional training and employment** – individuals who are enrolled in Career-Technical Education program areas which are linked to nontraditional/ underrepresented occupations.

(D) **Single parents, including single pregnant women** – unmarried single individuals with children and those expecting a child.

MEMBERS OF SPECIAL POPULATIONS (Cont'd.)

(E) **Displaced homemakers** – individual experiencing a change in lifestyle due to unpredictable circumstances.

Definition of "displaced homemaker" removes requirement that individual be an adult.

(F) **Individuals with other barriers to educational achievement, including individuals with limited English proficiency** –

Barriers to educational achievement –

a) Academically Disadvantaged – individuals who score at or below the 25th percentile on a standardized achievement or aptitude test; or, has secondary school grades below 2.0 on a 4.0 (on which the grade "A" equals 4.0 scale); or below 2.5 (on which the grade "A" is weighted); or, fails to attain minimum academic competencies.

b) Potential Dropouts – individuals who may reasonably be expected to leave school for any reason before graduating or completing a program of study and without transferring to another school. Students in this category usually exhibit one or more of the following characteristics:
- consistent low achievement,
- high rate of absenteeism,
- no motivation,
- constant discipline problems, or,
- delinquent behavior in school and in the community.

Individuals with limited English proficiency –
- were not born in the United States or whose native language is a language other than English;
- come from environments where a language other than English is dominant;
- are American Indian and Alaska Natives and who come from environments where a language other than English has had a significant impact on their level of English language proficiency; and
- who by reason thereof, have sufficient difficulty speaking, reading, writing, or understanding the English language which denies those individuals the opportunity to learn successfully in classrooms where the language of instruction is English or to participate fully in our society.

MEMBERS OF SPECIAL POPULATIONS (Cont'd.)

Disabled/Handicapped Students

The terms *"disabled"* and *"handicapped"* are used interchangeably in career-technical education.

"Individuals with disabilities" refers to students served under the **Individuals with Disabilities Education Act Amendments of 1997**.

"Handicapped" refers to individuals served under **Section 504 of the Rehabilitation Act of 1973** and other Civil Rights legislation.

A student served under **IDEA** is also eligible to be served under Section 504 and other legislation for disabled individuals.

Children with Disabilities:

The term "children with disabilities" includes, without limitation, all children who, because of permanent or temporary mental, physical or emotional disabilities, need special education, are unable to have all their educational needs met in a regular class without special education and related services, or are unable to be adequately educated in the public schools. It includes those who are autistic, behaviorally-emotionally disabled, deaf-blind, hearing impaired, mentally disabled, multihandicapped, orthopedically impaired, other health impaired, pregnant, specific learning disabled, speech-language impaired, traumatic brain injured, and visually impaired.

Definitions of Disabling Conditions:

1. **Autistic**. Autism is a developmental disorder, which involves several areas of development: reciprocal social interaction skills, communication skills, and the presence of restricted and/or repetitive behavior, interests and activities. This impairment, sometimes called Autism Spectrum Disorder, may include: Autistic Disorder, Atypical Autism (Pervasive Developmental Disorder – Not otherwise Specified), Asperger's Disorder, Rett's Disorder, Childhood Disintegrative Disorder or all Pervasive Developmental Disorders. These disorders can co-exist with other disorders such as mental retardation, learning disabilities, attention deficit disorder, Down Syndrome, or Tourette's Disorder.

2. **Behaviorally/Emotionally Disabled**. Behaviorally-emotionally disabled students are students who, after receiving specially designed educational support services and intervention strategies in the regular educational setting, still exhibit patterns of situationally inappropriate interpersonal or intrapersonal behavior. The inappropriate behaviors must be long-standing patterns of behavior

MEMBERS OF SPECIAL POPULATIONS (Cont'd.)

which occur regularly and often enough as to interfere consistently with the student's own learning process. A behavioral-emotional disability is evidenced by one or more of the following characteristics, which cannot be attributed primarily to physical, sensory, or intellectual deficits:

(a) inability to achieve adequate academic progress not due to a learning disability;
(b) inability to maintain satisfactory interpersonal and/or intrapersonal relationships;
(c) inappropriate or immature types of behavior or feelings under normal conditions;
(d) general pervasive mood of unhappiness or depression;
(e) a tendency to develop physical symptoms, pains or fears associated with personal or school problems.

The term does not include socially maladjusted students unless it is determined that he/she is also behaviorally-emotionally disabled.

3. **Deaf-blind**. Deaf-blind students have concomitant hearing and visual impairments, the combination of which causes such severe communication and other developmental and educational problems that they cannot be accommodated in special education programs solely for deaf or blind children.

4. **Hearing Impaired**. Hearing impaired children are those with hearing losses which are disabling educationally and developmentally and who, with or without amplification, may require various instructional modifications and related services in order to make full use of their learning opportunities. Hearing impaired is a generic term, which includes deafness and all hearing losses ranging from mild to profound.

5. **Mentally Disabled**. Mentally disabled individuals refer to significantly subaverage general cognitive functioning and a reduced rate of learning. This condition exists concurrently with deficits in adaptive behavior, is manifested during the developmental period, and adversely affects the student's educational performance.

6. **Multi-handicapped**. Multi-handicapped students have a pervasive primary disability that is cognitive and/or behavioral in combination with one or more other disabilities, the combination of which causes such development and educational problems that the children cannot be accommodated in special programs that primarily serve one area of disability.

MEMBERS OF SPECIAL POPULATIONS (Cont'd.)

7. **Orthopedically Impaired**. An orthopedically impaired child possesses a severe orthopedic impairment, which adversely affects their educational performance. The term includes impairments caused by congenital abnormalities and impairments from other causes. Preschool children who are orthopedically impaired have an orthopedic impairment, which adversely affects physical and motor development and which interferes with the acquisition of skills. The term includes impairments caused by congenital abnormalities and impairments from other causes.

8. **Other Health Impaired**. Other health impaired students have chronic or acute health problems, which causes limited strength, vitality or alertness, including a heightened alertness to environmental stimuli, to such an extent that special educational services are necessary. The health problems may include heart conditions, chronic lung disease, tuberculosis, rheumatic fever, nephritis, asthma, sickle cell anemia, hemophilia, epilepsy, lead poisoning, leukemia, diabetes, attention deficit disorder or attention deficit hyperactivity disorder, genetic impairments, or some other illness which may cause a student to have limited strength, vitality or alertness, adversely affecting educational performance of developmental progress.

9. **Pregnant Students.** Pregnant students with special educational needs are those who, because of their pregnancy, require special education and/or related services other than that which can be provided through regular education services.

10. **Developmentally Delayed.** Children identified in this area are those ages three through seven whose development and/or behavior is so significantly delayed or atypical that special education and related services are required.

11. **Specific Learning Disabilities**. Specific learning disabilities is an inclusive term used to denote various processing disorders presumed to be intrinsic to an individual (e.g., acquisition, organization, retrieval, or expression of information). For the purpose of special educational services, students classified as learning disabled are those who, after receiving instructional intervention in the regular education setting, have a substantial discrepancy between ability and achievement. The disability is manifested by substantial difficulties in the acquisition and use of skills in listening comprehension, oral expression, written expression, basic reading, reading comprehension, mathematics calculation, and mathematics reasoning. A learning disability may occur concomitantly with, but is not the primary result of, other disabilities and/or environmental, cultural, and/or economic influences.

MEMBERS OF SPECIAL POPULATIONS (Cont'd.)

12. Speech and Language Impaired. A pupil who has a speech-language impairment has a disorder in articulation, language, voice, and/or fluency. A speech-language impairment may range in severity from mild to severe. It may be developmental or acquired, and pupils may demonstrate one or any combination of the four parameters listed above. A speech-language impairment may result in a primary disability or it may be secondary to other disabilities.

(a) articulation. An articulation disorder is an abnormal, nondevelopmental production of phonemos (speech sounds). Types of misarticulations include omissions, substitutions, and distortions;

(b) language. A language disorder is the impairment of comprehension and/or production of an oral communication system. The disorder may involve the form of language (phonologic, morphologic, and syntactic systems), the content of language (semantic systemic), the function of language (pragmatic system), and/or any combination of the above.

(i) form of language
Phonology is the sound system of a language and the linguistic rules that govern it; Morphology is the rule system that governs the structure of words and the elements of meaning used in their construction; Syntax is the linguistic rule governing the order and combination of words to form sentences, and the relationships among the elements within a sentence;

(ii) content of language
Semantics refers to the content or meaning of words and utterances;

(iii) function of language
Pragmatics refers to the social use of language and its appropriateness in a given situation;

(c) voice. A voice disorder is an abnormal production of pitch (e.g., range inflection, appropriateness), intensity (loudness), resonation (e.g., excessive nasality), and quality (e.g., breathiness, hoarseness, and harshness);

(d) fluency. A fluency disorder is a disruption in the normal, rhythmic flow of speech that interferes with communication. The disorder may include, but not be limited to, frequency of dysfluencies, duration of dysfluencies, struggle and avoidance characteristics, and types of dysfluencies (repetition – phrases, whole words, syllables, and phonemes; prolongations; and blocks).

MEMBERS OF SPECIAL POPULATIONS (Cont'd.)

13. **Traumatic Brain Injury.** Traumatic brain injury is an acquired open or closed head injury caused by an external physical force that impairs a student's cognitive, communicative, perceptual, behavioral, social-emotional, and/or physical abilities to the extent that the student requires special education. Congenital, degenerative, or brain injuries induced by birth trauma are not included in this definition.

14. **Visually Impaired**.
    (a) functionally blind children have so little remaining vision that they must use Braille as their reading medium. Preschool children who are functionally blind use predominantly tactile or auditory mediums in order to learn. In children for whom formal vision measures are not appropriate, sufficient documentation for low vision will include diagnosed pathology and functional assessment that describes visual deficits significant enough to interfere with learning;
    (b) partially seeing children have a loss of vision, but are able to use regular or large type as their reading medium. These will generally be children who have a visual acuity between 20/70 and 20/200 in the better eye after correction. Preschool children with low vision have a loss of vision but are able to use the visual medium as their predominant means of learning. These generally will be children who have an actual or estimated visual acuity between 20/70 and 20/200 in the better eye after correction or whose visual impairment impedes the acquisition of developmental milestones;
    (c) children who are legally blind have a visual acuity of 20/200 or less in the better eye after correction or a peripheral field so contracted that the wider diameter subtends an arc no greater than 20 degrees.

Educational Setting

Laws require that disabled students be educated along with nondisabled students to the maximum extent appropriate to the needs of the disabled students. This means that disabled students must be assigned to regular courses or classes if the student's needs can be met there. Decisions on academic placement must be based on an individual student's needs.

Disabled students may be placed in a separate class or facility only if they cannot be educated satisfactorily in the regular educational setting with the use of supplementary aids or services.

MEMBERS OF SPECIAL POPULATIONS (Cont'd.)

Disabilities Covered under Section 504

Section 504 regulation defines an "individual with handicaps" as any person who:

(i) has a physical or mental impairment, which substantially limits one or more major life activities,
(ii) has a record of such an impairment, or
(iii) is regarded as having such an impairment.

The regulation further defines a physical or mental impairment as:

(A) any physiological disorder or condition, cosmetic disfigurement, or anatomical loss affecting one or more of the following body systems: neurological; musculoskeletal; special sense organs; respiratory, including speech organs; cardiovascular; reproductive; digestive, genitourinary; hemic and lymphatic; skin; and endocrine; or,
(B) any mental or psychological disorder, such as, mental retardation, organic brain syndrome, emotional or mental illness, and specific learning disabilities.

The key factor in determining whether a person is considered an "individual with handicaps" covered by **Section 504** is whether the physical or mental impairment results in a substantial limitation of one or more major life activities. Major life activities, as defined in the regulation, include functions such as caring for one's self, performing manual tasks, walking, seeing, hearing, speaking, breathing, learning and working.

Hidden Disabilities

Hidden disabilities are physical or mental impairments that are not readily apparent to others. They include such conditions and diseases as specific learning disabilities, diabetes, epilepsy, and allergy. A disability such as a limp, paralysis, total blindness or deafness is usually obvious to others. But hidden disabilities: such as, low vision, poor hearing, heart disease, or chronic illness may not be obvious. A chronic illness involves a recurring and long-term disability such as diabetes, heart disease, kidney and liver disease, high blood pressure, or ulcers.

The services needed to accommodate the student's special needs in the Career-Technical Education classroom must be made by a group of persons who know the student. The services must be documented on the student's accommodation plan and monitored periodically.

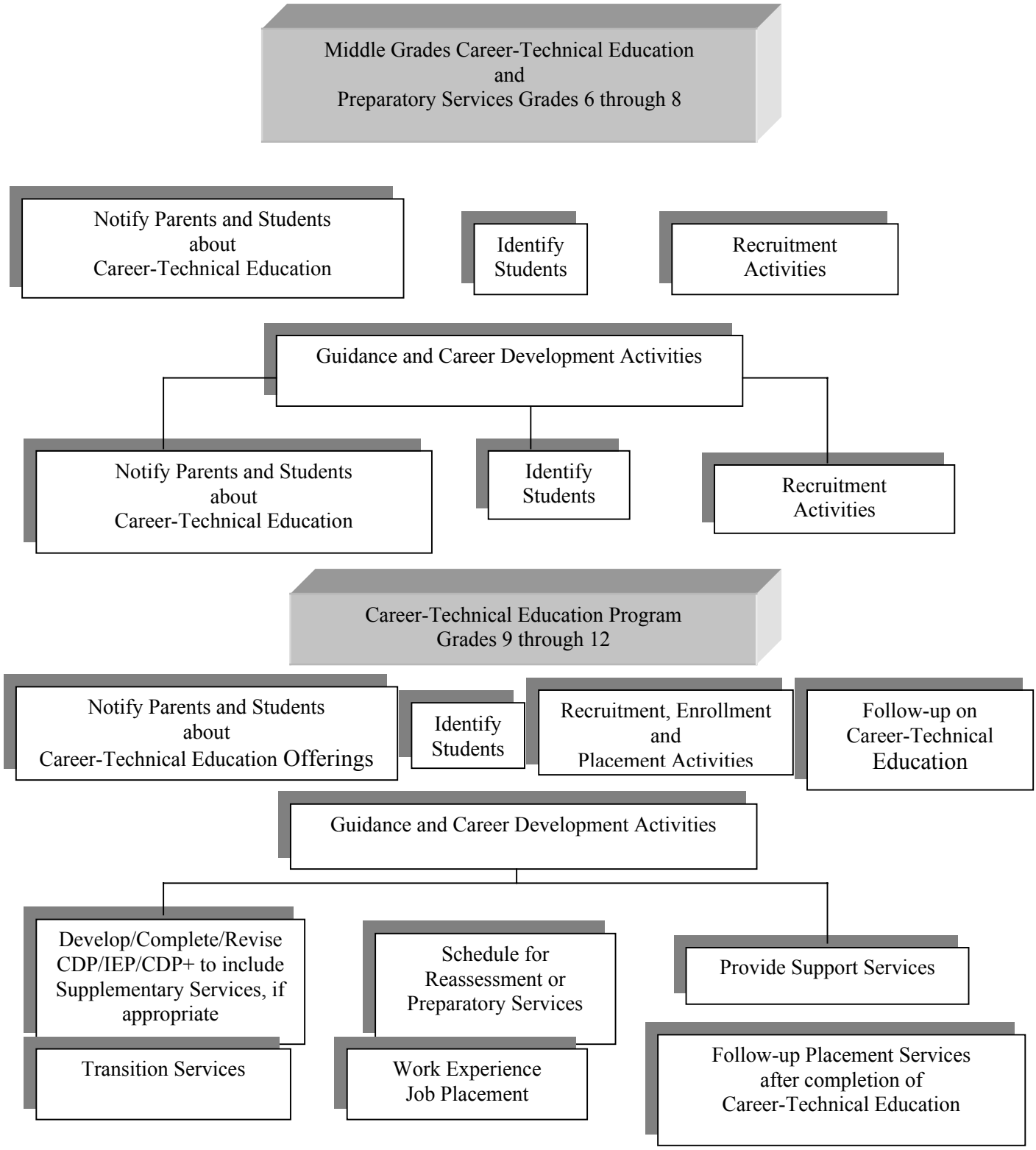
SUGGESTED CAREER-TECHNICAL EDUCATION SERVICE DELIVERY MODEL GRADES 6-12

Local school administrative units shall make provisions to provide a wide range of support services as needed by members of special populations who are enrolled in a career-technical education program. The chart on the following page provides an example of a comprehensive service delivery system. All services and activities must be provided as specified in the following publications:

1. *Special Populations Challenge Handbook*

2. *Procedures Governing Programs and Services for Children with Disabilities*

Special Populations Suggested Career-Technical Education Service Delivery Model Grades 6-12



ENROLLMENT

Enrollment in each career-technical education program should be of a size that would ensure effective instruction as prescribed in the individual course description in the *Standard Course of Study*.

The recommended maximum class size is established to maintain proper instruction management and to assure a safe and healthful teaching and learning environment. The maximum figures for each course of instruction are based on the degree to which student safety is involved in the learning process; the desired number of learning outcomes; the types, quantity and size of instructional equipment, material and supplies; and, the amount of space needed by students and teachers in the instructional process.

To ensure that members of special populations receive adequate services and job training, local education agencies are encouraged to lower the maximum class size. One of the best practices of exemplary programs is to limit the number of disabled students to five per regular career-technical education course.

Special programs for disadvantaged and disabled students should adhere to the following student-teacher ratio:

1. Disadvantaged – up to 16 students per class period.
2. Mentally Disabled – up to 12 students per class period with one assistant.
3. Specific Learning Disabled – up to 10 students per class period no assistant and 16 with one assistant.
4. Orthopedically Impaired – up to 12 students per class period with one assistant.
5. Behaviorally-Emotionally Disabled – up to 8 per class period with one assistant.
6. Multi-Categorical – up to 8 per class period with no assistant and 12 with one assistant (maximum of 4 Behaviorally-Emotionally Disabled in this setting).

FOR MORE INFORMATION

NC Department of Public Instruction
Instructional Services/BHC
Special Populations
Career-Technical Education
6359 Mail Service Center
Raleigh, NC 27699-6359

APPENDIX A

Career Exploration Clubs of North Carolina (CECNC)

Introduction

Career Exploration Clubs of North Carolina (CECNC) is a local and state career-technical student organization for middle grades students enrolled in exploratory career-technical education courses. The purposes of CECNC are to encourage, enhance and reinforce instruction, develop competent leadership, create more interest for exploring tentative occupation choices, develop character and citizenship, and to encourage participation in the CTSOs at the high school level.

The program and activities of Career Exploration Clubs of North Carolina are designed to be appropriate for middle grades students enrolled in any exploratory Career and Technical Education course in Grades 6-8. These exploratory courses include:

- Exploring Biotechnology
- Exploring Business Technologies
- Exploring Career Decisions
- Exploring Life Skills
- Exploring Technology Systems

CECNC activities and events are also appropriate for students enrolled in the following middle grade skill courses:

- Business Computer Technology
- Keyboarding

Levels of Organization and Dues

Local — Dues determined by local chapter
Regional — No dues required
State — No dues required

Opportunities for Involvement

CECNC members have an opportunity to participate in the following individual, team, and chapter-wide competitive events:

- Career Brochure
- Career Development Plan
- Career Display
- Career Math
- Career Multimedia Presentation
- Career Poster
- Career Research
- Career Skit
- Career Video
- Chapter of Excellence
- Computer Skills
- Creed
- Decision Making
- Excellence in Biotechnology
- Excellence in Business Technologies
- Excellence in Career Decisions
- Excellence in Life Skills
- Excellence in Technology Systems
- Helping Hands
- Illustrated Presentation
- Officer Elections
- Parliamentary Procedure
- Performing Arts
- Problem Solving/Creative Thinking
- Public Speaking
- Recruitment Brochure
- Report Writing

DECA: An Association of Marketing Students

Introduction

DECA is a state and national organization available to all students who are currently enrolled in Marketing Education courses.

Levels of Organization and Dues

Local – Determined by local chapter
State – Annual dues required
National – Annual dues required

Opportunities for Involvement

Competitive events are available for student participation at the district, state, and national levels.

Competency Based lndividual/Team Written Events

- Business and Financial Services Marketing Research
- E-commerce Business Plan
- Entrepreneurship Participating (Independent, Franchising, E-commerce)
- Entrepreneurship Written
- Fashion Merchandising Promotion Plan
- Food Marketing Research
- General Marketing Research
- Hospitality and Recreation Marketing Research
- International Business Plan
- Retail Marketing Research

Chapter Projects

- Civic Consciousness
- Creative Marketing
- Free Enterprise
- Learn and Earn
- Public Relations

Competency-Based Participating Competitive Events

- Apparel & Accessories, Associate Level
- Apparel & Accessories, Management Level
- Business Services Marketing Series (not offered at the state level)
- Employability Skills, Associate Level (not offered at the national level)
- Food Marketing, Associate Level
- Food Marketing, Management Level
- Full Service Restaurant Management
- Marketing Management (not offered at the state level)
- Quick Serve Restaurant Management
- Retail Merchandising, Associate Level
- Retail Merchandising, Management Level
- Vehicles and Petroleum Marketing
- Advertising Campaign
- Technical Sales
- Management Team Decision Making Events (2 member team)
  - E-commerce
  - Financial Services
  - Hospitality Services
  - Sports and Entertainment Marketing
  - Travel and Tourism Marketing

Scholarship Awards Program

- T. Carl Brown Scholarships
- Art Institute of Charlotte
- Kings College
- UNC-G Bryan School of Business
- Johnson & Wales University
- Pitt Community College
- North Carolina Retail Merchants Association
- Greater Greensboro Merchants Association
- Sonya Williams Dismuke Memorial Scholarship

Special Activities

- Quiz Bowl
- Merit Awards

National programs, projects and benefits to members

- Activities to Promote Mathematic Skills
- Activities to Promote Free Enterprise & Economic Awareness
- Activities to Build Self-Esteem
- Chapter Achievement Programs
- Chapter Activities
- Community Projects
- Marketing Education Program Enrichment
- Leadership Conferences: District, State, Regional, and National
- Leadership Positions
- Learn and Earn Activities
- Magazines: State and National Levels
- Merit Awards Activities
- National, Regional, State Business Associations Support
- Officers and Committee Members: Local, District, State, and National
- Professional Conferences: Local, District, State, Regional and National
- Scholarship Programs
- School Improvement Projects
- Business Sponsored Activities

FFA: The Organization for Agricultural Education Students

Introduction

FFA is a national organization that serves students enrolled in agricultural education courses grades 7-12. FFA in North Carolina is administered by the North Carolina FFA Association in cooperation with local chapters.

FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth, and career success through agricultural education.

Levels of Organization and Dues

Local - Determined by local chapter
Federation - Determined by Federation
Region - Determined by Region
State - Annual dues required
National - Annual dues required

Opportunities for Involvement

An extensive awards/recognition program is provided for individual members, teams and chapters. These include over 40 proficiency awards, the agriscience student program and a five-level degree program for individual members; a chapter-wide award programs recognizing community chapter and member development, and more than 23 career development events. Awards totaling more than $100,000 are awarded each year to individual members and chapters for outstanding achievements in North Carolina. These awards are provided through the North Carolina FFA Association, the National FFA Foundation, and the North Carolina FFA Foundation.

Benefits to Members

FFA members each year receive a membership card, six issues of the *FFA New Horizons* magazine, the opportunity to participate in the FFA camping program at a minimal cost; the opportunity to participate in numerous leadership development activities/conferences, and the opportunity to participate in the state and national conventions. Over $1,000,000 in college scholarships is awarded annually to deserving FFA members. FFA also offers members the opportunity to participate in international travel experiences, mentoring programs and many other personal development and recreational activities at the local level.

Family, Career, and Community Leaders of America (FCCLA)

Introduction

FCCLA is a national organization for middle and high school Family and Consumer Sciences students. It is a co-curricular organization that is a vehicle for mastering Family and Consumer Sciences Education competencies through leadership, citizenship, and skill development activities. Members develop skills for life through character development, creative and critical thinking, interpersonal communication, practical knowledge, and career preparation.

Membership and Types of Chapters

- Consumer Chapters – Any student who is taking or has taken a course in Family and Consumer Sciences Education is eligible for membership in an affiliated chapter. The emphasis in Consumer chapters is on exploration and examination of Family and Consumer Sciences careers.
- Occupational Chapters – Any student who is taking or has taken a career focused course is eligible for membership in an affiliated chapter. The emphasis in Occupational chapters is on development of technical and employability skills for Family and Consumer Sciences careers.
- Comprehensive Chapters – This is a combination of Consumer and Occupational chapters.

Levels of Organization and Dues

Local – Determined by local chapter
Regional – No Dues
State – Annual dues required
National – Annual dues required

Opportunities for Involvement

FCCLA offers many quality programs and activities that encourage students to set career goals, develop self-confidence, and learn about the problems and opportunities inherent in balancing the family and a career. Through involvement in school and community activities members develop a sense of belonging, build self-esteem, gain recognition, and become more autonomous. Chapter projects focus on a variety of youth concerns, including nutrition and fitness, environment, intergenerational communication, parenting, family relationships, and career development. Examples of competitive events, programs, projects and recognition activities related to the Family and Consumer Sciences Education curriculum with emphasis on specific competencies are listed below.

Benefits to Members

- COMPETITIVE EVENTS
  - Applied Technology
  - Career Investigation
  - Chapter Service Project
  - Chapter Showcase
  - Creative Fashion*
  - Creative Home Interiors*
  - Culinary Arts
  - Early Childhood
  - Entrepreneurship
  - Focus on Children
  - Food Science*
  - Hospitality
  - Illustrated Talk
  - Interpersonal Communications
  - Job Interview
  - National Programs in Action
  - Nutri-Snacks*
  - Parliamentary Procedure
  - PR Poster Power*
- PROGRAMS AND PROJECTS:
  - Career Connections
  - Community Service Award
  - Dynamic Leadership
  - Families Acting for Community Traffic Safety
  - Families First
  - Financial Fitness
  - Japanese Exchange Program
  - Leaders at Work
  - Membership Quest
  - Power of One
  - Star Events
  - Step One
  - Student Body
- RECOGNITION AND SERVICE:
  - Adviser Mentor
  - Honorary Member
  - Master Adviser
  - Skills for Life Member of Year
  - Teacher Scholarship

* State Events Only. All others have national competition.

Future Business Leaders of America (FBLA)

Introduction

FBLA is an organization (with state and national affiliations) for middle and high school students enrolled in business education courses. FBLA's mission is to bring business and education together in a positive working relationship through innovative leadership and career development programs. Co-curricular activities include career exploration, civic service, economic education, and fostering entrepreneurship.

FBLA is dedicated to bridging the gap between school and the workplace. Consequently, every program, service and activity is designed to build character, encourage scholarship, and promote competent, aggressive business leadership. Among other benefits, FBLA members receive two publications - *Tomorrow's Business Leader,* a magazine, and an electronic version of *The NC Business Leader,* a newsletter written for business education students. Additionally, members have the opportunity to attend regional, state, and national conferences which provide leadership development, problem solving and knowledge integration workshops and activities.

Levels of Organization and Dues

Local – Dues determined by chapter
Regional – No dues required
State – Annual dues required
National – Annual dues required

Opportunities for Involvement

Active FBLA members are provided opportunities to participate in competitive events designed to recognize students who excel in applying school-based learnings to simulated work-based activities.

Competitive Events for Middle Grades Students (Grades 6-8)

Business Communications – Middle Grades
Business Computer Technology – Middle Grades
Business Concepts – Middle Grades
Business Math – Middle Grades *
FBLA Creed – Middle Grades *
Impromptu Speaking – Middle Grades
Keyboarding – Middle Grades
Parliamentary Procedure – Middle Grades
Public Speaking – Middle Grades *

Competitive Events for High School Students (Grades 9-12)

Individual

Accounting I*
Accounting II
Banking and Financial Systems
Business Calculations *
Business Communications – HS *
Business Law
Business Math – HS
Business Procedures *
Computer Applications *
Computer Concepts
Economics
FBLA Principles and Procedures
Future Business Leader *
Impromptu Speaking - HS
International Business
Introduction to Business
Introduction to Business Communication
Introduction to Parliamentary Procedure
Job Interview *
Networking Concepts
Programming: C++, Java, Visual Basic
Public Speaking I – HS *
Public Speaking II – HS *
Technology Concepts
Word Processing I *
Word Processing II *

Team

Business Plan Project
Desktop Publishing
Emerging Business Issues
Entrepreneurship
Multimedia Presentation
Network Design
Parliamentary Procedure – HS
Website Development

Chapter

American Enterprise Project
Community Service Project (Roy Allen Award)
Crime Prevention Project
Gold Seal Chapter Award of Merit
Helen Ragan Chapter of the Year
Local Chapter Annual Business Report
Local Recruitment of Chapters
Partnership with Business Project

Scholarships

Alsup Business Scholarship
James L. White Scholarship Award
King's College/Sonja Litton Scholarship
NC ACTE Broyhill Leadership Scholarship
UNC-G Bryan School of Business Scholarship

Recognition

Adviser of the Year
Businessperson of the Year *
Largest Local Chapter Membership
NC FBLA Honorary Life Member
NCBEA Outstanding Student Service Award *
Who's Who in FBLA

*Events marked with an asterisk (*) require competitors to be 1st, 2nd, or 3rd place winners on the regional level. All middle grade competitive events are individual. *Middle grade chapters may participate in **all** chapter events.*

Health Occupations Students of America (HOSA)

Introduction

HOSA is a state and national organization whose mission is to enhance the delivery of compassionate, quality health care by providing opportunities for knowledge, skill and leadership development of all Health Occupations Education students, therefore, helping the students to meet the needs of the health care industry.

Membership

High school males and females in grades 9 through 12 who are, or have been, enrolled in a Health Occupations Education program.

Levels of Organization and Dues

Local – Dues determined by chapter
Regional – Dues determined by region
State – Annual dues required
National – Annual dues required

Opportunities for Involvement

Competitive Events

Category I
– Health Occupations Related Events
Dental Spelling
Dental Terminology
Medical Spelling
Medical Terminology
Medical Math
Knowledge Tests

Category II
– Health Occupations Skill Events
Dental Assisting
Administrative Medical Assisting
Medical Assisting - clinical
Nursing Assisting
Dental Laboratory Technology
Sports Medicine
Veterinary Assisting
Medical Lab Assisting
Opticianry
CPR/First Aid
Physical Therapy
Emergency Medical Technician

- Scholarships - $6000 annually
- National Leadership Academy.
- National Recognition Program
- National Service Project
- Barbara James Service Award
- Gold Star Chapter Program

Category III
– Individual Leadership Events
Extemporaneous Speaking
Job Seeking Skills
Prepared Speaking
Extemporaneous Writing
Researched Persuasive Speaking
Extemporaneous Health Poster

Category IV
– Team Leadership Events
Community Awareness Project
HOSA Bowl
Parliamentary Procedure
Outstanding HOSA Chapter
Creative Problem Solving
Biomedical Debate
Outstanding HOSA Member
Medical Reading
Health Education
Career Health Display

Category V
– Recognition Events
Outstanding HOSA Chapter
Outstanding HOSA Member
Kaiser Permanente Healthcare Issues Exam
Chapter Newsletter
HOSA week
National Service Project

SkillsUSA

Introduction

SkillsUSA is a state and national organization that serves trade, industrial, and technical students in secondary and post secondary public schools. Members are part of a national group of skilled youth on the move - working toward future career goals. SkillsUSA members make things happen in their schools, communities and the nation with their leadership and work skills. Members complete at various levels to demonstrate their competencies in skill, leadership, and general contests. Members meet industry, business, and civic leaders and learn to develop leadership and citizenship skills through public speaking events at the community, state, and national levels.

Levels of Organization and Dues

Local - Determined by local chapter
Regional - No annual dues
State - Annual dues required for student and professional members
National - Annual dues required

Opportunities for Involvement

Competitive events are available for student participation at the state level of the organization. Winners advance from local competition to regional, state, and national competition by competing in the following contest categories:

Leadership Development Contests

Chapter Business Procedure (Team Event)
Creed "A"
Creed "B"
Current Events
Domestic Affairs
Debate (Team Event)
Extemporaneous Writing
Extemporaneous Poster
ICT Employee Competency
International Affairs
Job Interview
Opening & Closing Ceremonies (Team Event)
Prepared Speech
Poster Board
Spelling
Technical Math
SkillsUSA Pledge "A"
SkillsUSA Pledge "B"
SkillsUSA Video
Quiz Bowl (Team Event)

Skill Development Contests

3-D Visualization & Animation
Action Skills
Advertising & Design
Architectural Drafting
Automated Manufacturing
Automotive Service Technology
Cabinetmaking
Carpentry
Collision Repair Technology
Computer Maintenance Technology
Cosmetology
Criminal Justice
Diesel Equipment Technology
Electronic Applications
Electronic Technology
Graphic Communications
Heating, Ventilation, Air Conditioning & Refrigeration
Industrial Maintenance
Internetworking
Job Skill Demonstration "A"
Job Skill Demonstration "B"
Major Appliance Technology
Machine Drafting
Marine Mechanics
Masonry
Motorcycle Service Technology
Nail Care
Photography
Power Equipment Technology
Precision Machining Technology
Residential Plumbing
Residential Wiring
Robotics and Automation Technology
Teamworks
Television Production
Technical Drafting
Welding

Occupational Related Contests

Customer Service
First Aid/CPR
Principles of Technology
Related Technical Math
Total Quality Management

Technology Student Association (TSA)

For More Information

TSA is an organization for middle and high school students enrolled in or who have completed technology education courses. The mission of the Technology Student Association is to prepare its membership for the challenges of a dynamic world by promoting technological literacy, leadership, and problem solving, resulting in personal growth and opportunity. In addition to these goals, NC-TSA's mission statement reads "To empower students to become leaders and citizens of the highest quality by creating and sustaining technology programs of excellence in order to serve our changing communities and nation".

Levels of Organization and Dues

Local -- Dues determined by chapter
State -- Annual dues required
Regional -- None
National -- Annual dues required

Opportunities for Involvement

Competitive events are available for student participation at the regional, state, and national level. Winners may advance from local, to regional, state and national competition by competing in the following contest categories. These events may change from year to year.

MIDDLE SCHOOL

Agriculture and Biotechnology Challenge
Challenging Technology Issues
Chapter Team
Communication Challenge
Computer Application
Construction Challenge
Cyberspace Pursuit
Digital Photography Challenge
Dragster Design Challenge
Electrical Application
Environmental Challenge
Flight Challenge
Leadership Challenge
Graphic Design Challenge
Inventions & Innovations
Manufacturing Challenge
Marine Design Challenge
Mechanical Challenge
Medical Technology Challenge
Membership Recruitment Challenge
Prepared Speech
Problem Solving
Structural Challenge
System Control Technology
Technical Design Challenge
Technical Writing Challenge
Technology Bowl Challenge
Transportation Challenge
TSA Talk/Multimedia
RC Marine Transportation
Video Challenge

HIGH SCHOOL

Agriculture and Biotechnology Design
Architectural Model
Chapter Team
Computer – Aided Design, Animation
Computer – Aided Design, 2D/3D
Computer System/ Trouble Shooting
Construction Systems
Cyberspace Pursuit
Desktop Publishing
Dragster Design
Electronic Research and Experimentation
Engineering Design
Extemporaneous Presentation
Film Technology
Flight Endurance
Imaging Technology
Manufacturing Prototype
Medical Technology
Membership Recruitment Challenge
NC TSA Talk Multimedia
Prepared Presentation
Promotional Graphic
Radio Controlled Transportation
SciVis (Scientific and Technical Visualization)
Structural Engineering
System Control Technology
Technical Research and Report Writing
Technical Sketching and Application
Technological Systems
Technology Bowl
Technology Challenge
Technology Problem Solving
Transportation Modeling

Awards and Recognition Programs

Achievement Program
TSA Technology Honor Society
TSA Chapter Excellence
Advisor of the Year
TSA Recognition Awards
William P. Elrod Memorial Scholarships
Clark Scholarship

TSA is dedicated to helping students develop broad technological literacy to become responsible, participating, healthy and successful citizens. As part of the state's technology education program, TSA helps students acquire and apply design, problem-solving, teaming and leadership skills. Students also learn to use simple and complex tools found in communication, manufacturing, structural and transportation systems. Students also are given the opportunity to develop authentic skills, which are reflective of today's workplace, and to demonstrate and be recognized for excellence by others. In addition to competitive conferences, students have the opportunity to attend regional and state workshops, that provide leadership, teaming, and problem-solving development.

Request to Offer Career-Technical Education Courses
Not in the Standard Course of Study

(Complete Items A-G, Documentation/Verification Checklist, and Sign)

A. Date form submitted to Regional Coordinator _____
B. Implementation Date _____
C. LEA _____
D. Program Area _____
E. Projected Career Pathway(s)_____
F. Course Name_____Level(s)_____
G. School(s) where course(s) will be offered _____

Documentation/Verification Checklist (Completed by CTE Administrator)

On file in LEA:	**CTE Administrator**	**Regional Coordinator**	**Section Chief**
Employment Demand/Trends/Forecasts	_____	_____	
Scope & Sequence/Career Pathway	_____	_____	
Business and Industry Advisory Committee	_____	_____	
Student Interest/Anticipated Enrollment	_____	_____	
Postsecondary Linkages	_____	_____	
Licensed Instructor	_____	_____	
Adequate Facility	_____	_____	
Equipment List	_____	_____	
Supply/Material List	_____	_____	
Budget Plan	_____	_____	
Submitted to State Office:*			
Blueprint	_____	_____	_____
Content Outline	_____	_____	_____
Post-Assessment	_____	_____	_____

Signatures: CTE Administrator _____ Date _____
Regional Coordinator _____ Date _____

*Local CTE Administrators are to submit the Blueprint, Content Outline, and Post-assessment documents to the Regional Coordinator who will submit these items to the Section Chief. Approval will follow the reverse route.

STATE OFFICE APPROVAL

Approval is recommended: Yes ___ No ___ If no, Why?

Course # assignment _____ Completer Course: Yes ___ No ____
Career Pathway(s)_____
Section Chief's Signature_____ Date_____

Note: When the annual application is submitted to career-technical education, an approved signed copy of this form must be sent to the regional coordinator.

Approval Process for Offering Career-Technical Education Courses Not in the North Carolina Standard Course of Study

Rationale for Approval Process

In order to promote innovation and to ensure the purposes of career-technical education are being supported, the following approval process has been developed. This process should be used when local school systems want to offer a course not included in the *Standard Course of Study*. Planning should take place prior to the year a school system wants to offer the course.

Approval Process

Prior to offering a course not in the North Carolina Standard Course of Study Guide, a local school system must follow these steps and send documentation to the career-technical education regional coordinator. Local school systems are strongly encouraged to consult with program area staff at the blueprint development/content outline stage before completing the approval process. The regional coordinator will review and verify that the appropriate documentation (Items 1-10 below) exists in the LEA. The course blueprint, content outline, and post-assessment are to be submitted with the modification form to the regional coordinator no later than 120 days before students are enrolled. These items will be submitted by the regional coordinator to the appropriate section chief who will recommend approval or disapproval. If approved, the annual application will reflect the course offered. The modification form must be submitted with the local plan.

Documentation/Verification Checklist (Completed by CTE Administrator)

On file in the LEA and Verified by Regional Coordinator:

Instructions

1. Justify offering the course either by State Plan employment demand or local survey. The local survey must be submitted with the names of companies contacted and their employment projection for workers in that field for the next three years. Information should include employment trends and forecasts.

2. By comparing competencies, determine if a similar course is being offered in another curriculum area or with another course title. Assure that the course relates to the purposes of career-technical education as specified in GS 115-C-15. Determine the appropriate sequence of the course within the total CTE offerings in the LEA. Identify the appropriate career pathway.

3. Obtain advisory committee input/support for the courses.

4. Verify that there is student interest to support the course. Provide anticipated enrollment.

5. Verify linkages and potential articulation agreements within postsecondary education programs.

6. Verify that there is a licensed instructor.

7. Verify that an adequate facility will be available when the course is to be offered.

8. Develop an equipment list.

9. Develop a supply/material list.

10. Verify that funds will be available to purchase the needed supplies, equipment, and other resources needed to provide the course.

State Office Curriculum Materials (completed by CTE Administrator)

On file in the State Office and Approved by the Section Chief:

Instructions

1. Develop competency and objective listings in blueprint format.

2. Develop a detailed content outline which provides details of the blueprint.

3. Develop a post-assessment which measures the competencies included in the blueprint.

4. Submit the blueprint, content outline and post-assessment to the Regional Coordinator. The Regional Coordinator submits the material to the Section Chief for approval and filing for audit. A copy of the approved modification form will be returned to the Regional Coordinator who will return it to the CTE Administrator.