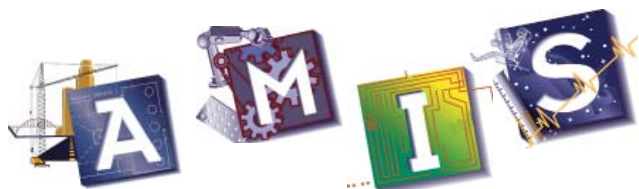


SCIENCE, ENGINEERING AND TECHNOLOGY



✓ Counts for SBOE Recommended HS Program.

✎ **Minimum Graduation Program only**

DC- Dual Credit Course for College

🔧 **SBOE Recommended Technology Course**

All courses are not available every semester. Each campus offers courses based on student interest.

Note: The Advanced Technical Credit (ATC) Program can help students earn college credit, taught by a teacher who has had special training.

AGRICULTURAL FOOD AND NATURAL RESOURCES

Practicum in Agriculture (WBL) RHS X06011

Provides students with a non-paid internship arrangement between the high school and agriculture industry. For students who have completed Veterinary Medical Application and Veterinary Assistant Level I Certification. Students are eligible to take the State Certification for Veterinary Assist Level II. 2 semesters (3 credits).

Grade 11-12

Agriculture Mechanics & Metal Technologies X06050

Develop proficiency in welding skills, use of the cutting torch and MIG Welders. Welding positions include flat, horizontal, and vertical. Develops tool operation, electrical wiring, plumbing, carpentry, and metal working techniques.

Grade 10-12

✓ **Advanced Animal Science (Science Credit) RHS X05920**

This course examines the interrelatedness of human, scientific, and technological dimensions of livestock production. Instruction is designed to allow for the application of scientific and technological aspects of animal science through field and laboratory experiences. 2 semesters (1 credit).

Grade 11-12

✓ **Advanced Plant & Soil Science (Science Credit) RHS X05910**

Plant and Soil Science provides a way of learning about the natural world. Investigations, laboratory practices, and field exercises will be used to develop an understanding of current plant and soil science. This course is designed to prepare students for careers in the food and fiber industry. Students will learn reinforce, apply and transfer their knowledge in a scientific setting. 2 semesters (1 credit).

Grade 11-12

✓ **Principles & Elements of Floral Design RHS X06020**
(Fine Arts Credit)

Exposes students to the basic techniques of floral design. This class is project based with many large and small projects used to evaluate the progress of the student. There are lots of hands on activities to involve the students in techniques required in the floral industry. 2 semesters (1 credit).

Grade 10-12

Horticulture Science I RHS X06000

Focuses on the identification, production and care of plants. The students will study propagation, fertilizing, transplanting, and growing various plants. Students will also investigate the various career pathways within the horticulture industry. 2 semesters (1 credit).

Grade 10-12

Horticulture Science II RHS X06008

Students develop an understanding of common horticultural management practices as they relate to food and ornamental plant production. 40% of instructional time, conducts field experiments, laboratory investigations, or approved supervised experience programs

2 semesters (2 credits)

Landscape Design & Turf Grass Management RHS X06015

Focuses on plant identification, selection, care, and maintenance as well as planting, planning and developing a basic landscape. This course focuses on both commercial and residential landscaping. 2 semesters (1 credit).

Grade 10-12

Wildlife, Fisheries & Ecology Management X06300

Examines the importance of wildlife and outdoor recreation with emphasis on using wildlife and natural resources. Students will also examine the management of game and non-game wildlife species, fish, and aqua crops and their ecological needs. Students are able to obtain their Hunter Safety Certification during this course if they pass their exam. 2 semesters (1 credit).

Grade 9-12

ARCHITECTURE AND CONSTRUCTION

🔧 **Principles of Architecture and Construction X04600**

Introduces students to the basic knowledge and skills related to the career opportunities and training in the architecture and construction fields. 2 semesters (1 credit).

Grade 9-12

🔧 **Architectural Design**

Students gain knowledge and skills needed to enter a career in architecture and construction. It includes the knowledge of the design, design history, techniques, and tools related to the production of drawings, renderings, and scaled models for commercial or residential architectural purposes. 2 semesters (1 credit).

Grade 10-12

BCTAL X10300

Information Technology

Advanced Architectural Design *BCTAL X10400*

Students gain advanced knowledge and skills specific to those needed to enter a career in architecture and construction or prepare a foundation toward a postsecondary degree in architecture, construction science, drafting, interior design, and landscape architecture. Includes knowledge of the design, design history, techniques, and tools related to commercial or residential architectural purposes. 2 semesters (2 credits).

Grade 11-12

Construction Technology *BCTAL X06710*

Students gain knowledge and skills specific to those needed to enter the work force as carpenters or building maintenance supervisors. Students acquire knowledge and skills in safety, tool usage, building materials, codes, and framing. 2 semesters (1 credit).

Grade 9-12

Advanced Construction Technology (Construction II) *BCTAL X06720*

Students build on the knowledge base from Construction Technology and are introduced to exterior and interior finish out skills. 2 semesters (2-3 credits).

Grade 10-12

Practicum Construction Management I (Construction Tech III) *BCTAL X06730*

An occupationally specific course designed to provide classroom technical instruction or on-the-job training experiences. Safety and career opportunities are included in addition to work ethics and job-related study in the classroom. 2 semesters (2-3 credits)

Grade 11-12

Interior Design *X09200*

A technical course that addresses psychological, physiological and sociological needs of individuals by enhancing the environments in which they live and work. Knowledge and skills related to interior and exterior environments, construction and furnishings. 2 semesters (1 credit).

Grade 10-11

Advanced Interior Design *X09200*

Students use interior design theory, layout and design lines, symbols, and drawings; demonstrate knowledge of the theory and use of color in interior design; and demonstrate knowledge of the principles of computer-aided drafting.

INFORMATION TECHNOLOGY

Principles of Information Technology *X09900*

Students develop knowledge of emerging technologies used in presentation management, spreadsheets and web design for information storage and exchange while increasing computer literacy. 2 semesters (1 credit).

Grade 9-12

Computer Technician

Digital and Interactive Media *X28400*

Students will analyze and assess current and emerging technologies, while designing and creating multimedia projects that address customer needs and resolve a problem. Students demonstrate appropriate use of digital photography equipment and techniques. 2 semesters (1 credit).

Grade 10-12

Web Technologies *X25900*

Student evaluates and employs computer-based productivity tools to create and modify web and digital media designs. Student demonstrates knowledge of Internet programming strategies, standards and web administration to develop and maintain web applications. 2 semesters (1 credit).

Grade 10-12

Computer Programming *X07500*

Special emphasis is placed on programming concepts and languages, programming methodology, software design, and an awareness of programming applications for business. This course meets the technology applications course requirement on all high school graduation plans.

Grade 10-12

Advanced Computer Programing *BCTAL X07600*

Students explore structured programming techniques and concepts, develop programs using the appropriate language, code software applications, perform maintenance, and maintain the security of computerized systems. **Prerequisite:** Principles of Information Technology, Computer Programming. 2 semesters (2 credits).

Grade 12

Cisco Internetworking I/II BLK *BCTAL 25910/25920*

Students design, build and maintain small to medium sized networks. In a lab setting students utilize the building blocks of today's global information and design networks. Focus is on advanced routing and switching, network design and management. Completion of this program prepares students to take the Cisco Certified Networking Associate exam. 2 semesters (1 credit).

Grade 10-12

Computer Maintenance *BCTAL X28110*

First-year instruction is designed to provide job-specific training for entry-level employment in the rapidly expanding computer maintenance field. Instruction includes electricity/electronic theory, computer systems, data-communications, digital electronics, installations, inspections, adjustments and repair and maintenance. 2 semesters (2 credits).


Grade 11-12

Computer Technician *BCTAL X28200*


Students gain knowledge and skills in the area of computer technologies, including advanced knowledge of electrical and electronic theory, computer principles, and components related to the installation, diagnosis, service, and repair of computer-based technology systems. 2 semesters (2 credits).


Grade 12


MANUFACTURING

 **Principles of Manufacturing** **X19900**
Provides exploration which addresses the knowledge and skills important in manufacturing technology and related careers in manufacturing. Students study common manufacturing tools, machines, materials and processes in the laboratory. Projects allow students to explore robotics, quality control, electronics, hydraulics and pneumatics. 2 semesters (1 credit).
Grade 9-12

SCIENCE, TECHNOLOGY, ENGINEERING, MATHEMATICS


 **Introduction to Engineering Design** **X04775 (PLTW)**
Students use a problem solving model to improve existing products and invent new ones. Using sophisticated three-dimensional modeling software, students communicate the details of products. Emphasis is placed on analyzing potential solutions and communicating ideas to others. 2 semesters (1 credit).
Grade 9-12

 **Principles of Engineering** **BCTAL X04785 (PLTW)**
Students explore the wide variety of careers in engineering and technology. They explore various technology systems and processes. Using activities, projects and problems, students learn firsthand how engineers and technicians use math, science and technology in an engineering problem-solving process to benefit people. 2 semesters (1 credit).
Grade 10-12

 **Digital Electronics** **BCTAL X04795 (PLTW)**
Students use computer simulations to learn about the logic of electronics as they design, test and actually construct circuits and devices to control systems. 2 semesters (1 credit).
Grade 10-12

✓ **Principles of Technology** (*Physics Credit*) **BCTAL X05200**
An applied physics course designed to provide a study in force, work, rate, resistance, energy, power and force transformers as applied to mechanical, fluid, thermal and electrical energy. The course reinforces the math applications a student needs to understand and apply the principles studied.
Grade 10-12

✓ **Engineering Mathematics** (*Math credit*) **X04700**
Students solve and model robotic design problems using mathematical methods and models to represent and analyze problems including spatial applications, electrical measurement, manufacturing processes, materials engineering, mechanical drives, pneumatics, and robotics with computer programming. 2 semesters (1 credit).
Grade 10-12

 **Aerospace Engineering** **X04810 (PLTW)**
Through hands-on engineering projects developed with NASA, students learn about aerodynamics, astronautics, space-life sciences, and systems engineering, including the study of intelligent vehicles like the Mars rovers Spirit & Opportunity. 2 semesters (1 credit).
Grade 10-12

TRANSPORTATION, DISTRIBUTION AND LOGISTICS

Practicum in Transportation, Distribution & Logistics **BCTAL X19250**
Practicum is designed to give students supervised practical application of knowledge and skills. Practicum experience occurs in a work place environment appropriate to the nature and level of experience. Students are required to secure and maintain employment. 2 semesters (3 credits).
Grade 12

Aerospace Maintenance **TCC NW Campus X06500**
Students will take aviation courses at the TCC campus. After high school graduation students continue the program at TCC and become licensed Airframe and Power plant (A&P) Mechanics. Students must take the Accuplacer before fall registration for TCC and have an 80 overall average. (2 semesters 3 credits).
Grade 11-12

Automotive Technology **BCTAL X19100**
Job specific training for employment in the automotive technician career field. It includes the use of repair manuals, hands-on service, and the preparation for four of the Automotive Service Excellence (ASE) automotive certifications: Engine Performance, Electrical/Electronic Systems, Suspension/Steering and Brakes. 2 semesters (2 credits).
Grade 10-12

Advanced Automotive Technology **BCTAL X19200**
Students learn the theory of operation of automotive vehicle systems and associated repair practices in a pre-employment laboratory. This course is advanced training and preparation for the Automotive Service Excellence (ASE) Certification in Engine Performance, Electrical/Electronic Systems, Suspension and Steering and Brakes. 2 semesters (2 credits).
Grade 10-12

Project Lead The Way high school program centers on developing advanced problem-solving skills by immersing students in real world engineering situations. Each of the challenging courses uses project-based, hands-on experiences to teach students the key elements and skills of engineering and technology based careers.



BISD engineering partners include:

Half Association	Medtronics
Lockheed Martin	Exxon Mobile
Northrop Grumman	Aerotek CE
Allegis Group	Component Construction Co., Ltd.