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**QUICK GUIDE**

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### Agriculture Career Cluster

**AGRI-SCIENCE**

**BPS Career Academy**

**Grade Placement:** 10, 11, 12.............1 credit (Block Class).............Semester 1 or 2

alternative credit: Fulfills one science credit for graduation; however, this one semester course will fulfill only 1/2 college entrance science requirement credit.

This agri-science technology course is intended to introduce students to scientific, production, and mechanical concepts of agriculture and to relate it to today's technology. It includes the study of agricultural plants, animals, soils, ag business, horticulture, pesticides, computers, carpentry, mechanics, and food technology. Field trips to various Ag related businesses are taken throughout the semester. Leadership through the FFA is an integral part of this course. This course is offered at the CTE Center on the BSC campus.

**APPLIED MECHANICS**

**BPS Career Academy**

**Grade Placement:** 9, 10, 11, 12.............2 credits (Block Class).............Full Year

Leather boots, welding gloves, and safety glasses are required. Coveralls or old set of clothes strongly suggested.

This program includes: tool identification, the study of small engine repair, farm engine maintenance and tune up, repair using oxyacetylene, MIG and arc welding, repair of farm machinery and building of small metal projects. Further studies include: agriculture carpentry, building of small & medium wood projects & buildings, surveying, construction techniques and materials, concrete, plumbing, electricity, and utilities. The use of hand and power tools for projects is also included in the mechanics program. Leadership through FFA is an integral part of this course.

**INTRODUCTION TO AGRICULTURE**

**BPS Career Academy**

**Grade Placement:** 9, 10, 11, 12.............1 credit (Block Class).............Semester 1 or 2

This applied course is designed to introduce students to agriculture, its applications, and leadership development as the core foundation of the Agriculture Education program. Individual units will familiarize the student with safety and proper use of tools and equipment; animal selection and genetic traits; soil and plant relationships; basic business management and financial skills. Other topics include: soils, horticulture, nursery, natural resources/wildlife management, and biotechnology. Emphasis is on developing problem solving skills applied to real world problems. FFA and leadership skills are an integral part of this course.
BOTANY/HORTICULTURE (Science Credit)  
BPS Career Academy  
Grade Placement: 10, 11, 12……..2 credits (Block Class) ……. Full year (Early Bird offered as an option)  
Alternative Credit: Fulfills up to two science credits for graduation; however, both semesters of this course will fulfill only one college entrance science requirement credit. Successful completion of both semesters of Botany/Horticulture are required to fulfill the biology requirement for graduation.  
This course, offered at the CTE Center on the BSC campus, is designed to give hands-on instruction in skills related to nurseries, greenhouses, florist shops, lawn services, landscaping, park and landscape maintenance, gardening, and fruit production.

Architecture and Carpentry Cluster

ARCHITECTURAL DESIGN  
BPS Career Academy  
Grade Placement: 10, 11, 12…………1 credit (Block Class)………………Semester 1 or 2  
Architectural Design students will master the technical skills of the industry software, Computer Aided Drafting and Design (CADD), and in the process will produce architectural plans and 3D computer models. In addition, students will sketch floor plans, conduct materials tests, and build scale architectural models from sketches and blueprints. Bismarck-Mandan architects will provide professional insights into the architectural design process and local projects.

BUILDING SYSTEMS  
BPS Career Academy  
Grade Placement: 9, 10, 11, 12…………1 credit (Block Class)………………Semester 1 or 2  
Lab Fee: $20  
If you enjoy any type of woodworking and construction this class is for you. Students will explore the various sections of residential building, constructing of framing walls for siding, windows and doors, dry walling, mudding, taping, and texturing along with fixing holes in the wall. Students will learn the different types of woods and wood composites. In addition, students run a breaker box and run electrical wiring to the various lighting and electrical outlets within the structure. Projects using stone, tile, and concrete are introduced. As the semester finishes all students will design, create, and build a final project.

CARPENTRY FRAMING  
BPS Technical Center  
Grade Placement: 10, 11, 12…………2 credits (Block Class)………………Full Year  
Students in this class participate in the actual construction of a house to be built on-site. Students will get valuable hands-on experience in floor, wall, and roof framing, sheathing, insulating, siding, metal soffit system, shingling, window and exterior door installation, and drywall. Proper safety methods and appropriate use of carpentry tools are stressed throughout the course.

CARPENTRY INTERIOR  
BPS Technical Center  
Grade Placement: 10, 11, 12…………2 credits (Block Class)………………Full Year  
The students will design/draw individual plans for a 1600 sq. ft. home. The students will build and install a variety of oak cabinets used in the house-building project each year. Students will also learn how to cut, assemble, install, and finish all interior woodwork and countertop in a typical house. This will include hanging interior doors, trimming doors and windows, and installation of baseboard. Proper safety methods and appropriate use of carpentry tools and equipment are stressed throughout the course.
Health Science Cluster

MEDICAL RELATED CAREERS I
Grade Placement: 10, 11, 12..............1 credit.............. Full Year
This year-long course provides students with information relating to the educational and professional requirements for the various medical related careers. Students will also study fundamentals of disease transmission and prevention, basic anatomy and physiology, and medical terminology. Students will complete CPR/AED for the Professional Rescuer and American HeartSaver First Aid.

CERTIFIED NURSING ASSISTANT (CNA)
Grade Placement: 11, 12.................1 credit (Block Class).............. Semester 1 or 2
Fee: $25 plus cost of flu vaccination
Prerequisite: Medical Related Careers I & Current First Aid & CPR/AED for Healthcare Providers
This course provides classroom instruction and clinical practice to prepare the student for employment as a CNA in a skilled nursing facility, acute care, or home health care setting. Upon successful completion of clinical hours and course requirements, students are eligible to take the CNA certification exam through Headmaster. Up to date vaccinations including influenza and a TB test are required per facility policy, as is a current Healthcare Provider CPR/AED certification. (Refresher course will be offered.) Students 18 years or older must have a background check. The student is responsible for necessary vaccinations, transportation to clinical sites, and the state exam fee. State mandated clinical hours are outside of class time.

MEDICAL RELATED CAREERS II – BLOCK
Grade Placement: 11, 12.................1 credit (Block Class)..............Semester 1 or 2
Fees: $25 plus the cost of flu vaccination & background check
Prerequisite: Medical Related Careers I & Current First Aid & CPR/AED for Healthcare Providers.
This course will expand on the knowledge gained in Medical Related Careers 1. Students will have the opportunity to explore various medical careers through research, professional guest speakers, college tours, and potential job shadows. The curriculum is designed to enhance student employability skills and professional medical career readiness. Up to date vaccinations including influenza and a TB test are required per facility policy as is a current Healthcare Provider CPR/AED certification. (Refresher course will be offered.) All students must have a background check. The student is responsible for necessary vaccinations, background check, and transportation to clinical sites.
MEDICAL TERMINOLOGY

Online Course
Grade Placement: 11, 12 ............................ 1/2 credit.......................... Semester 1 or 2
(Students must be 16 years of age)
This course will be offered as a dual credit course with Bismarck State College through the MRACTC. It is offered in an online format with proctored tests. In this course, students will develop skills necessary for decoding commonly used medical terms. Students will learn the meaning of medical suffixes, prefixes and word roots. This medical terminology course covers the basic knowledge and understanding of medical language and terminology used by healthcare professionals. This course requires students to work independently and manage their time well. Dual credit available

PREVENTION AND CARE OF ATHLETIC INJURIES

BPS Career Academy
Grade Placement: 11, 12 ............................. 1 credit (Block Class).................. Semester 1 or 2
Fee: $15
Prerequisite: Medical Related Careers I & Current First Aid & CPR/AED for Healthcare Providers
An introductory course for students interested in the field of Sports Medicine. General principles covered include: prevention, recognition, and immediate care of athletic injuries; equipment fitting; rehabilitation of athletic injuries; basic nutrition; HIPAA; hands-on activities - taping and wrapping techniques, goniometry. Classroom learning is enhanced through job shadowing. Job shadow experiences are outside of class time and the student is responsible for transportation to job shadow sites. Successful completion of this course fulfills the prerequisites for becoming a Sports Medicine Assistant with BPS (There is a difference between a student manager and a Sports Medicine Assistant). Dual credit through the University of Mary is available.

Art and Communication Cluster

DIGITAL ART and PHOTOGRAPHY

BPS Career Academy
Grade Placement: 10, 11, 12 ............................ 2 credits (Block Class)............... Full Year
Lab Fee: $20.00
Students are encouraged to explore the idea of finding visual solutions to creative problems. This class focuses on creating artwork in Adobe Photoshop, in addition to other Adobe programs such as Illustrator and Lightroom. Digital Photography is a main component of the class and students are given the opportunity to learn digital camera use and image editing. Projects include creating collages, album covers, and posters, and conducting photo shoots.

GRAPHIC DESIGN

BPS Career Academy
Grade Placement: 10, 11, 12 ............................ 2 credits (Block Class)............... Full Year
Lab Fee: $20.00
This course emphasizes graphic design principles, techniques, and software. Students will be introduced to the graphic design industry while working on real world projects. Creating artwork in Adobe Illustrator is a main focus of this class, but InDesign and Photoshop are also used as necessary. Students will use the Adobe CC software to create designs that can be printed on a wide variety of media right here in the classroom. Students will design logos, t-shirts, posters, advertisements, brochures, and books.
Information Technology Cluster

COMPUTER HARDWARE
BPS Career Academy
Grade Placement: 9, 10, 11, 12…………….1 credit (Block Class)………………..Semester 1 or 2
Recommended: Intro to Computer Software
This course introduces students to computer hardware and operating systems. Students learn the functionality of hardware and software components as well as suggested best practices in maintenance and safety issues. Through hands-on activities and labs, students learn how to assemble and configure a computer, install operating systems and software, and troubleshoot hardware and software problems. In addition, an introduction to networking is included. This course helps the students prepare for CompTIA A+ certification. Dual credit available to 10, 11, & 12th grade students only.

INTRO to COMPUTER SOFTWARE
BPS Career Academy
Grade Placement: 9, 10, 11, 12…………….1 credit (Block Class)………………..Semester 1 or 2
This exploratory level course provides an exposure to careers and issues in Information Technology. Units prepare students for the industry recognized “Internet and Computing Core Certification” (IC3). This globally recognized certification provides students with the foundation of knowledge needed to excel in fields that involve computers and the internet. The IC3 Global Standard 3 reflects the most relevant skills for school and business today including: Computing Fundamentals, Key Applications, and Living Online. Students will also have introductory units on Cybersecurity and the Internet of Things (IoT).

NETWORKING
BPS Career Academy
Grade Placement: 10, 11, 12…………….1 credit (Block Class)………………..Semester 1 or 2
Learn how to design, install, and manage small networks of wireless routers, computers, printers, and other devices used in a home or small office. This hands-on course will provide experience in setting up security and other networking policies needed for a fast, safe network. Innovations such as social networking, cloud computing, ecommerce, web conferencing, and desktop virtualization are changing the way we live, work, play, and learn. These capabilities are all powered by networks. Organizations in the state and around the world are experiencing a shortage of qualified workers. Students who gain knowledge and experience through these courses can earn industry certification and help fill hundreds of jobs in ND and an estimated eight million networking jobs around the world. Dual credit is available.
Manufacturing Cluster

WELDING I
Grade Placement: 10, 11, 12 ..............1 or 2 credits (Block Class) ..........Semester 1 or 2

Requirements: Students must provide their own boots, coveralls/jacket, gloves, welding cap
This course provides a combination of classroom study and hands-on exploration of metal joining processes and techniques as well as an opportunity to learn multiple welding skills including: safe handling of welding equipment, Oxy-Acetylene welding, Oxy-Acetylene cutting, Shielded Metal Arc Welding, and Gas Metal Arc Welding. We will reinforce our classroom studies with hands-on projects that will be done in teams or individually with the use of welding equipment, hand and power tools, and other metal fabrication machines.

WELDING II
Grade Placement: 11, 12 ..............2 credits (Block Class) .................Full Year

Prerequisite: Welding I
Requirements: Students must provide their own boots, coveralls/Jacket, gloves, welding cap
This course will be an extension of the Welding I course. Added topics will be: Plasma torch cutting, Shielded and Gas Metal Arc welding in the vertical and horizontal positions, and Gas Tungsten Arc Welding. Scale drawings, measurements, and blueprint reading will be covered in this course as well as an emphasis on project fabrication, career-ready skills, and welding career exploration.

Transportation Cluster

AUTO COLLISION I
Grade Placement: 10, 11, 12 ............2 credits (Block Class) .................Full Year

Required: Safety glasses, welding gloves (available for purchase or supply your own), instructor approved work boots and clothing.
Students will learn safe work procedures, basic tool handling, usage and repair procedures in the following areas: wire welding, basic sheet metal repair, materials used in auto body repair, body construction, glass installation, and refinishing materials and techniques.

AUTO COLLISION II
Grade Placement: 11, 12 ............2 credits (Block Class) .................Full Year

Prerequisite: Auto Collision I
Required: Safety glasses, welding gloves (available for purchase or supply your own), instructor approved work boots and clothing.
Students will expand their knowledge of auto collision repair through instruction in minor frame repair, wire feed welding, panel replacement, glass installation, basic collision damage repair and refinishing. Students will use many of the specialty tools used in major auto body repair and will learn the use of water bourn paints. Students will also learn about the insurance industry and how to write estimates.
AUTOMOTIVE TECHNOLOGY I
BPS Technical Center
Grade Placement: 10, 11, 12..............2 credits (Block Class).............Full Year
Course Titles: Auto Shop Orientation, Engine diagnosis, Electrical/Electronic Systems, Suspension and Steering
Student Requirements: Instructor approved full-leather work boots, OSHA approved clear lens safety glasses, locker padlock if desired
The focus of Auto Tech I is the fundamentals of today’s more complicated automobile engines, electronics and suspension systems. Students will learn proper safety techniques, as well as the use of specialized equipment in the diagnosis and repair of these systems. The program maintains ASE Certification under the direction of ASE Master Certified Technicians. Students are encouraged to work on their own personal vehicles as course guidelines direct. The goal of the course is to prepare students to become entry level technicians in the area of maintenance and light repair. Participation in SkillsUSA is recommended.

AUTOMOTIVE TECHNOLOGY II
BPS Technical Center
Grade Placement: 11, 12...............2 credits (Block Class)...............Full Year
Prerequisite: Automotive Technology I
Student Requirements: Instructor approved work boots, OSHA approved clear lens safety glasses, locker padlock if desired
Automotive Technology II completes the automobile training bumper to bumper. This class is also a ASE certified program with the goal of preparing students to become entry level Maintenance and Light Repair Technicians. Students are strongly encouraged to enroll in both Automotive Technology I and II to accumulate a thorough working knowledge of the automobile. Work on students’ vehicles is also encouraged as course work dictates. Participation in SkillsUSA is recommended.

AVIATION I
BPS Career Academy
Grade Placement: 10, 11, 12...............2 credits (Block Class)...............Full Year
The aviation program is one-of-a-kind in North Dakota. We prepare our students for the private pilot verbal and written exam, utilizing the flight simulators along with the Kerbal Space Software Program. Some of the topics we investigate and apply are aerodynamics, weather forecasting, navigation, air traffic control, aircraft engineering, aviation law, physiology, performance, career opportunities, airframe and power-plant. A highlight is the opportunity students will have to take control of an aircraft in flight.

AVIATION II
BPS Career Academy
Grade Placement: 11, 12...............2 credits (Block Class)...............Full Year
Prerequisite: Aviation I
This course prepares future pilots, air traffic controllers, mechanics and educators for the 21st century. The students learn advanced aerodynamics, airmanship and navigation. Focus is placed on aircraft manufacturing and assembly of an aircraft. Students also receive training for Unmanned Aerial Vehicles and research how they are going to affect our society in the future. At the completion of the course, students will be prepared to pass the FAA private and unmanned aerial vehicle written exams.
Science, Technology, Engineering, and Math Cluster (STEM)

**ANALOG ELECTRONICS**
BPS Career Academy
Grade Placement: 11, 12.........................2 credits (Block Class)..................Full Year
Prerequisite: Electronics I
Students will have the opportunity to earn college credits through the articulation process.
Analog Electronics will prepare students for a high-paying career after high school. This class is equipped with state-of-the-art equipment and taught by experienced professionals who will help you thoroughly learn designing, building, analyzing and trouble-shooting analog electronic circuits.

**DIGITAL ELECTRONICS**
BPS Career Academy
Grade Placement: 11, 12.........................2 credits (Block Class)..................Full Year
Prerequisite: Electronics I
Students will have the opportunity to earn 28-32 college credits through the articulation process.
Building on students understanding of basic electronics concepts, this course develops a thorough explanation of TTL and CMOS devices and their applications. Special attention given to related troubleshooting techniques and equipment. Students are introduced to microprocessor-based systems and microcomputers.

**CREATIVE ENGINEERING I**
BPS Career Academy
Grade Placement: 10, 11, 12......1 credit (Block Class) ...Semester 1 or 2
Prerequisite: 10th grade students must have successfully completed one Career Academy or Tech Center class
Are you considering a career in engineering? A major focus of this class will be on understanding what engineers do and how they solve problems. You will learn about the engineering design process, including defining the problem, identifying criteria for success, discussing potential ethical issues, brainstorming conceptual designs, and formulating the detailed (final) design. Students can work in teams on a design problem, and in the process will experience the engineering design approach. Students will be able to make engineering choices for their own projects based on their skills what they have learned.

**CREATIVE ENGINEERING II**
BPS Career Academy
Grade Placement: 10, 11, 12......1 credit (Block Class) ...Semester 1 or 2
Prerequisite: 10th grade students must have successfully completed one Career Academy or Tech Center class
A major focus of this class will be on the exploration of careers in engineering. You will have the opportunity to do job shadows and career explorations at local facilities where you can meet people in the engineering field, ask questions, and create contacts for the future. You will learn about the engineering design process, including defining the problem, identifying criteria for success, discussing potential ethical issues, brainstorming conceptual designs, and formulating the detailed (final) design. Students can work in teams on a design problem, and in the process will experience the engineering design approach. Students will be able to make engineering choices for their own projects based on their skills and what they have learned.
ENERGY & POWER PRODUCTION  
BPS Career Academy
Grade Placement: 10, 11, 12..........1 credit (Block Class) .............. Semester 1 or 2
If you are interested in the energy industry, then look at what this class has to offer. Hands-on activities include tool safety, building wind turbines, solar cars, catapults, hydroelectric turbines; pneumatics, duct tape boats, and a LED light project that you get to take home. Tours that may be possible are of the BSC Energy Center, a power plant, and a job-shadow day at Coteau Freedom Mine where you can ride-along in the coal hauling trucks and in the dragline. Students will learn how to use various motors, gears, and mechanisms that utilize a variety of energy sources. You will examine various forms of energy including mechanical, chemical, nuclear, electrical, and heat energy.

ELECTRONICS I  
BPS Career Academy
Grade Placement: 10, 11, 12..........2 credits (Block Class).............. Full Year
Students will have the opportunity to earn college credits through the articulation process.
Today’s electrical engineers, technologists and technicians continue to change the way we live. This hands-on course allows students to work in a lab environment where they will build, analyze and troubleshoot basic electronic circuits. The theory and lab environment in Electronics I provide a perfect starting point in which to explore the tremendous potential in career areas such as communications, medical, computer networking, automotive, manufacturing, engineering, and consumer electronics repair and installation.

FOUNDATIONS OF TECHNOLOGY  
BPS Career Academy
Grade Placement: 9, 10, 11, 12............1 credit (Block Class) ............. Semester 1 or 2
Lab Fee: $20
Do you like building things? Do you like working with your hands? Learn through group and individual activities that engage in STEM activities by creating ideas, developing innovations, and engineering practical solutions. Some hands-on activities that are possible: tool safety, CAD designed Co2 car dragsters, rockets, manufacturing in the wood shop with the mini-lathe & building a small wood project, laser engraver, vinyl cutter, t-shirt design, bridge design, building robots, and an energy & power unit with a possible tour of Coteau, Antelope Valley Station, and Dakota Gasification Company in Beulah.

ROBOTICS  
BPS Career Academy
Grade Placement: 9, 10, 11, 12............1 credit (Block Class) ............. Semester 1 or 2
The Robotics experience will provide the student with an overall study of robotic construction and bluetooth control. The class will study the physics and mechanical systems and aspects through relevant activities and projects. The robotic equipment used for this class will be Vex Robotics systems. Robots to be built may include the crane, square bots, speed bot, stair climbers along with robotic arms and possible battle bots.

TECH DESIGN/3D MODELING  
BPS Career Academy
Grade Placement: 10, 11, 12............1 credit (Block Class).............Semester 1 or 2
Students will develop skills necessary for the designing and modifying of products and projects. Students will use 3D printers, laser cutters and other machines to produce models and prototypes of the designed product. This class allows individual students the creativeness throughout the designing and building phase of their project. Solidworks is a professional design software program used in this class.
Extended Learning Opportunities

CAPSTONE SEMINAR

Grade Placement:  12..................2 credits (Block Class)..................Full Year

Prerequisite: Must have completed four credits in a Career Pathway

This course serves as a culminating and integrative experience designed specifically to provide an opportunity to expand upon knowledge gained in a career pathway. It is a project-based course that will focus on the design process to a finished product by incorporating 21st Century Skills, such as critical thinking and problem solving. The course will consist of a major project where the student must be able to demonstrate all that they have learned in their program of study. Each capstone project will incorporate the broader community, some aspect of “giving back” to others, which will provide students the opportunity to connect their project to the community and apply their learning to the real world.

INTERNSHIP

Grade Placement:  11, 12..........Semester 1 or 2..........May earn up to 2 credits

Prerequisite:  Student must have earned one full credit in a specific pathway of a CTE Coordinated Plan of Study.

An internship may be a paid or unpaid job experience. An application must be completed and approved prior to registration for the class. To begin the application process, schedule an appointment with your career advisor. Transportation to and from the training site is the responsibility of the student. Students must be enrolled in six classes (junior year) or five classes (senior year) in addition to the internship. Students must complete 75 hours of work for ½ credit.