Western Dakota Corps of Discovery

Learning Modules in the Western Dakota Corps of Discovery

Graphic Production

This module is designed to take students from manipulating graphics to production of a final product. This module contains (2) BN-20 vinyl cutter/printers and (2) VersaLaser laser engravers. Also included are 6 computers containing Corel Graphics Suite and the appropriate drivers and interface softwares. The module comes complete with custom curriculum and contact information for ordering supplies and materials. This module is ideally suited for preparing students for the rapidly increasing demand for workers in the graphics and production career area.

Mechanical/Pneumatic/Hydraulic

This module is intended to teach the core concepts of mechanical/industrial technology. It contains 5 trainers in each section. The trainers include all parts necessary to learn the basic principals of mechanics, pneumatics and hydraulics. Also included are 10 student manuals for each section and 1 instructor manual for each section. Exposure to core industrial technology skills sets the foundation necessary to study today's more sophisticated technologies.

Laser/Fiber Optic

In this module, students learn the properties of laser light and its uses with fiber optic cable. This module contains 6 lasers, 6 receivers, and all the lenses, fiber, and mirrors to perform the experiments in the custom created curriculum. This module gives students a chance to learn how lasers and fiber optics are used to move the massive amounts of data carried by a rapidly developing global telecommunications system.

Electricity/Electronics

This module covers the basics of AC and DC electricity. Contained in this module are; 6 analog trainers, 6 multimeters, 2 oscilloscopes, and all components and wiring to complete all the experiments in the training manual. The control and operation of independent machines and complete technological systems is governed by basic electronic concepts. This module gives students an opportunity to study these concepts in a hands on learning environment.

Bio-Chemistry

This module has been designed especially for cooperative schools. The student is led through experiments in DNA extraction and plant growth cycle. The custom learning manual also contains exams to test the student's progress. Included in this module are all the equipment and perishable supplies required to extract and analyze DNA and to observe the plant life cycle. No refrigeration is required and all materials are non-hazardous when properly used and stored. This module uses rapid cycling Wisconsin Fast Plants developed at the University of Wisconsin and freeze dried DNA and enzymes from the National Center for Biotechnology Education at the University of Reading in Reading, England.

C/N/C

This module is intended to teach computer numeric control and machining concepts. Students experience the design, programming and production of a finished part. A CNC router and mill are used to produce the finished products using a variety of materials including machinable wax, acrylic and wood. Mastercam is the software are used to draft and design parts. This module also contains 6 computers with Mastercam, Mastercam Art and machine tool interface software. Custom manuals with lessons on Mastercam, Mastercam Art and machine coding is also included. This module uses industry standard CAD (computer aided drafting) and CAM (computer aided manufacturing) software to teach students how CNC (computer numeric control) is used to drive today's automated manufacturing systems.

Robotics

In this module, students are exposed to the basics of robotic control and programming. The module uses teach pendant control to teach the students to use switches, program the robots and create works cells with peripherals such as carousels, conveyors and linear slides. Included in this module are 7 robots, 7 teach pendants, 10 microswitchs with connectors, (2) carousels and (2) conveyors. The module gives students an opportunity to actually program the robots using the same linear logic used to control the equipment in today's automated factories.

GPS

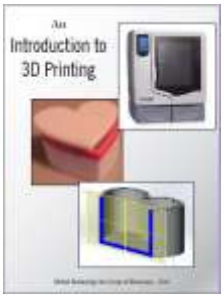
The GPS module contains 15 Garmin GPS units, protective cases and extension antennas. All of the curriculum and software for a complete study of GPS function and operation is included. The curriculum also introduces GIS database with hands-on activities which incorporate GPS data with GIS databases integrating the State recommended GIS software.

Commercial Embroidery

The Commercial Embroidery module is intended to continue CNC principals based on the Universal Coordinate System and the plotting of points in the form of stitches. The embroidery machine (2) included in the module is a 15-needle industrial grade machine. It also includes computers with embroidery digitizing and editing software and auto-digitizing software. Students are exposed to cost and time of manufacturing using stitch calculating software. This module truly prepares students for real-life commercial application.

C/N/C Plasma Cutter

The C/N/C Plasma Cutter module is intended to expand the CNC curriculum to include high speed plasma cutting as it is done in industry. Students has the opportunity to design using the same software that is used in the CNC module and also import pre-designed parts and cut them out on metal. The module also encourages the students to use welding skills they previously learned in the classroom. This module also contains 6 computers with Mastercam, CorelDraw and machine tool interface software. A custom manual with lesson in Mastercam and the machine interface is also included. This module uses industry standard CAD (computer aided drafting) and CAM (computer aided manufacturing) software to teach students how CNC (computer numeric control) is used to drive today's automated manufacturing systems.



3D Printer

The 3D Printer module contains a UPrint SE Plus 3D printer, 6 computers (or laptops) with Solidworks software for designing in 3 dimensions. This module is intended to introduce students to the process of 3D printing and the art of creating objects in 3 dimensional objects. The UPrint SE Plus is an industry standard 3D printer used not only in university settings but also business and manufacturing. Students can use the included software (an industry leader in design) or any other software to create files and print those files on the 3D printer.