

Emerging Technology  
Core Concepts of Current Modules

On December 1, 2005 a representative group of teachers and technicians from each of the six consortiums met to align the current modules with Core Concepts.

The Overarching Concepts are common to all modules and consist of the Knowledge & Skill Statements and the Basic Core Concepts. The Basic Core Concepts, developed by consortium teachers and technicians, were grouped after the meeting to align with the national Knowledge & Skill Statements. Both are reflected here in their entirety.

**Overarching Concepts**

Knowledge & Skills

Academics  
Communications  
Problem Solving and Critical Thinking  
Information Technology Applications  
Systems  
Safety, Health and Environmental  
Leadership and Teamwork  
Ethics and Legal Responsibilities  
Employability and Career Development  
Technical Skills

Basic Core Concepts

Applies Math, Applied Science  
Communication Skills  
Problem Solving, Troubleshooting  
Creativity  
  
Safety  
Teamwork, Adaptability, Flexibility  
Work Ethic  
Job Information  
Trade Skills, Research Skills, Measurement

All current modules were grouped into four categories:

- I. Automated Manufacturing
- II. Science Technologies
- III. Engineering
- IV. Information/Communication Technology

A statement follows each grouping to better define the particular category. The Core Concepts that are listed for each category are applicable to every module in that area. While there may be other concepts that are taught within each module, the group named these as the most prevalent. The bulleted items are there to further describe either the module or the Core Concept.

**I. Automated Manufacturing**

Students will have an understanding of the concepts used in computer numerical control as it relates to the production and handling of materials to create products.

Modules

Mill  
PlasmaCAMM  
Laser Engraver  
Router  
Robotics  
ColorCAMM  
CNC Embroidery

Core Concepts

Equipment Function  
• Tools  
• Feed Rate  
Computer  
• File Format  
• Application Software  
3 Axis Geometry  
Design Processes

## II. Science Technologies

Students will have an understanding of basic scientific concepts and principles by applying them to real life applications.

### Modules

Bio Tech

- Fast Plants
- DNA
- Genetics
- Forensics

Science Workshop/Probes

- Physiology Concepts

### Core Concepts

Basic Science Concepts

Biology Concepts

Physics Concepts

Chemistry Concepts

Ecology

## III. Engineering

Students will have an understanding of problem-solving skills using engineering concepts and processes. Integrations of math and science principals and foundations skills used in production will be stressed during support activities.

### Modules

CADD

- Basic Computer Skills

Laser/Fiber Optics

Electronics

Pneumatics/Hydraulics/Mechanical

Plastic Molding

### Core Concepts

Terminology

Systems

Schematics

Basic Linear Logic

Properties

## IV. Information/Communication Technologies

Students will have an understanding of a wide range of information data systems that are used across many discipline areas.

### Modules

Aviation

- Experimental Flight

GPS/GIS

- Tracking

Video/Digital Editing

Image Manipulation

### Core Concepts

Map Reading

Navigation

Geography

Triangulation

## Potential modules to be developed

Nanotechnology

Aerospace

Energy – Bio Diesel, Wind

Medical

PLC's

Rapid Prototyping & Automated Manufacturing

Semi-conductor