

Introduction to STEM Pathways

Intelitek’s Introduction to STEM Pathways provides an easy-to-implement solution for delivering early engagement and discovery of science, technology, engineering and mathematics topics for middle and high school students.

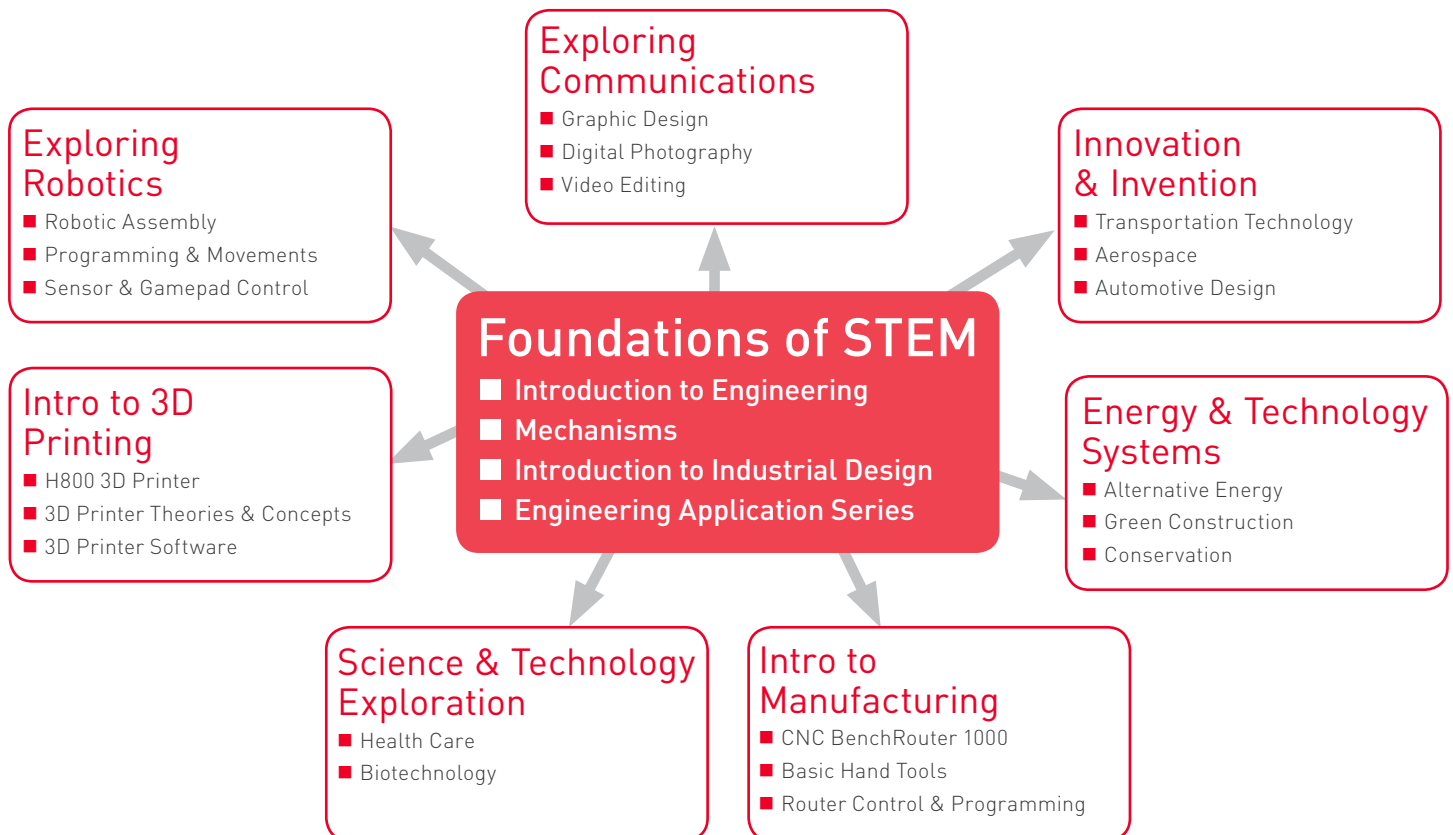
Using multiple instructional strategies including activity-based learning and immersive e-learning, students explore technology, examine science and math concepts and investigate careers in STEM.

The standards-based curriculum emphasizes 21st Century skills including teamwork, leadership and creative problem-solving skills. Relevant topics like robotics, energy systems and transportation help students see the connection between STEM and the world around them.



How the Program Works:

Students start with the requisite Foundations of STEM course, which is the cornerstone of the STEM Pathways program. After completion, students can mix and match courses from the following options to build a flexible program for STEM exploration!



Foundations of STEM

The Foundations of STEM course pack is the cornerstone of the Introduction to STEM Pathways program, which introduces STEM concepts to students through problem-based learning and hands-on activities. This package includes the following courses: Introduction to Engineering, Mechanisms, Introduction to Industrial Design and our Engineering Application Series, which consists of over 30 downloadable projects to add to your classroom.

Courses Included:

- LearnMate Learning Management System (LMS E-learning Content):
- Introduction to Engineering (Virtual)
- Mechanisms (Virtual)
- Introduction to Industrial Design (Lab)
- Engineering Application Series (EAS) Projects

Course Material:

- Introduction to Industrial Design Course Materials Package
 - Protractors
 - 12" metal rulers
 - Lab, challenge sheets and more
- Mechanisms Materials Package
 - VEX Mechanism Hardware Kit With 108 Components
 - 500g & 250g Spring Scales and Weights
 - Classroom Resources
 - Classroom Challenge Sheets
- Engineering Application Series (EAS) Project Materials Package
 - Simple machines modeling packages
 - Brass fasteners
 - Other miscellaneous materials

Introduction to Engineering

Introduction to Engineering provides students an excellent overview of the field of engineering. Students explore the history of engineering, career choices and the engineering design process.

Curriculum Material

- Introduction to Engineering
- Engineering in Society
- Careers in Engineering
- Engineering Approaches to Product Design
- Engineering Education Planning
- Exploring Engineering (Project)

Mechanisms

In the Mechanisms course, students examine various components of mechanisms including gears, pulleys, levers and more.

Curriculum Material:

- Simple Machines - Inclined Planes, Wedges, and Screws
- Simple Machines - Levers
- Simple Machines - Wheels, Axles, and Pulleys
- Gears
- Forces
- Work
- Friction
- Building a Mechanisms

Introduction to Industrial Design

In the Introduction to Industrial Design course, students explore the history and role of industrial designers. What is Industrial Design?

Curriculum Material

- Technical Drawing
- History of Product Design & How Products are Made
- Reverse Engineering, Patents, and the Engineer's Notebook
- Human Factors Engineering
- Rapid Prototyping

Engineering Application Series

The Engineering Application Series (EAS) is a collection of over 30 downloadable projects that you can add to your classroom.

Curriculum Material

- Airplane Launcher
- Balloon Racer
- Bathroom Redesign
- Movable Bridge
- Conveyor System - Automated
- Geothermal Heating/Cooling System
- Guitar Tuning Device
- Intelligent Green House
- Pneumatics Trainer
- Robotics Game/Event
- Smart House
- Solar Water Heater
- Sun Tracking Solar Panel Array
- Vending Machine
- Wind Turbine

Optional Courses

The following courses can be added to the Foundations course to help create a complete STEM solution!

Exploring Robotics

Intelitek's Exploring Robotics provides an easy-to-implement solution for delivering early engagement and discovery of science, technology, engineering and mathematics topics for middle school students. .

Material

- E-Learning Content: Exploring Robotics curriculum (30-45 hours total)
- Exploring Robotics Material Package (EasyC@V5 Software, VEX IQ Robotics Kits, Programming Add-On Kit).

Exploring Communications

Students study the history of media and its impact on society and use personalized activities like designing and edition to create customized t-shirts.

Material

- E-Learning Content: Intro to Communications, Digital Video Editing, Digital Photo Editing and Graphic Design (45-60 hours total)
- Exploring Communications Material Package (T-shirt transfer press and paper, Video editing software, Printer with photo paper, Classroom resources and challenge sheets).

Innovation & Invention

Students learn about the history of various methods of transportation including land, sea, air and space and then connect with technology through hands-on activities like building gliders and rockets.

Material

- E-learning Content: Introduction to Transportation Technology, Aviation, Aerospace, R&D Automotive (45-60 hours total)

Innovation & Invention Material Package (Pneumatic Rocket Launcher, Classroom Resources, Tools & Hardware and Challenge Sheets).

Introduction to 3D Printing

Introduction to 3D Printing is designed to introduce students to the concepts and theories of 3D printing, while also teaching them everything they need to know to begin printing 3D parts on their own.

Material

- E-Learning Content: Intro to 3D Printing (15-20 hours)
- Intro to 3D Printing Material Package (Afinia H800 3D Printer, BuildTak build platform, Air Filters, Cell/Perf boards, replacement nozzle and eight 500 gram Filament spools)

Energy & Technology Systems

Students explore various technologies in the relevant context of sustainable and alternative energy and use experiment kits to generate electricity and extract hydrogen.

Material

- E-learning Content: Intro to Green Technology, Resource Conservation, Green Transportation, Alternative Energy and Green Construction (45-75 hours total)
- Energy Systems Material Package (Hydrogen Station kit, Renewable Energy Set, Solar Home test kit, Soil test kit, science kits, Classroom resources and challenge sheets).

Introduction To Manufacturing

Students will first learn the fundamental skills in identification, application and usage of hand tools, and then will be introduced to CNC Routers and software in a project-based course.

Material

- E-Learning Content: Intro to Basic Hand Tools, Introduction to CNC Routers with VCarve Pro (20-30 hours total)
- Intro to Manufacturing Material Package (Intelitek BenchRouter 1000, Mach3 Control Software, VCarve Pro CNC Software and 2 Spare pieces of MDF).

Science & Technology Exploration

Introduction to Healthcare

Intro to Healthcare is an exploratory course that introduces students to the principles and practices of healthcare.

Introduction to Biotechnology

Intro to Biotechnology explores how the use and manipulation of cells and genetic materials affect our lives on a daily basis.

Material

- E-Learning Content: Intro to Healthcare (15-20 hours), Intro to Biotechnology (15-20 hours).
- Intro to Healthcare Material Package (Eye chart, Thermometer, Blood Pressure & Pulse Monitors, Dental and Medical Supplies, Classroom resources and challenge sheets)
- Intro to Biotechnology Material Package (Fingerprint and DNA Model Kits, Classroom resources and challenge sheets)

Ordering Information

Replace 'XX' in the catalog number with the number of students. The available options are shown in the item description.

Required Courses

Foundations of STEM

Foundations of STEM, 30 Students	STEM-FOUN-CORE
Introduction to Engineering Content	77-3095-0000
Mechanisms Content	77-3065-0000
Mechanisms Materials	10-8155-1030
Introduction to Industrial Design	77-8154-0001
Engineering Application Series Content	77-7027-0001
Engineering Application Series Materials	10-7027-1030
Intro to Industrial Design Materials	10-8154-1030

Optional Courses

Exploring Robotics

Exploring Robotics [2,10,20,30 Students]	STEM-EXPL-ROBXX
Exploring Robotics Content	77-8108-0000
EasyC V5 License	63-2060-50XX
VEX IQ Super Kit	228-2500

Introduction to 3D Printing

Introduction to 3D Printing	STEM-INTR-3DP
Intro to 3D Printing Content	77-8157-0000
Afinia H800 Printer (2)	00-3087-H800
Printer filament & accessories	

Introduction to Manufacturing

Intro to Manufacturing [2,10,20,30 Students]	STEM-INTR-MANF
Intro to CNC Routers Content	77-8160-0001
Hand Tools Content	77-BA05-0001
BenchRouter 1000	00-1000-0110
	(use 00-1000-0220 for 220V)
Hand Tools Hardware	10-BA05-0000
VCarve Pro Software, 1 Seat (30 for Education)	63-20000-VCRV

Exploring Communications

Exploring Communications [2,10,20,30 Students]	STEM-COMM-LABXX
Introduction to Communications Content	77-8150-0001
Digital Video Editing Content	77-8151-0001
Digital Photo Editing Content	77-8152-0001
Graphic Design Content	77-8153-0001
Exploring Communications Materials	10-8150-10XX



Innovation & Invention

Innovation and Invention [2,10,20,30 Students]	STEM-ININ-LABXX
Introduction to Transportation Content	77-8136-0001
Introduction to Transportation Materials	10-8136-10XX
Aerospace Content	77-8136-0002
Aviation Content	77-8136-0003
R&D Automotive Content	77-8136-0004

Energy & Technology Systems

Energy Systems [2,10,20,30 Students]	STEM-ENSYS-LABXX
Intro to Green Technology Materials	10-8110-10XX
Intro to Green Technology Content	77-8110-0001
Alternative Energy Content	77-8110-0002
Green Transportation	77-8110-0003
Green Construction Content	77-8110-0004
Resource Conservation Content	77-8110-0005
Renewable Energy Content	77-8110-0006

Science & Technology Exploration

Intro to Healthcare [2,10,20,30 Students]	STEM-HCARE-LABXX
Healthcare Content	77-8138-0000
Healthcare Materials	10-8138-10XX
Intro to Biotechnology [2,10,20,30 Students]	STEM-BTECH-LABXX
Biotechnology Content	77-8137-0000
Biotechnology Materials	10-8137-10XX



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