



# Mission of the VIP

To bring talented faculty and students from community colleges and universities together with industry to design and develop products virtually, paralleling global product development.

The VIP model enables students to develop skill sets to help them compete globally while providing faculty members with opportunities to collaborate with colleagues from other campuses regardless of location.





# Virtual Ideation Platform Institutional Partners

- CENTRAL MAINE COMMUNITY COLLEGE—MAINE
- KEENE STATE COLLEGE—NEW HAMPSHIRE
- SPRINGFIELD TECHNICAL COMMUNITY COLLEGE—MASSACHUSETTS
- CONNECTICUT'S COLLEGE OF TECHNOLOGY
- SADDLEBACK COLLEGE—CALIFORNIA
- UNIVERSITY OF MASSACHUSETTS LOWELL
- NEW ENGLAND BOARD OF HIGHER EDUCATION





# Virtual Ideation Platform

## **CENTRAL MAINE COMMUNITY COLLEGE**

Diane Dostie, Dean

Instructors: Lloyd Pulsifer, Devin Watson, Brad Record , Fred Donovan

## **KEENE STATE COLLEGE**

Lisa Hix, Instructor

Robert W. Simoneau, Associate Professor

## **SPRINGFIELD TECHNICAL COLLEGE**

Megan Piccus, Professor

## **CONNECTICUT'S COLLEGE OF TECHNOLOGY**

Dr. Karen Wosczyzna-Birch, State Director

## **SADDLEBACK COLLEGE**

Ken Patton, Dean

Ed Tackett, Director of RapidTech

## **UNIVERSITY OF MASSACHUSETTS LOWELL**

Dr. Robert Malloy, Plastics Engineering, Chairperson

## **NEW ENGLAND BOARD OF HIGHER EDUCATION**

Fenna Hanes, Senior Director





# Institutional Roles and Responsibilities

<b>INSTITUTION</b>	<b>RESPONSIBILITY</b>
Central Maine Community College <b>CMCC</b>	Overall project management, coordinate partner efforts, precision machining and tool design expertise
Keene State College <b>KSC</b>	Coordinate project creation and design, assimilate results from the Finite Element Analysis (FEA)
Springfield Technical Community College <b>STCC</b>	Assess design and quality related to product drawings and documentation, perform first article inspections
Connecticut's College of Technology – Regional Center Next Generation Manufacturing <b>COT - RCNGM</b>	Develop strategies for recruitment and retention of underrepresented groups, beta test curriculum elements, dissemination of results among community colleges in Connecticut
Saddleback College <b>SC RapidTech</b>	Support for rapid prototyping modeling
University of Massachusetts, Lowell <b>UMASS - Lowell</b>	FEA design analysis and design optimization , make appropriate recommendations
New England Board of Higher Education <b>NEBHE</b>	Support regional collaboration among partners , regional dissemination





# VIP Rationale

The ability for global teams to work concurrently and to produce products relies on the coordinated efforts of teams which lead to improved competitiveness [4].

According to Mittelstadt, “The new paradigm requires ‘intense collaboration’ among people and among organizations including not only OEM’s and their suppliers (often SMMs) [small and medium manufacturers], but also in cases with education and governments” [5].

## References

4. Jaruzelski, B., Dehoff, K., Bordia, R. The Booz Allen Hamilton Global Innovation 1000: Money Isn’t Everything. Strategy + Business. Winter 2005; 41: 1-15.
5. Mittelstadt, E. The Role of Community Colleges and Industry in Meeting the Demand for Skilled Production Workers and Technicians in the 21st Century Economy. Testimony before the Subcommittee on Research on Science and Technology. June 19, 2007: 1-12





# Results to Date

## Overview *Spring 2009*

### **CENTRAL MAINE COMMUNITY COLLEGE**

Managed project development  
Logistics development  
Integrated development and manufacturing of tooling

### **KEENE STATE COLLEGE**

Created a variety of part and tool designs

### **SPRINGFIELD TECHNICAL COMMUNITY COLLEGE**

Validated part and tool design  
Created complete project documentation

### **CONNECTICUT'S COLLEGE OF TECHNOLOGY – RCNGM**

Supported project dissemination and beta testing

### **NEW ENGLAND BOARD OF HIGHER EDUCATION**

Validated program development at KSC





# VIP Goals

**GOAL 1.0** Develop collaborative network between regional and national college and industry partners in order to create the necessary pedagogical and collaborative infrastructure for product ideation and realization.

**GOAL 2.0** Identify appropriate, measurable, student learning objectives necessary to fully realize virtual product design and development.

**GOAL 3.0** Implement existing proven practices that support recruitment and retention of underrepresented students.





# Results to Date

GOAL 1.0 Develop collaborative network for product ideation and realization.

*Spring 2009*

**KEENE STATE COLLEGE** offered a four-credit course called *Sustainable Management Practices*—MGT 490.

- ❖ an experimental course
- ❖ involved collaboration between the Sustainable Product Design and Innovation Program (SPDI) and the Management department working within the VIP
- ❖ designed and developed three iterations of an iPod nano cover
- ❖ developed component and tool drawings



# Results to Date





# Results to Date

*Spring 2009*

## **KEENE STATE COLLEGE**

### ***Sustainable Management Practices—MGT 490***

#### SPDI students responsibilities:

- ❖ Develop product drawings
- ❖ Develop tool designs
- ❖ Create rapid prototype components as needed

#### Management students responsibilities:

- ❖ Research cost
- ❖ Provide unit cost analysis
- ❖ Make recommendation regarding specific features
- ❖ Suggest alterations to features and effect on cost
- ❖ Suggest alternate designs to make the design more attractive to females
- ❖ Employ sustainable practices whenever possible









# Results to Date

GOAL 1.0 Develop collaborative network for product ideation and realization.

*Spring 2009*

## **CENTRAL MAINE COMMUNITY COLLEGE'S**

Machine Tool Technology program offered Advanced Computer Numeric Control (CNC) and Advanced Tool Making courses meeting NIMS standards

- ❖ reviewed initial iPod drawings in terms of manufacturing, sent drawing revisions to KSC for adjustment
- ❖ Advanced Tool Making students manufactured the mold blanks on manual equipment
- ❖ Students in Advanced CNC used MasterCam to program the iPod molds, perform the set-up and run the parts on a CNC mill
- ❖ CMCC students finished the product and sent it to KSC
- ❖ KSC had parts produced at Precision Elastomers Inc.





# Results to Date



# Results to Date

## Ipod Protective Case

Collaborative Product Development Project  
Central Maine Machinist Program and Keene State College Product Design Program

Ipod Case (Front View)



Designed by Keene State College  
MGT 490 Class

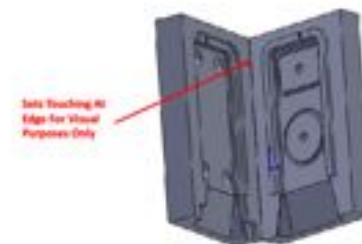
Front Of Case (Die Set)



Ipod Case (Back View)



Die Sets Touching At Edge





# Results to Date

GOAL 1.0 Develop collaborative network for product ideation and realization.

*Spring 2009*

## SPRINGFIELD TECHNICAL COMMUNITY COLLEGE

### *Introduction to Solid Modeling—MECH 280*

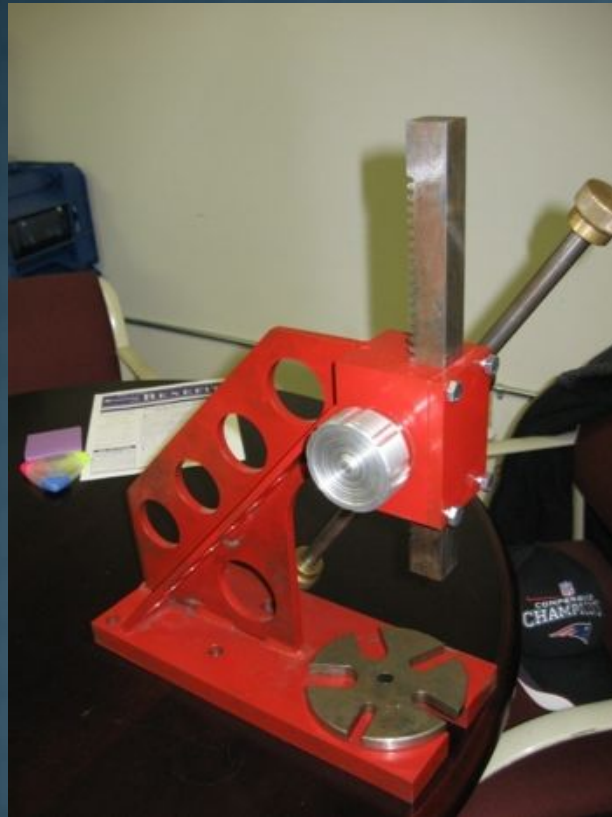
- ❖ Conducted a first article inspection of an existing Arbor Press from CMCC
- ❖ Developed a complete set of detailed and assembly drawings of the Arbor Press conforming to ANSI Y14.5 standards

### *Quality Concepts—MECH 327*

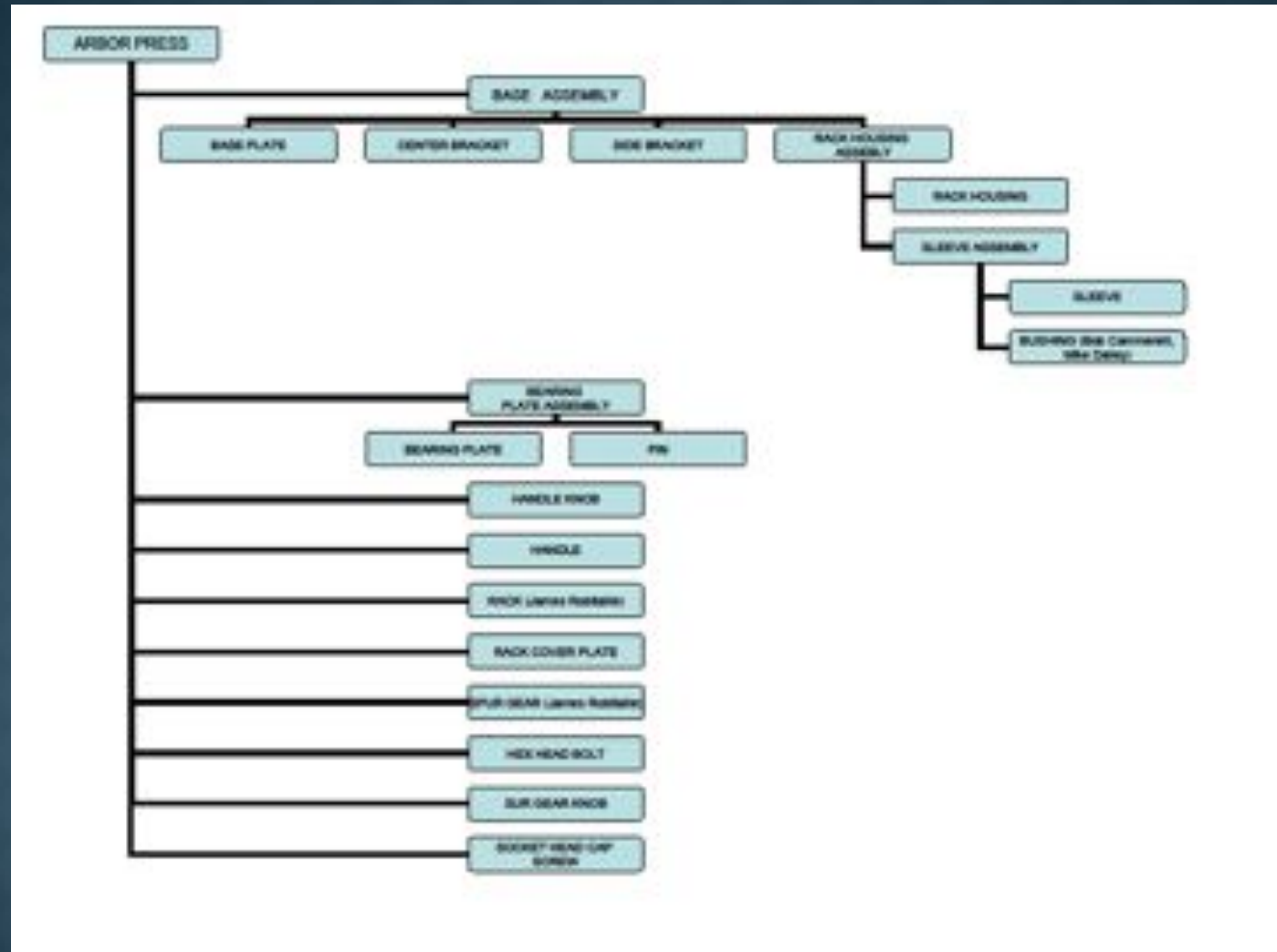
- ❖ KSC drawings were critiqued by STCC faculty and students against ANSI Y14.5 standards
- ❖ coordinated all their activities within the VIP
- ❖ help to set-up a beta Moodle site for course management



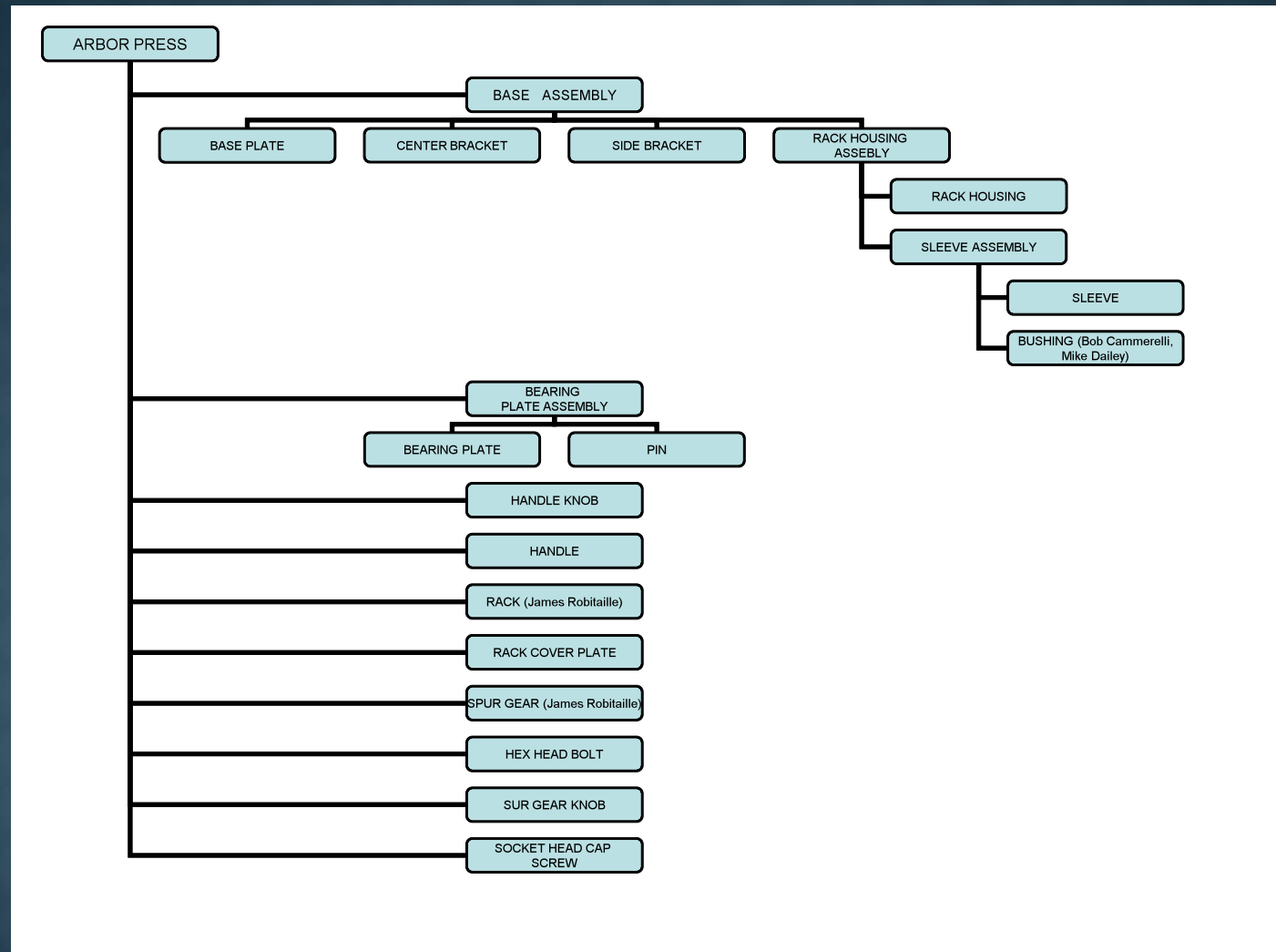
# Results to Date



# Results to Date



# Results to Date





# Results to Date

## GOAL 2.0 Identify measurable student learning objectives

Each course offered allows the VIP team to develop student learning objectives :

### ***Introduction to Solid Modelling—MECH-280***

- ❖ be capable of performing a first article inspection
- ❖ draw a component part to ANSI Y14.5

### ***Quality Concepts—MECH 327***

- ❖ critique detailed drawing to ANSI 14.5

### ***Sustainable Management Practices—MGT 490***

- ❖ calculate unit cost
- ❖ explain the concept of product life cycle



# Results to Date





# Results to Date

GOAL3.0 Implement existing proven practices that support recruitment and retention of underrepresented students.

Based on interviews with female students, conducted by MGT 490 students, a design was developed that was more appealing to women.

The ultimate goal behind this course is to have female and other underrepresented students collaborating on designs to encourage involvement and increased enrollment.





# Results to Date

GOAL3.0 Implement existing proven practices that support recruitment and retention of underrepresented students.

In June 2009, CMCC hosted a conference—*Recruiting and Retaining Girls and Women in Technology Programs*

Forty-eight attendees from three states indicated interest in attending a two-day train-the-trainer workshop during summer 2010

Recruiting posters and brochures for CMCC's Machine Tool Technology Program were reworked and female enrollment increased from two to seven.





# Recruiting and Retaining Girls and Women in Technology Programs



*Sponsored by CMCC's Virtual Ideation Platform (VIP) project, an Advanced Technological Education (ATE) Grant through the National Science Foundation (NSF).*

*The goal of the ATE program is to promote exemplary improvement in the way technicians are educated for the workplace.*



CMCC  
1250 Turner Street  
Auburn ME 04210



## Recruiting and Retaining Girls and Women in Technology Programs

June 5, 2009  
Central Maine  
Community College  
Auburn, Maine

CONTACT NAME



1250 Turner Street  
Auburn ME 04210  
207.755.5280



# Recruiting and Retaining Girls and Women in Technology Programs

## Strategies and Promising Practices

While it is known that girls have the ability to succeed in technology programs, despite best efforts, participation still lags. This is reflected by a startling lack of women in high paying, technology careers.

Attend this workshop, June 5, to discover the underlying reasons behind this gender inequity and learn proven ways to improve representation of women in technology fields.

This workshop will cover:

- Proven practices in recruiting under-represented populations for technology programs.
- The latest research about methods to increase diversity in science and technology disciplines.

Are you?

- Faculty
- Counselor
- Program Director
- Admissions Department
- Student Service Coordinator

You should attend this workshop if you assist women and girls with the career



## Agenda

June 5, 2009  
8:00am-3:30pm

- Registration and Coffee
- Introductions
- Technology and Engineering:
  - Where we are
- Job Opportunities
- Recruitment

### LUNCH

- Specific Strategies
- Marketing Strategies
- Tools
- Examples
- Evaluation Data
- Break Out Groups
- Follow up Activities

## PRESENTER

**Dr. Karen Wasserman-Birch** has over 28 years in higher education with a focus on diversity in nontraditional careers.

She has taught chemistry and related technology courses at both the community college and university level with an emphasis on technician education. Her career pathway began at a technical college where she was the only female department chairperson.

As part of her passion to increase the diversity of students pursuing careers in science and technology, she has been part of several research initiatives to study how we can attract and retain a diverse population of students in our technology disciplines.

She has received numerous awards for her work including a regional award from the American Association of University Women, AAUW, and both regional and national awards for excellence as an educator.

## Registration

June 5, 2009 | 8:00am-3:30pm

There is no charge for this workshop but pre-registration is recommended.

Spaces are limited.

Please reply by May 27, 2009

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Organization: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

City: \_\_\_\_\_

State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_

E-mail: \_\_\_\_\_

Will you need a certificate?  Yes  No  
Will you need CEUs?  Yes  No

Please share information about this workshop with others who assist girls and women with education and career choices.

Return form to  
Nancy Bradbury  
Central Maine Community College  
1250 Turner Street  
Auburn ME 04210  
or  
Phone: 207.755.5280  
Fax: 207.755.5496  
E-mail: nbradbury@cmcc.edu



# *Recruiting and Retaining Girls and Women in Technology Programs*



# Results to Date



For more information about  
**Women In Technology** contact:

**Kathleen Harrison**  
Gender Equity Coordinator  
Central Maine Community College  
1250 Turner Street  
Auburn ME 04210

207.755.5325

kharrison@cmcc.edu

Providing women with the tools  
they need to succeed:

- Information
- Connections to resources
- Support
- Mentoring network
- Proven tips and strategies
- Individual meetings with WIT advisor



*Central Maine Community College does not  
discriminate on the basis of race, color,  
national origin, sex, disability, or age in its  
programs and activities.*

## Women In Technology

A Gender Equity Project at  
Central Maine Community  
College



 **Central Maine**  
COMMUNITY COLLEGE



# Results to Date



## Women in Technology

(WIT) is an active student organization at CMCC that provides information and support through a variety of activities.

- Women members have chosen technical programs—usually dominated by male students—that lead to high skill, high wage employment.
- Women from other programs who want to explore their career options are invited to join.
- Membership is free and includes lunches, activities, important information and valuable resources.
- WIT has been active on campus for more 11 years

WIT, whose purpose is to help students achieve their career and educational goals, creates a friendly setting where women share strategies for success.

WIT is helping build successful students at Central Maine Community College



- Free luncheon meetings monthly.
- Events scheduled each semester.
- Posters on bulletin boards around campus advertise upcoming WIT activities.

For more information about  
Women In Technology contact:  
**Kathleen Harrison**  
Gender Equity Coordinator  
kharrison@cmcc.edu  
Office: Student Services-314

Some programs of study at CMCC often considered unconventional for women:

- Architectural and Civil Engineering Technology
- Automotive Technology
- Automotive Parts and Services Management
- Building Construction Technology
- Computer Technology
- Electromechanical Technology
- Machine Tool Technology



Central Maine Community College is committed to eliminating any barriers encountered by students enrolled in programs of study considered non-traditional for their gender.





# Sustainability of the VIP

The VIP methodology of virtual product development is being integrated into the following courses:

## **CENTRAL MAINE COMMUNITY COLLEGE**

- ❖ MTT 224—Advanced CNC
- ❖ MTT 217—Advanced Toolmaking

## **SPRINGFIELD TECHNICAL COMMUNITY COLLEGE**

- ❖ MECH 280—Introduction to Solid Modeling
- ❖ MECH 327—Quality Concepts

## **KEENE STATE COLLEGE**

- ❖ SPDI XXX—Sustainable Product Design and Innovation III
- ❖ SPDI XXX—Sustainable Product Design and Innovation III
- ❖ MGT 490—Sustainable Management Practices will become an alternative of MGT 381 .





# Virtual Ideation Platform

# Thank You

Any Questions?

