Locating Free Curriculum & Professional Development Resources

April 16, 2015

The Webinar Begins At 3 PM Eastern

CCTA | CENTERS COLLABORATIVE FOR TECHNICAL ASSISTANCE

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ATE CENTERS

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Webinar Details

- For this webinar you will be in listen only mode using your computer or phone
- Please ask questions via the question window
- This webinar is being recorded – you will be sent a recording link

Poll

Your affiliation?

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SC ATE

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CA2VES and the Clemson University Center for Workforce Development

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Locating Free Curriculum and Professional Development Resources, April 16, 2015

Clemson University Center for Workforce Development

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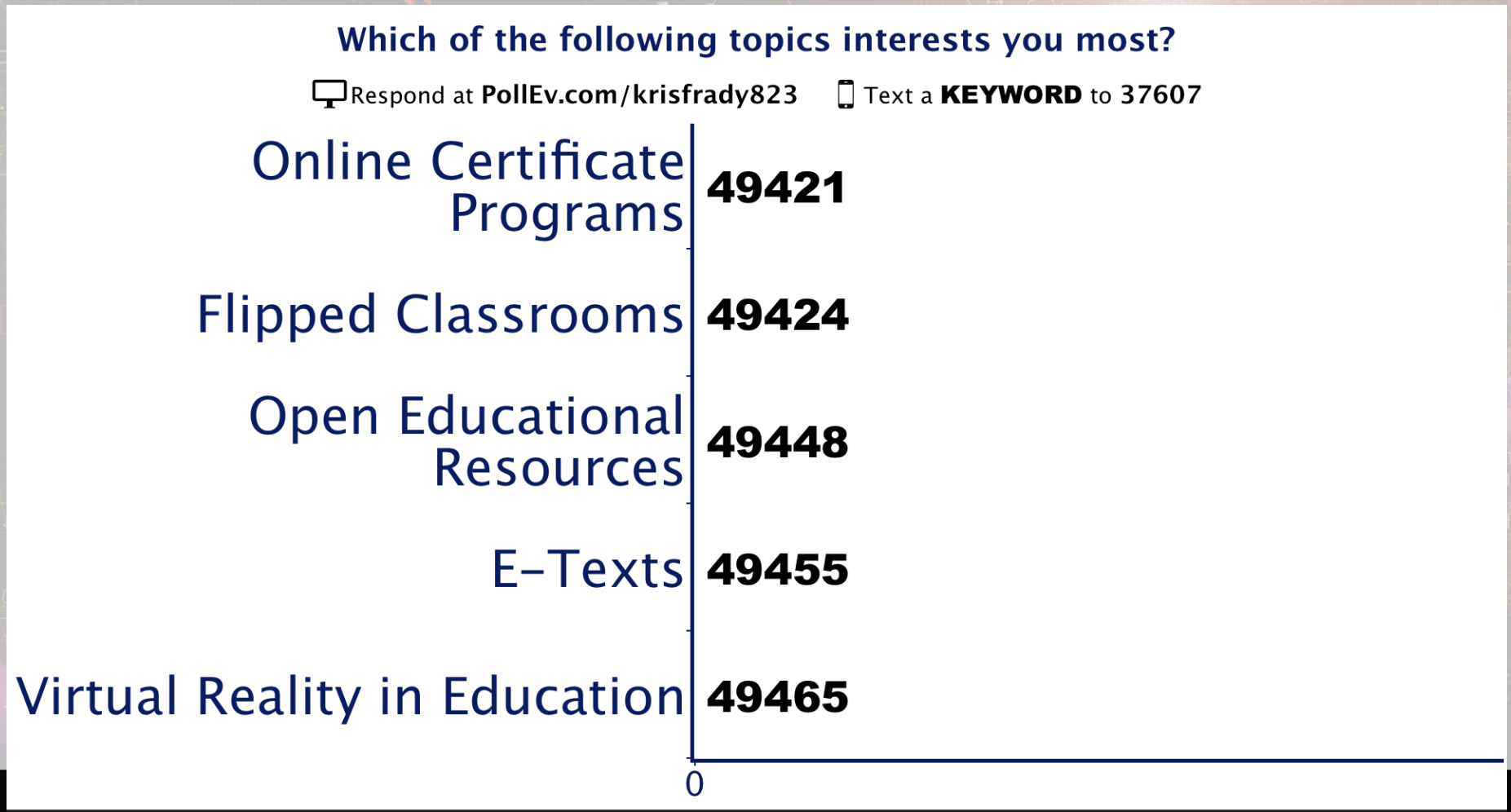
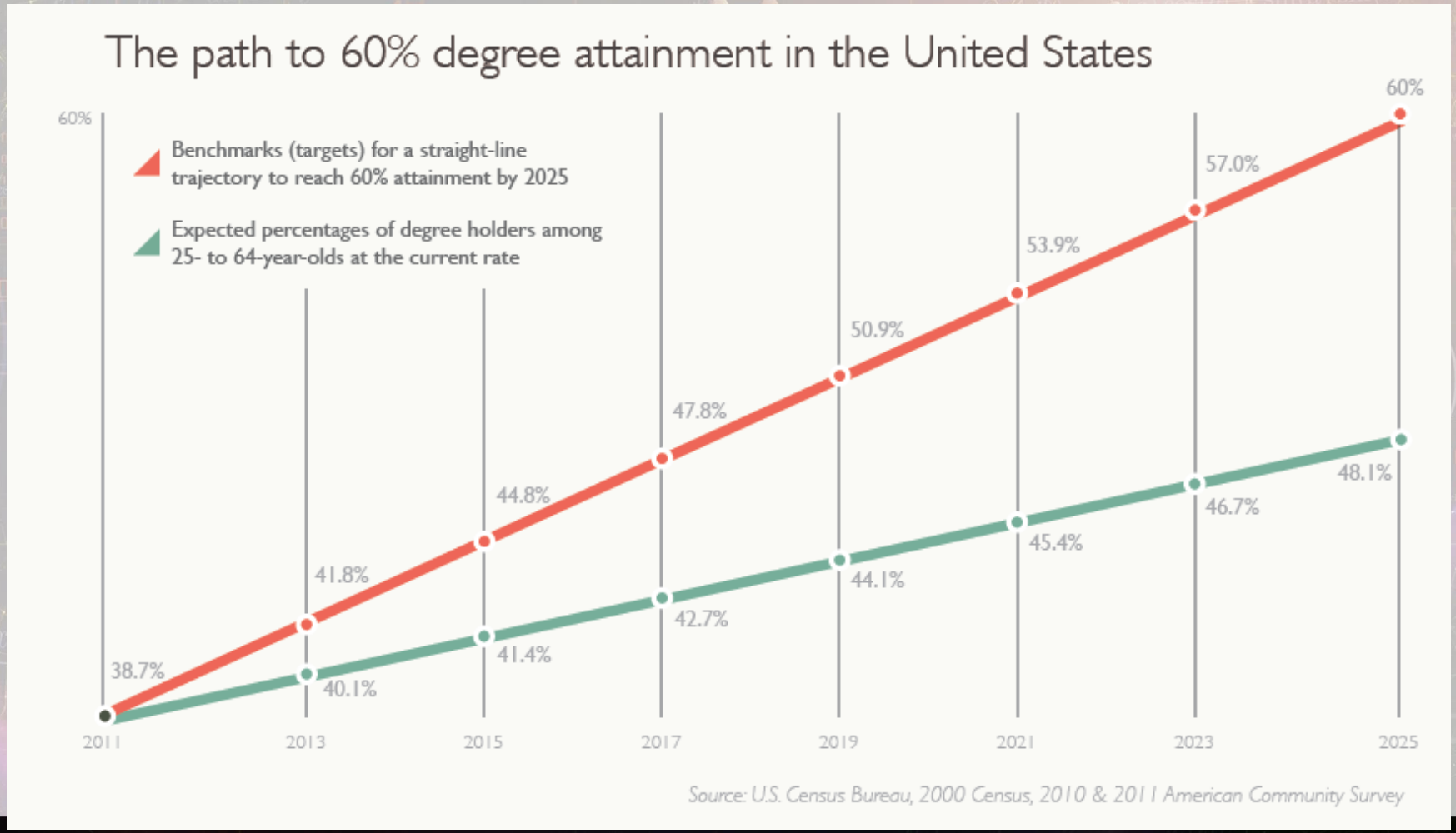
Interactive Poll

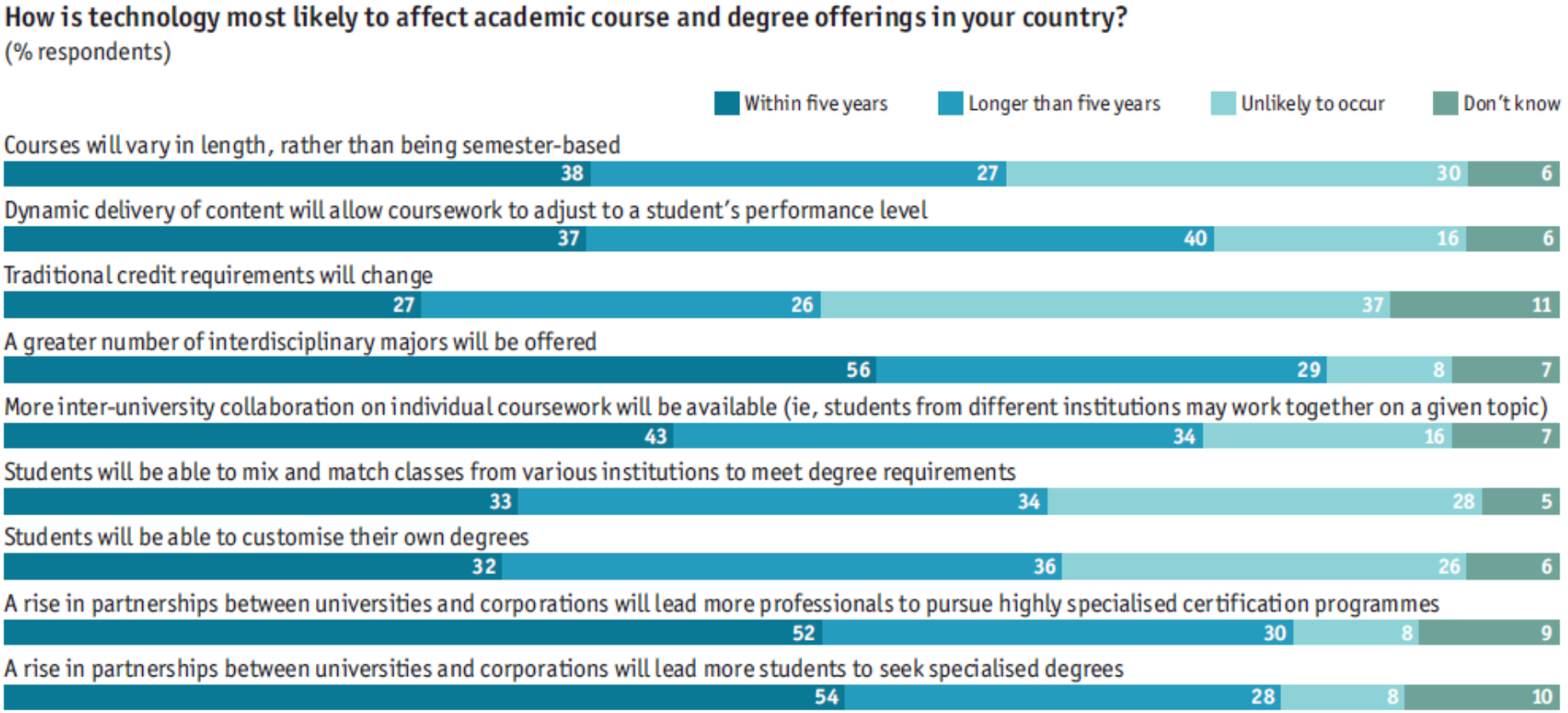


Workforce Development & Higher Ed



63% of all jobs will require postsecondary education by 2018

Affects of Technology



Center for Workforce Development

CUCWD
CLEMSON UNIVERSITY CENTER FOR WORKFORCE DEVELOPMENT

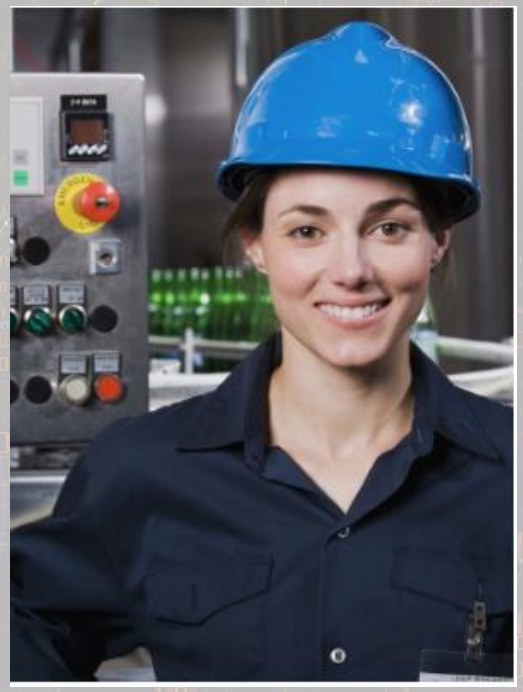
CA²VES
CENTER FOR AVIATION & AUTOMOTIVE TECHNOLOGICAL EDUCATION USING VIRTUAL E-SCHOOLS

SCACCELERATE
EDUCATION CAREER SUCCESS

DUKE ENERGY®

ASSIST TO WORK
SOUTH CAROLINA

SELECT SC
Improving Manufacturing Competitiveness In The Palmetto State



Mission: To provide research-centered resources and evidence-based leadership for 2-year colleges and the broader ATE community, by designing and developing state-of-the-art virtual reality-based modules that support automotive and aviation technician education.

WORKFORCE DEVELOPMENT IS ABOUT...

GETTING THE RIGHT

PEOPLE, THE RIGHT

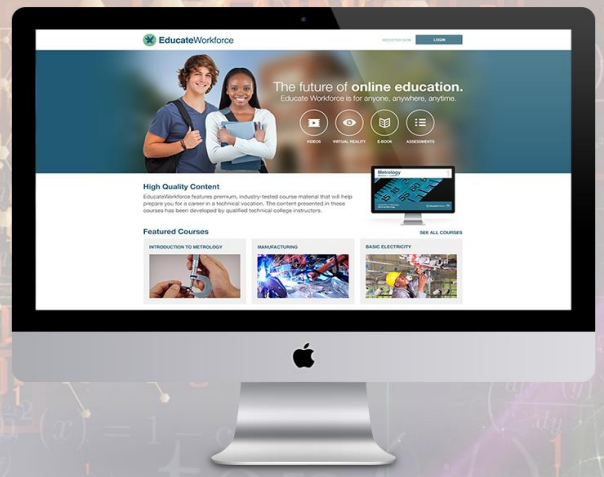
SKILLS FOR THE RIGHT

CAREERS AT THE RIGHT TIME.

Goal 1

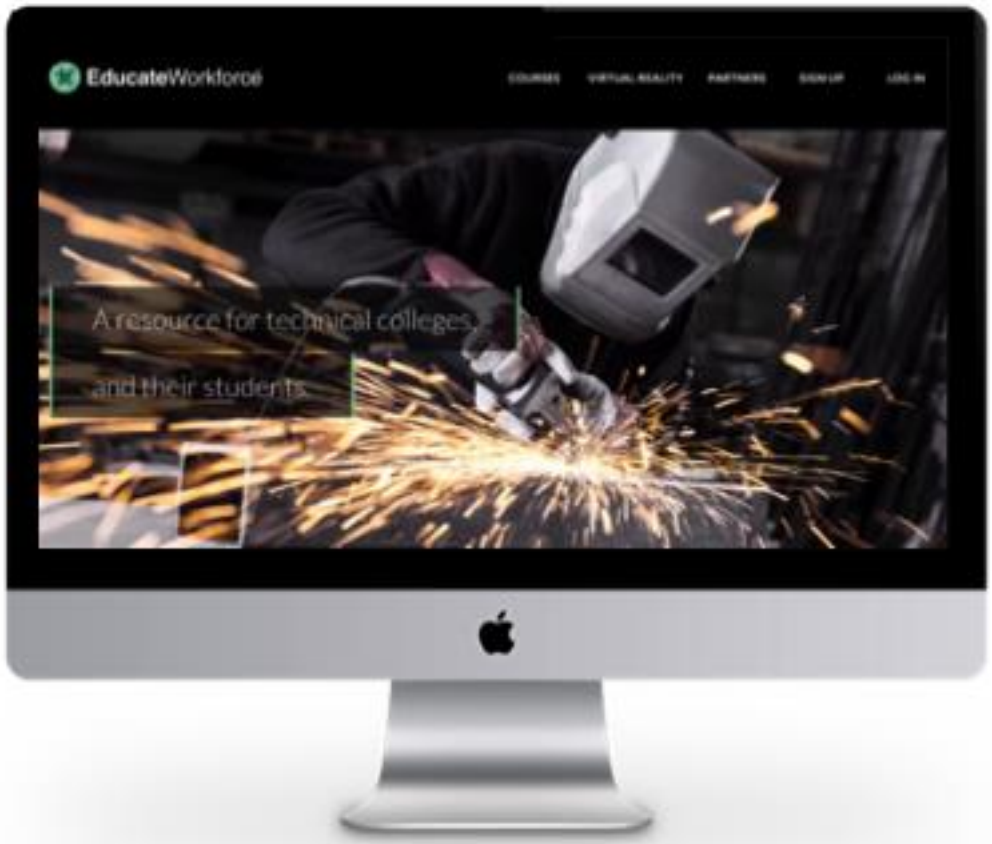
To Facilitate and Accelerate Distribution and Implementation of the Digital Learning Tools

- Integrating TAACCCT curricula into technological education programs
- EducateWorkforce
- Assessment of dissemination and tools
- Implementing feedback to enhance existing curricula



EducateWorkforce

EducateWorkforce



VIDEO LECTURES

VIRTUAL REALITY SIMULATIONS

OPEN TEXT

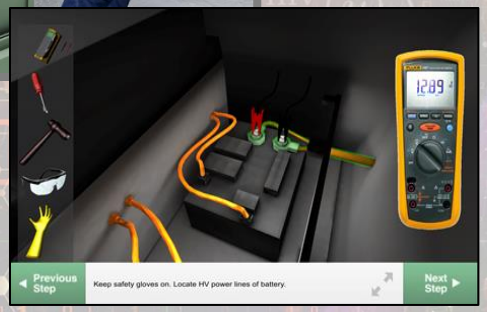
INTERACTIVE ASSESSMENTS

Introduction to EducateWorkforce - Video

Goal 2

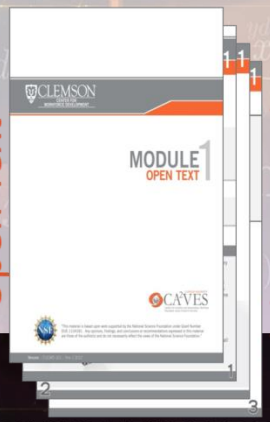
To Design and Develop Digital Curricula, E-Schools, and Virtual Reality Teaching and Learning for Online and Hybrid Environments

- Develop virtual reality with other ATE Centers
- Enhance existing ATE curricula
- Create new digital learning tools
- Summer CA2VES Academies
- Field testing and implementation

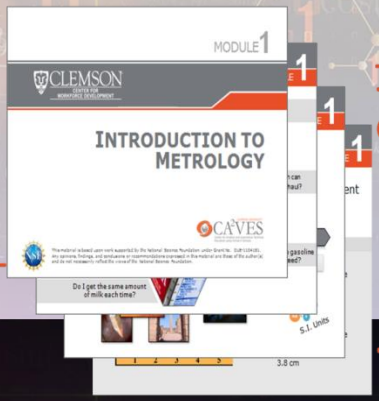


Module Outline

Open Text



Mini-presentation

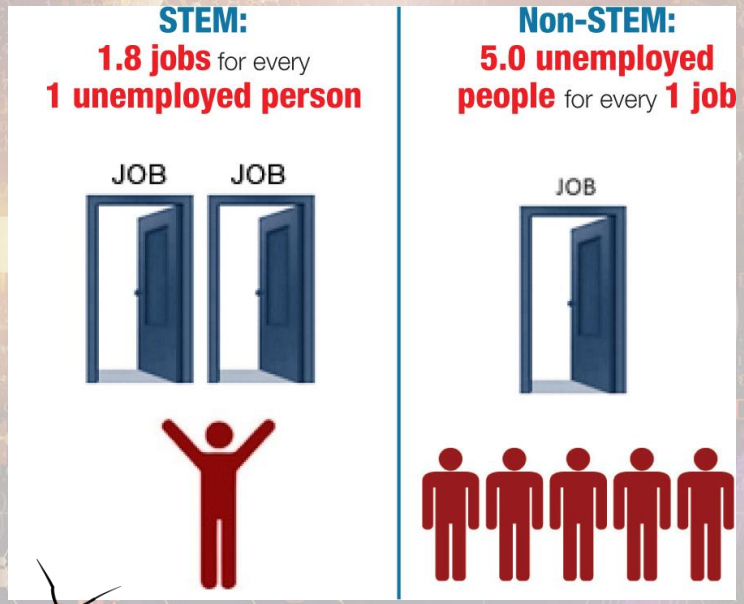


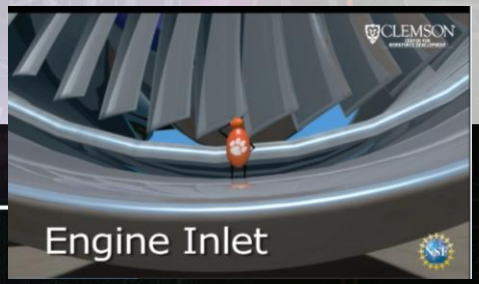
Assessment Guide

Goal 3

To Increase the Diversity and Quality of the Advanced Manufacturing Talent Pipeline Through Sustainable Pathways

- Recruitment campaigns *(focus: underrepresented populations and rural areas)*
- Diversity professional development
- Career education professional development
- Southeastern CA²VES Workforce Summit



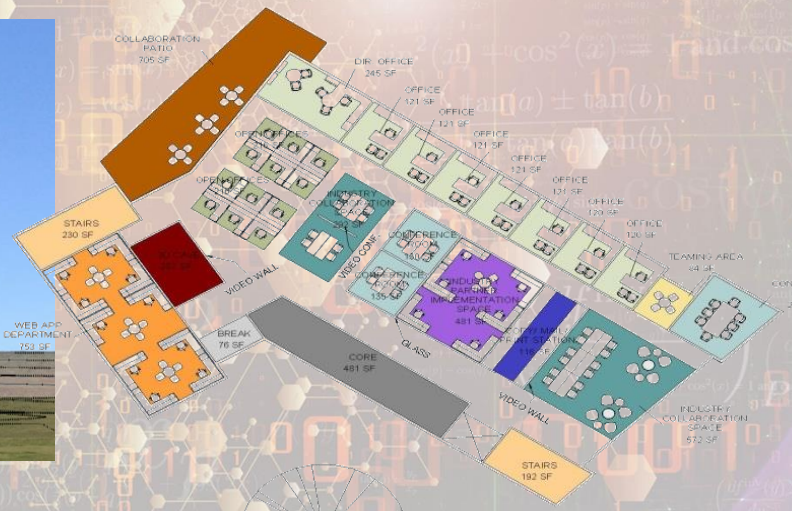


Goal 4

To Provide Rigorous Evidence-based Research in VR Development for Technician Education and Become a Sustainable Resource for ATE Centers and 2-year Colleges

- Digital learning tool and pedagogical research
- Broader impacts and concentration in workforce development
- Evaluation of digital learning tools

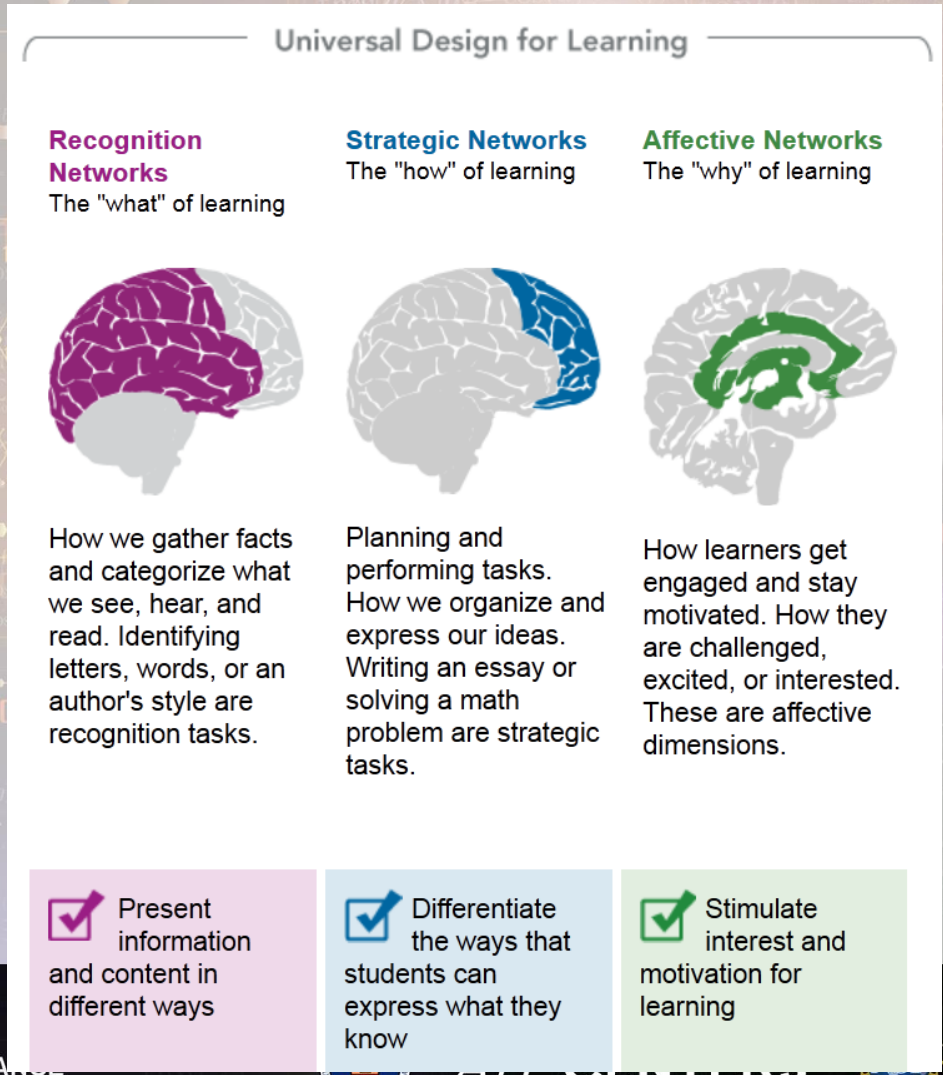
Advanced Technological Education Center



- ***Unprecidented access*** to digital learning tools, equipment and expertise
- ***Stimulate partnerships***, economic development and job creation
- ***Development of web tools***: virtual reality, apps, data analytics
- ***Multidisciplinary research***: economic and workforce development

Universal Design for Learning

- Variability in individuals and their learning.
- These three primary brain networks come into play.
  - Recognition Networks
  - Strategic Networks
  - Affective Networks



I. Provide Multiple Means of **Representation**

1: Provide options for perception

1.1 Offer ways of customizing the display of information

1.2 Offer alternatives for auditory information

1.3 Offer alternatives for visual information

2: Provide options for language, mathematical expressions, and symbols

2.1 Clarify vocabulary and symbols

2.2 Clarify syntax and structure

2.3 Support decoding of text, mathematical notation, and symbols

2.4 Promote understanding across languages

2.5 Illustrate through multiple media

3: Provide options for comprehension

3.1 Activate or supply background knowledge

3.2. Highlight patterns, critical features, big ideas, and relationships

3.3 Guide information processing, visualization, and manipulation

3.4 Maximize transfer and generalization

Resourceful, knowledgeable learners

II. Provide Multiple Means of **Action and Expression**

4: Provide options for physical action

4.1 Vary the methods for response and navigation

4.2 Optimize access to tools and assistive technologies

5: Provide options for expression and communication

5.1 Use multiple media for communication

5.2 Use multiple tools for construction and composition

5.3 Build fluencies with graduated levels of support for practice and performance

6: Provide options for executive functions

6.1 Guide appropriate goal-setting

6.2 Support planning and strategy development

6.3 Facilitate managing information and resources

6.4 Enhance capacity for monitoring progress

Strategic, goal-directed learners

III. Provide Multiple Means of **Engagement**

7: Provide options for recruiting interest

7.1 Optimize individual choice and autonomy

7.2 Optimize relevance, value, and authenticity

7.3 Minimize threats and distractions

8: Provide options for sustaining effort and persistence

8.1 Heighten salience of goals and objectives

8.2 Vary demands and resources to optimize challenge

8.3 Foster collaboration and community

8.4 Increase mastery-oriented feedback

9: Provide options for self-regulation

9.1 Promote expectations and beliefs that optimize motivation

9.2 Facilitate personal coping skills and strategies

9.3 Develop self-assessment and reflection

Purposeful, motivated learners

CAST

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APA Citation: CAST (2011). *Universal design for learning guidelines version 2.0.* Wakefield, MA: Author.

DOL TAACCCT

CUCWD Goal:

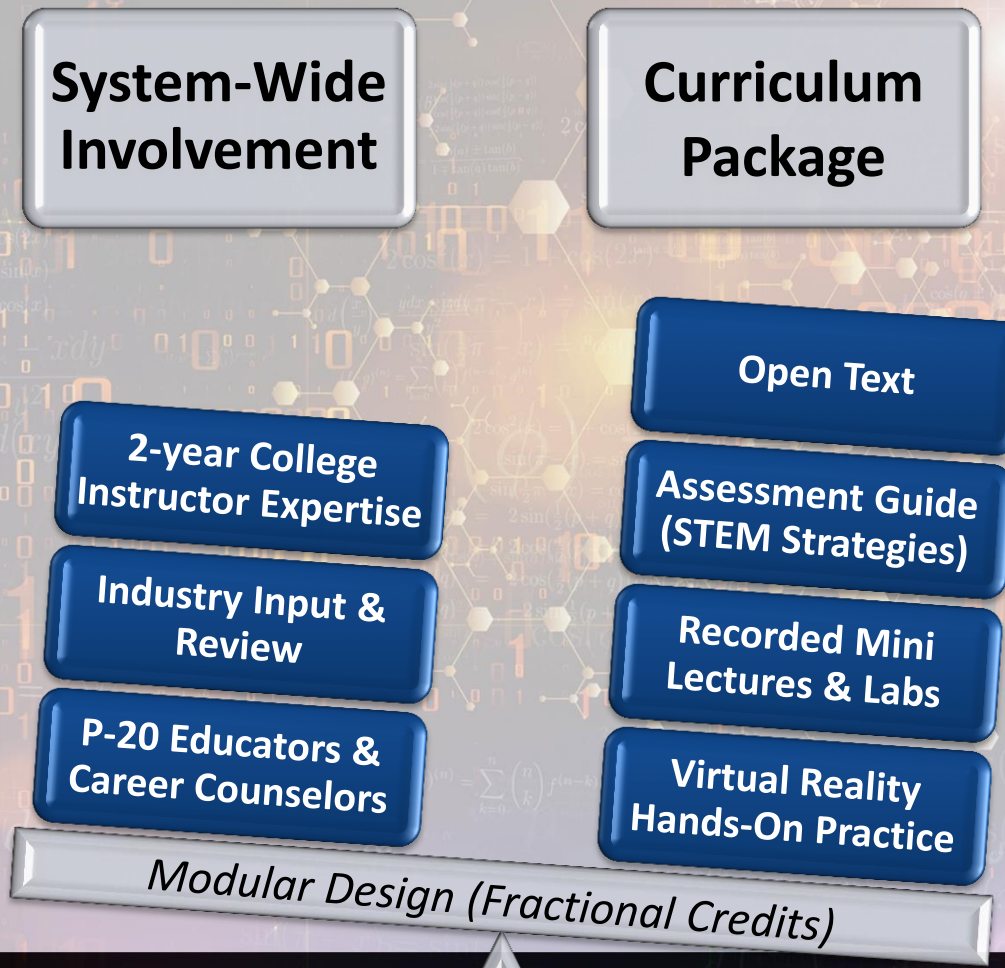
Develop new curricula and redesign existing curricula into formats that accelerate learning and increase accessibility

CUCWD Role:

Provide instructors with guidance during course development process by:

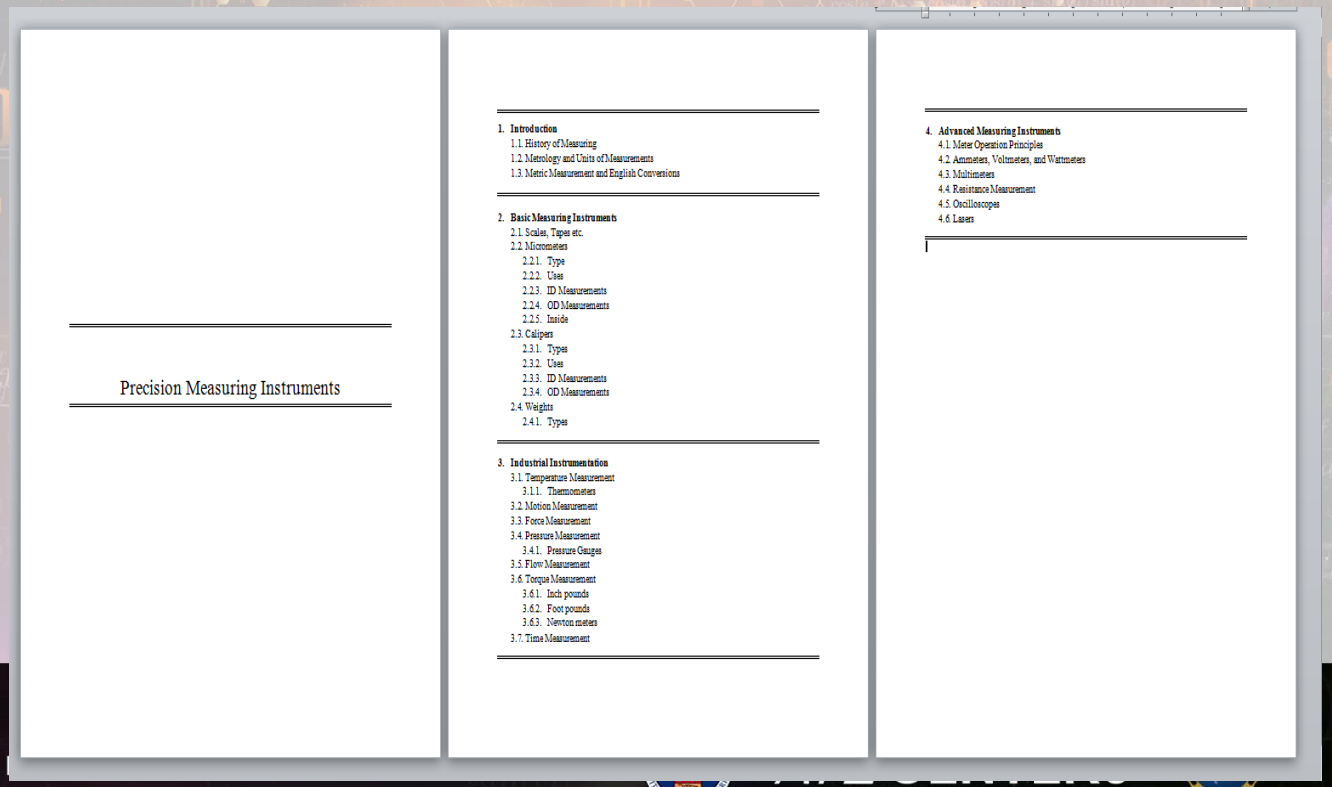
- Developing and sharing Instructional Design Templates
- Provided OER Resources and Tools
- Offering Professional Development that covers DOL Requirements:
  - UDL
  - Creative Commons
  - ADA

Learning Design



Learning Design

- Instructor Toolkit
  - Course Outline broken into Modules



Precision Measuring Instruments

1. Introduction
   1.1. History of Measuring
   1.2. Metrology and Units of Measurements
   1.3. Metric Measurement and English Conversions

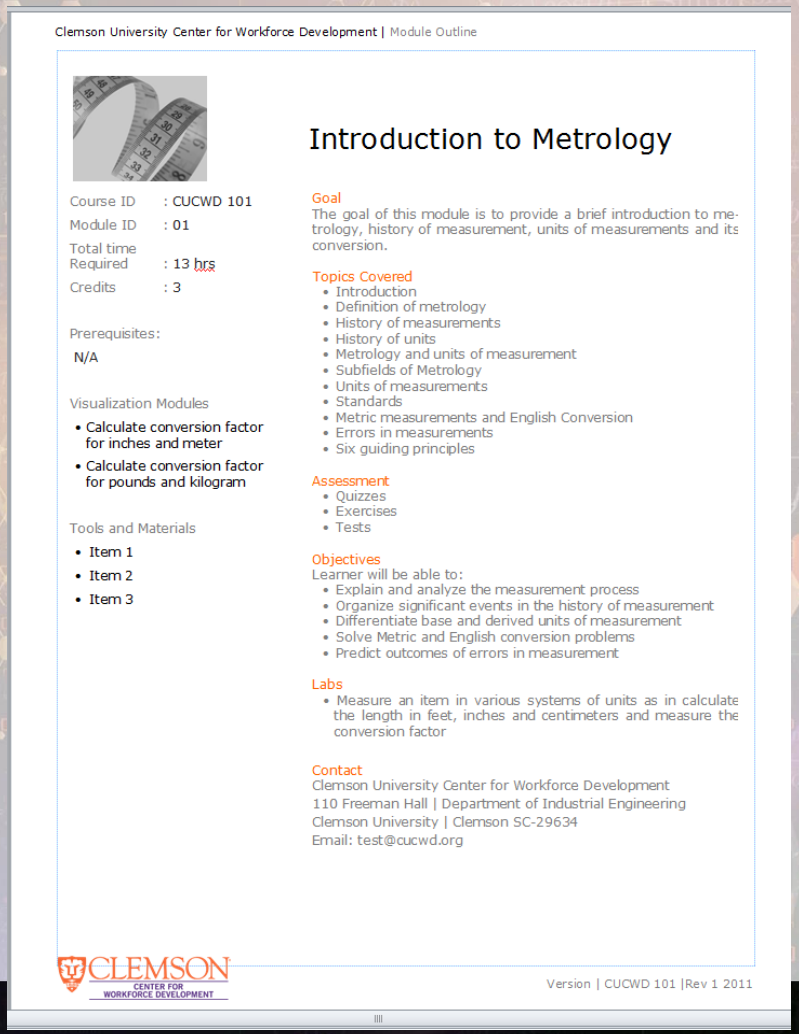
2. Basic Measuring Instruments
   2.1. Scales, Tapes etc.
   2.2. Micrometers
      2.2.1. Type
      2.2.2. Uses
      2.2.3. ID Measurements
      2.2.4. OD Measurements
      2.2.5. Inside
   2.3. Calipers
      2.3.1. Types
      2.3.2. Uses
      2.3.3. ID Measurements
      2.3.4. OD Measurements
   2.4. Weights
      2.4.1. Types

3. Industrial Instrumentation
   3.1. Temperature Measurement
      3.1.1. Thermometers
   3.2. Motion Measurement
   3.3. Force Measurement
   3.4. Pressure Measurement
      3.4.1. Pressure Gauges
   3.5. Flow Measurement
   3.6. Torque Measurement
      3.6.1. Inch pounds
      3.6.2. Foot pounds
      3.6.3. Newton meters
   3.7. Time Measurement

4. Advanced Measuring Instruments
   4.1. Meter Operation Principles
   4.2. Ammeters, Voltmeters, and Wattmeters
   4.3. Multimeters
   4.4. Resistance Measurement
   4.5. Oscilloscopes
   4.6. Lasers

Learning Design

- Instructor Toolkit
  - One page module summary



Clemson University Center for Workforce Development | Module Outline

Introduction to Metrology

Course ID : CUCWD 101
Module ID : 01
Total time Required : 13 hrs
Credits : 3

Prerequisites:
N/A

Visualization Modules
- Calculate conversion factor for inches and meter
- Calculate conversion factor for pounds and kilogram

Tools and Materials
- Item 1
- Item 2
- Item 3

Goal
The goal of this module is to provide a brief introduction to metrology, history of measurement, units of measurements and its conversion.

Topics Covered
- Introduction
- Definition of metrology
- History of measurements
- History of units
- Metrology and units of measurement
- Subfields of Metrology
- Units of measurements
- Standards
- Metric measurements and English Conversion
- Errors in measurements
- Six guiding principles

Assessment
- Quizzes
- Exercises
- Tests

Objectives
Learner will be able to:
- Explain and analyze the measurement process
- Organize significant events in the history of measurement
- Differentiate base and derived units of measurement
- Solve Metric and English conversion problems
- Predict outcomes of errors in measurement

Labs
- Measure an item in various systems of units as in calculate the length in feet, inches and centimeters and measure the conversion factor

Contact
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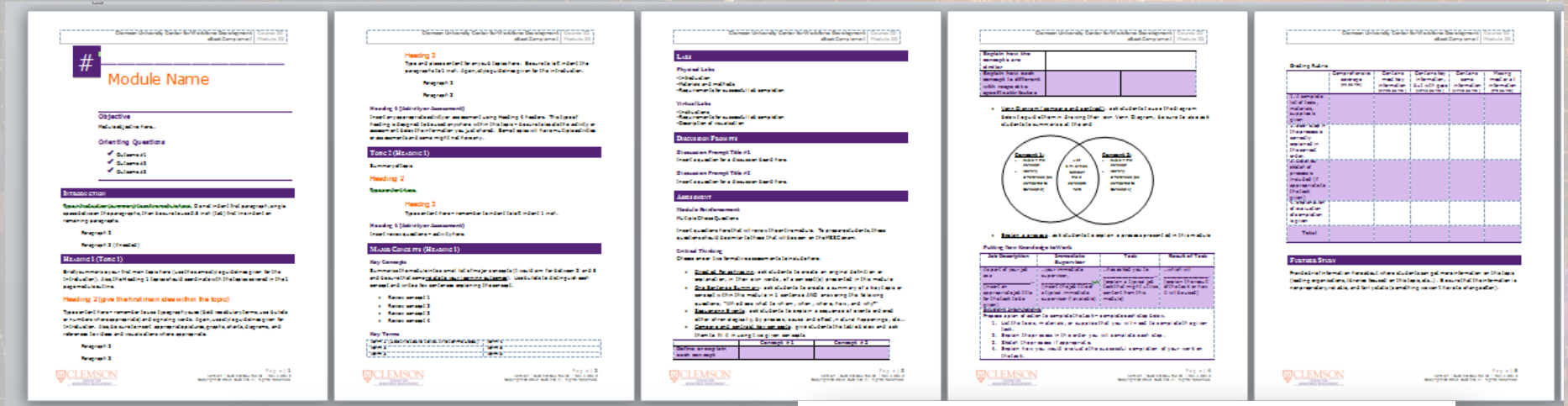
110 Freeman Hall | Department of Industrial Engineering
Clemson University | Clemson SC-29634
Email: test@cucwd.org

CLEMSON CENTER FOR WORKFORCE DEVELOPMENT

Version | CUCWD 101 |Rev 1 2011

Learning Design

- Instructor Toolkit
  - Open Text



Module Name

Objective

Students will be able to:

- Objective 1
- Objective 2

These should be the same objectives found within your module ou

Orienting Questions

- ✓ Outcome #1
- ✓ Outcome #2
- ✓ Outcome #3

INTRODUCTION

Type introduction (summary) to entire module here.

Paragraph 2

Paragraph 3 (if needed)

1.1 TOPIC NAME ***(Your topics should align with the topics in your course outline)***

Briefly summarize your first main topic here

1.1.1 SUBTOPIC NAME

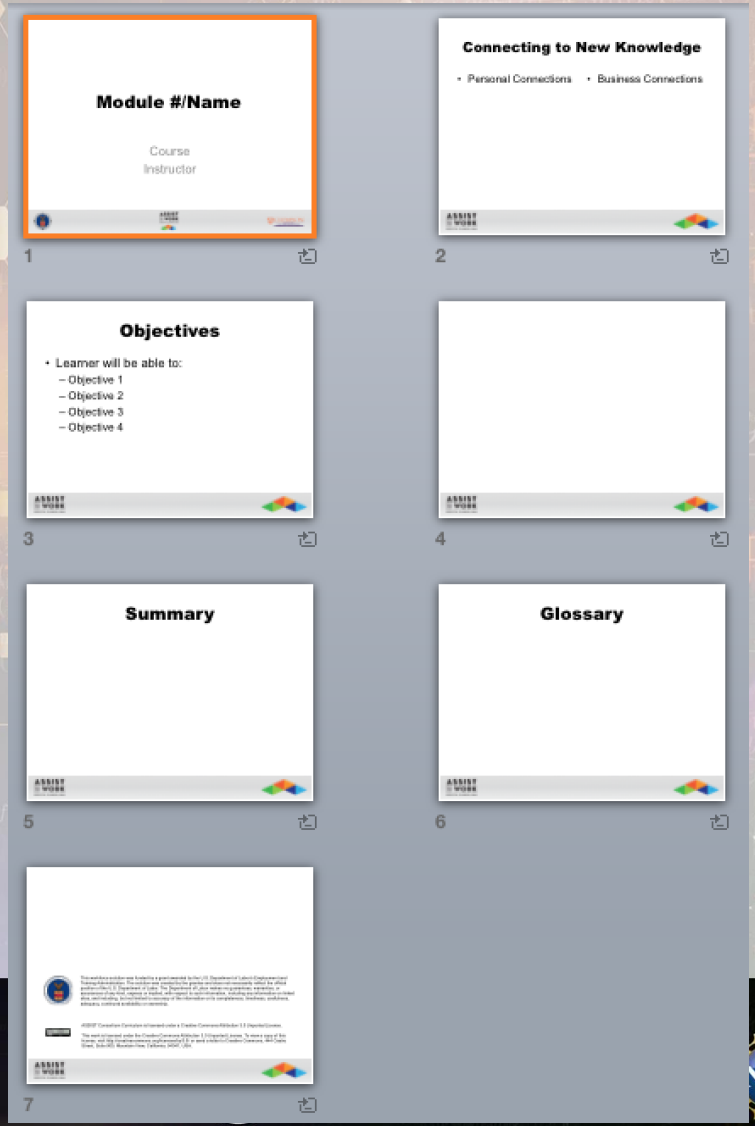
Type content here

1.1.2 SUBTOPIC NAME

Type content here

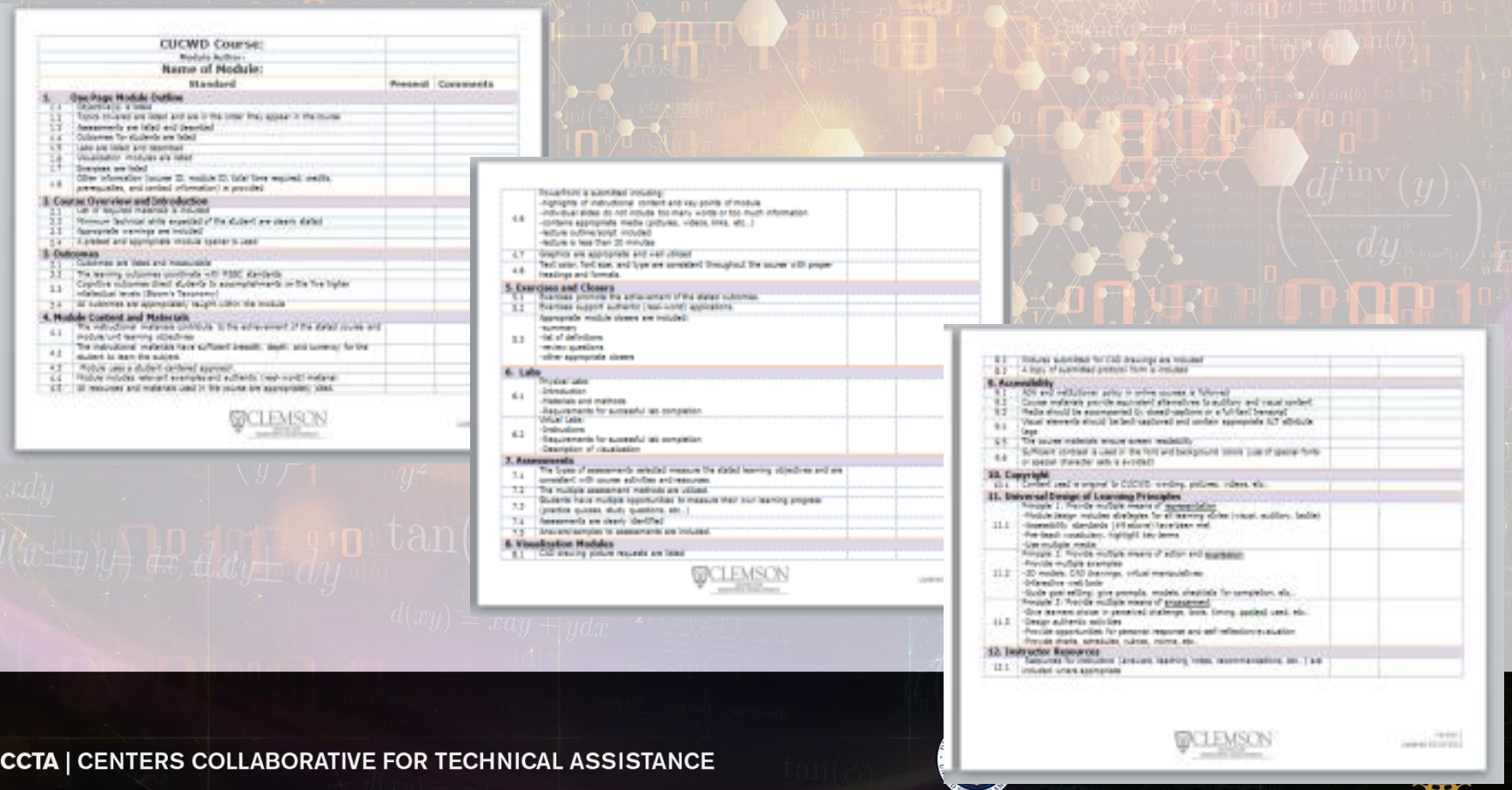
Learning Design

- Instructor Toolkit
  - Brief supplemental presentation



Learning Design

- Instructor Toolkit
  - Checklist



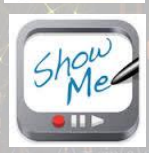
Learning Theories

Activity

In the text area share your favorite education app

Mobile Applications for the Classroom

Air Sketch
(iPad)



ShowMe
(iPad)

iTunesU
(iPad)

Adobe Connect (iOS and Android)

MyHomework
(iOS, Android, Windows, Kindle)

iBook
(iOS)

Khan Academy (iPad)

Dropbox
(iOS, Android, Windows, Kindle)

Notesplus
(iPad)

Wolfram|Alpha
(iOS)

StudyBlue
(iOS, Android, Windows, Kindle)

iAnnotate
(iOS)

Wunderlist
(iOS, Android, Windows, Kindle)

Evernote
(iOS, Android, Windows, Kindle)

Ted and Ted Books
(iOS)

BrowZine
(iOS, Android)

PBS
(iPad)

NASA App HD
(iOS, Android)

Mindomo
(iOS, Android)

SlideShark
(iOS)

Mental Case
(iOS)

** Click on the App Names to view a description and the APP Icons to view a video*

Air Sketch

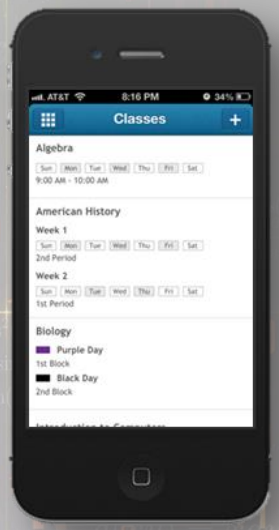
Need a recordable whiteboard?

Try Vittle or ShowMe !

iAnnotate

User Guide
Tabbed Reading
Fully customizable toolbars
Add notes & bookmarks
DRAFT
1.1: QuickStart Guide
Easily mark-up text
Typewriter annotations
check links
Search document text
Quickly navigate annotations

MyHomework



Homework

Track your homework, tests, projects and lessons.

Class Schedules

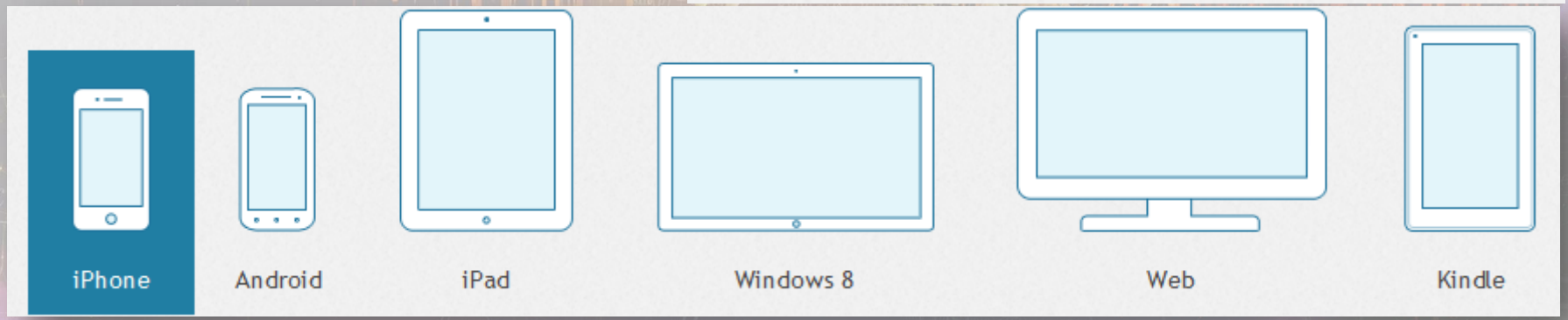
Supports time, block and period based schedules.

Reminders

Get reminded when assignments are due.

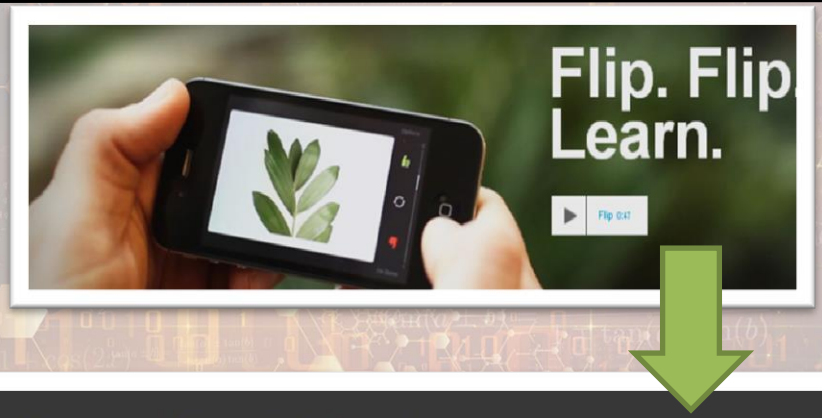
Sync

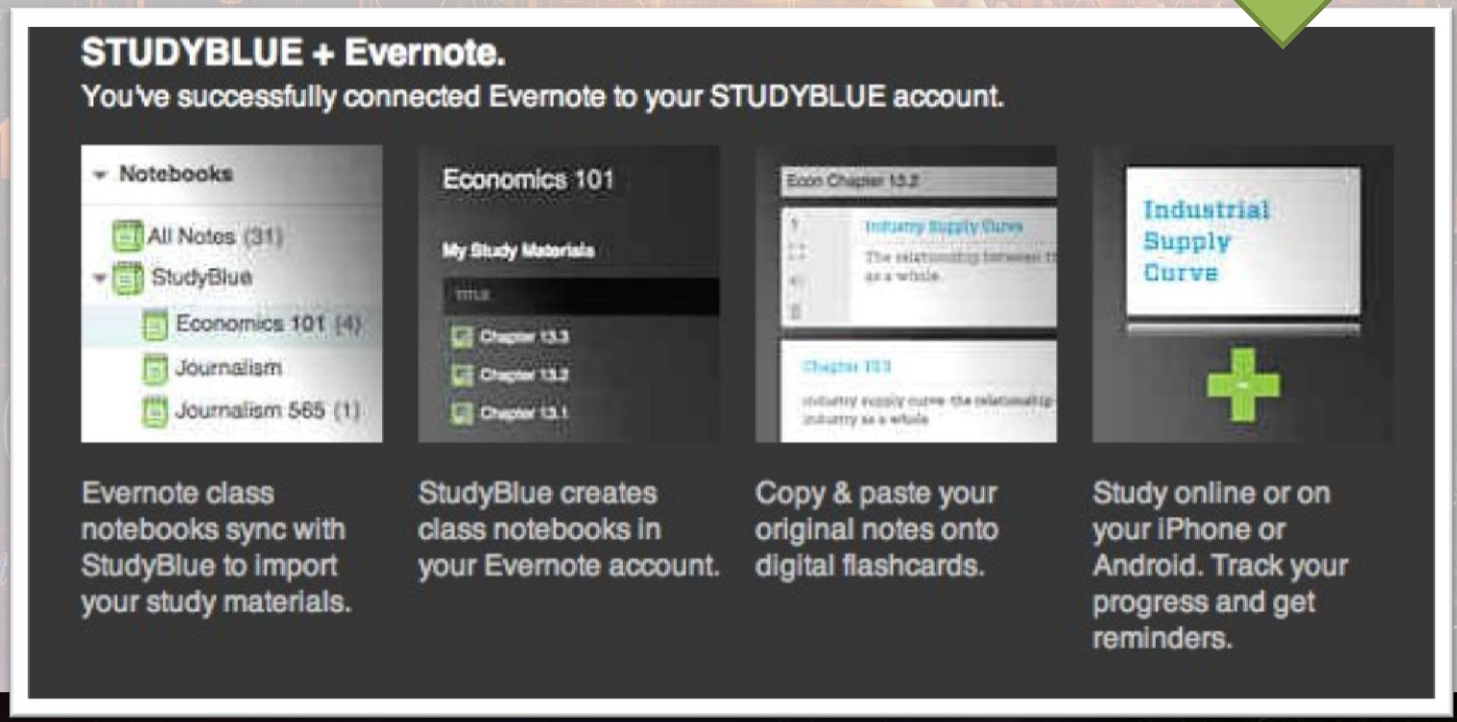
Sync to access your classes and assignments on any of the available devices!



Teachers.io = share class information with students synced through MyHomework

StudyBlue + Evernote





Activity

In the text area share your favorite e-Text or online textbook

Open Educational Resources - E-Texts

[OpenStax College]

[Connexions]

[College Open Textbooks]

[University of Minnesota]

[Wikibooks]

[Boundless]

[CK12 Flexbooks]

[The Saylor Foundation]

[Flatworld Knowledge]

[Orange Grove Text Plus]

** Click on the E-Text Names to view a description*

Activity

In the text area share your favorite Open Education Resource (OER) website

OER – Open Educational Resources

OER Repositories:

- SBCTC OERs (Washington State Board) Open Course Library
- NROC – National Repository of Online Courses
- Curriki
- OER Commons
- Open Source Physics
- PHET Interactive Simulations
- Open Learning Network (OLNet)

OER Resources:

- OER Matrix
- Order of Operations OER Creation
- Quality Matters Rubric
- Learning Registry
- OER-Friendly Tools & Resources
- Scoop It
- Wikimedia
- Open Policy Implementation Guide

** Click on the OER Names to view a description*

Skillscommons

DOL TAACCCT Repository: skillscommons.org

Grant Projects

- AAT Enhancement and Acceleration Program
  - Learning Resources Collection
  - Program Support Materials Collection
- Accelerated Career and Education Pathway Program (ACEPP)
  - Learning Resources Collection
  - Program Support Materials Collection
- Accelerated Career Pathways: From Hawaii to the Texas Panhandle
  - Learning Resources Collection
  - Program Support Materials Collection
- Accelerating Advanced Manufacturing and Global Logistics Careers Partnership (AAMGLP)
  - Learning Resources Collection
  - Program Support Materials Collection
- Accelerating Wireless Education For Capitol and Crater Regions (AWE4CCR)
  - Learning Resources Collection
  - Program Support Materials Collection
- Accessible Support Services and Instruction for Sustainable Transition to Work (ASSIST)
  - Learning Resources Collection
  - Program Support Materials Collection
- ACT-On Retail Management Careers
  - Learning Resources Collection
  - Program Support Materials Collection

Learning Resources Collection

search

Recent Submissions

- ENG 032: Developmental English, Mason, Jennifer
- MAT 176: Algebra & Trigonometry II, Knowlen, Mathew
- RDG 031: Developmental Reading 1, Kerr, Donna
- EEM 162: Process Controls, Anton, Mary
- EEM 166: Commercial and Industrial Wiring, Microburst, Learning
- MAT 120: Probability and Statistics, Grooms, Ellen
- IMT 121: Drive Systems, Widener, Michael
- TDL 214: GPS and GIS Technology Applications in TDL, Oran, Tony
- BIO 102: General Biology II, Plummer, Melissa
- EEM 151: Motor Controls I, Waymyers, James A
- MTT 258: Machine Tool CAM, Stuhr, William R.
- MAT 175: Algebra and Trigonometry I, Spain, Dina
- EET 113: Electrical Circuits I, Mohajer, Farhad
- EEM 140: National Electrical Codes, Moore, Kevin
- IMT 102: Industrial Safety, Moore, Kevin

ATE CENTERS

Organization

Anand K. Gramopadhye, Ph.D. Dean of College of Engineering and Science

Management Team

Kapil Chalil Madathil, Ph.D.
Director of Technology Ops.

Kris K. Frady, Ed.D.
Director of Operations

Virginia Hall, Ed.D.
Director of Digital Learning & DOL TAACCCT Program Manager

Rebecca Hartley, M.P.A.
Director of Pathways

Dave Lee
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Jeffrey Bertrand, M.S.
Visualizations Lead

Caroline Christ, M.S.
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Martin Clark
IT Network Operations

Kristina Corbett
Fiscal Analyst

Saundra Holland
Administrative Assistant

Zachariah Inks, M.F.A.
Visualizations Developer

Jim Piekutowski, M.S.
Program Manager

Nicholaus Outen
Web Services

Zachary Trabookis, M.F.A.
Web Services

South Carolina Advanced Technological Education Center of Excellence (SC ATE)

Anna Kolliopoulos,
Assistant Director and Co-PI for the South Carolina Advanced Technological Education Center of Excellence
SC ATE

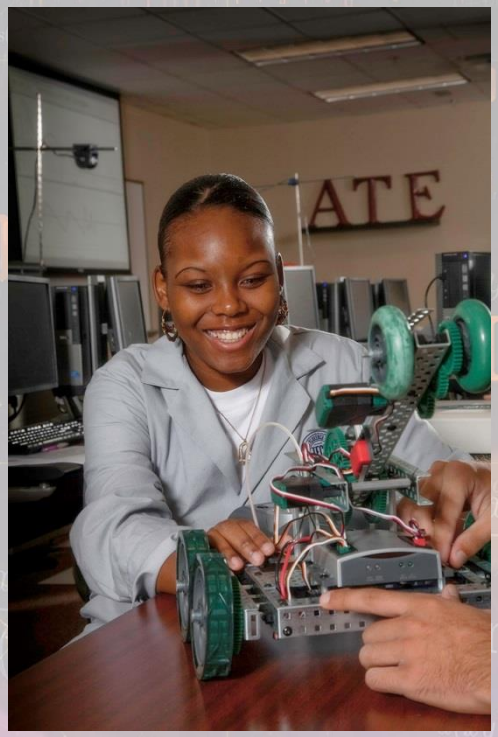
TeachingTechnicians.org

IF YOU BUILD IT...

WILL THEY COME?

TeachingTechnicians.org

SC ATE Center of Excellence (SC ATE)



A National Science Foundation – funded Advanced Technological Education (ATE) National Center for Expanding Excellence in Technician Education

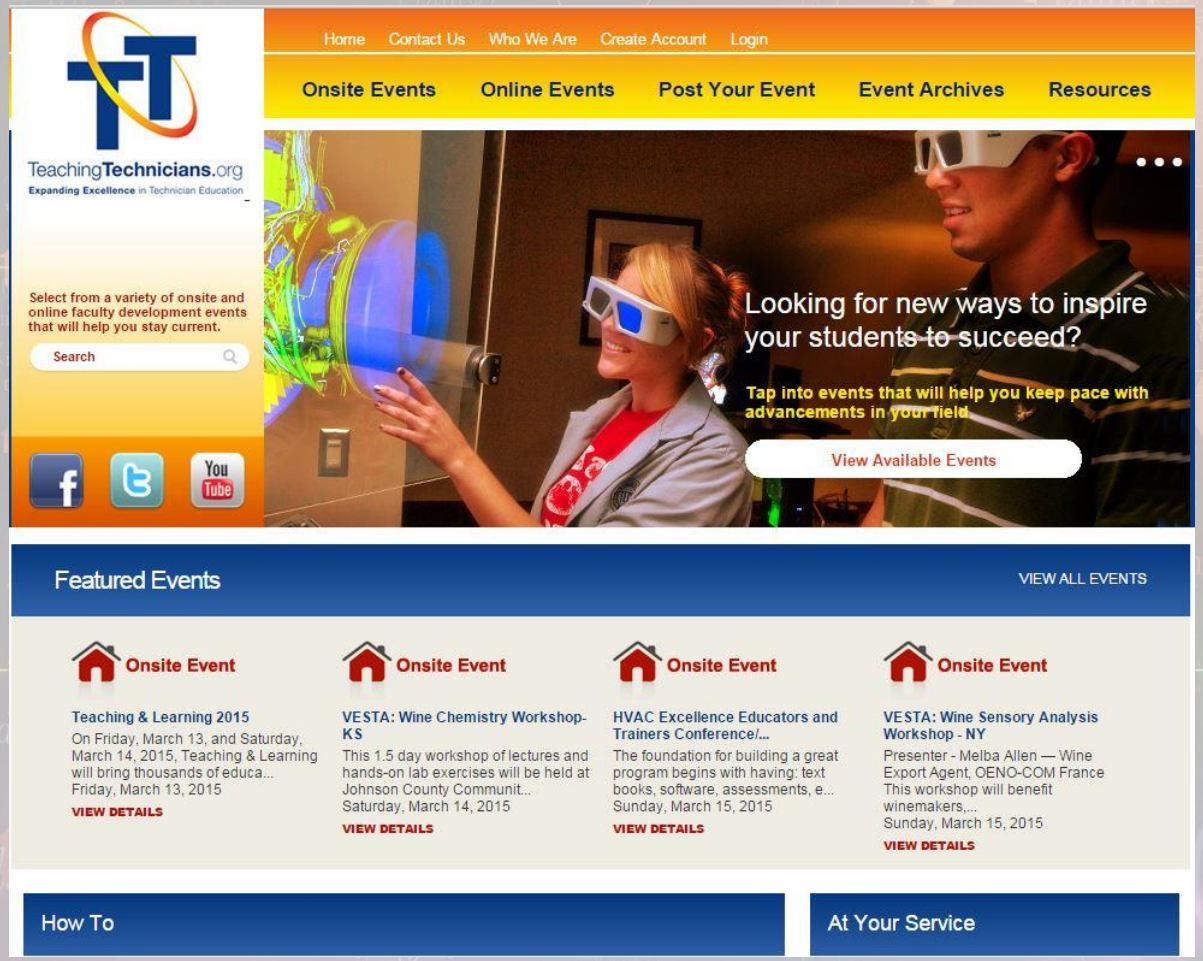
TeachingTechnicians.org

Linking Faculty Development Providers and Seekers

Projects & initiatives offering low/no-cost faculty development

Teachers seeking knowledge & skills in content or teaching methodologies

TeachingTechnicians.org



TeachingTechnicians.org

Promoting Faculty Development

Who are the Providers?	What TT.org offers
➢ ATE grantees (projects and centers) ➢ Others STEM or ATE	➢ Free Marketing ➢ Reaches over 2000 registered users ➢ Connection to targeted STEM and ATE educators ➢ Searchable database of archive events

TeachingTechnicians.org

Promoting Faculty Development

What is the target audience ?	What TT.org offers
➢ High School STEM educators ➢ Community college STEM and ATE educators	➢ Free or low-cost ➢ Online ➢ Onsite ➢ Hybrid

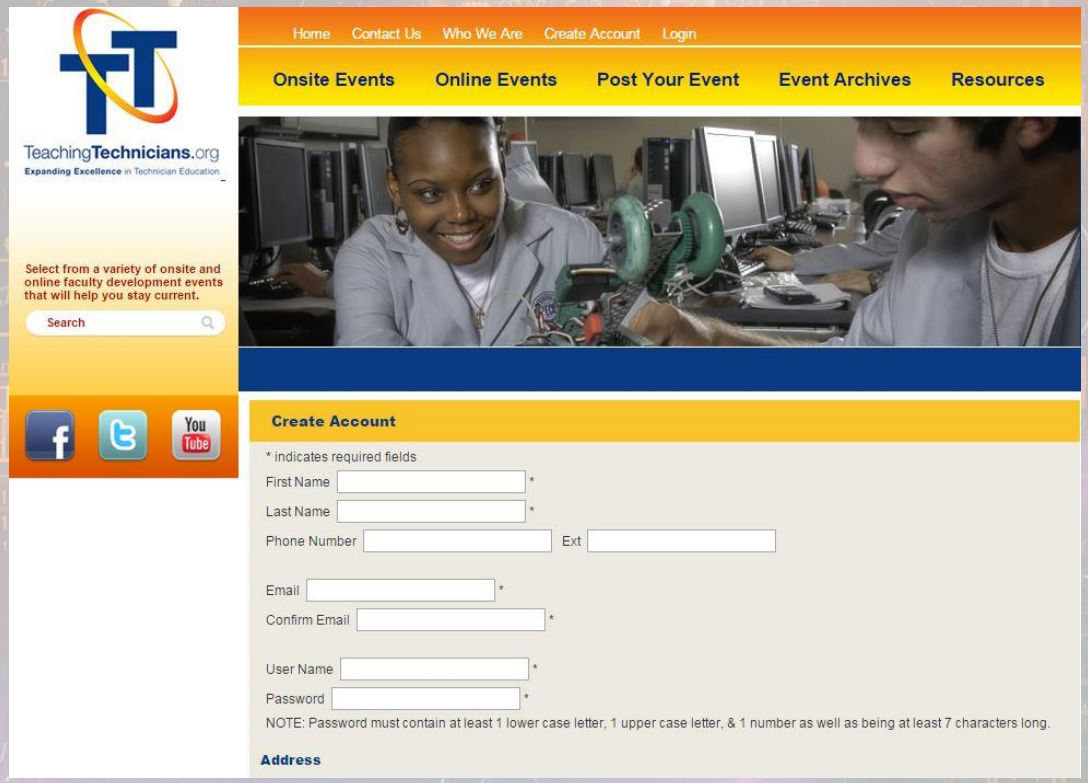
TeachingTechnicians.org

Promoting Faculty Development

Getting Started

- Post Your Event
- Become a Registered User

Create an account



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Resources	
Educator Resources	STEM and Technician Career Exploration
Help for ATE PIs	Teaching Methodologies
PBL (Problem-Based Learning)	Tips
Proven And Promising Practices	Women in STEM
Working With Industry	Diversity Resources
FAQ	PowerPoint Presentations

TeachingTechnicians.org

Proven Practices

A Searchable Compendium of Research on Technician Education – previously-completed work funded by NSF ATE

- Existing and Prospective PIs
- Easy for educators to learn, benefit and leverage proven strategies and useful in informing practice.

TeachingTechnicians.org

Mentor-Connect.org

Expand NSF ATE among the nation's two-year colleges

- Funded through the NSF ATE program
- Provides support for NSF ATE Small Grants for Institutions New to ATE
  - Face to face interaction with Mentors
  - Detailed assistance for proposal development

TeachingTechnicians.org

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(843) 676-8559

Questions

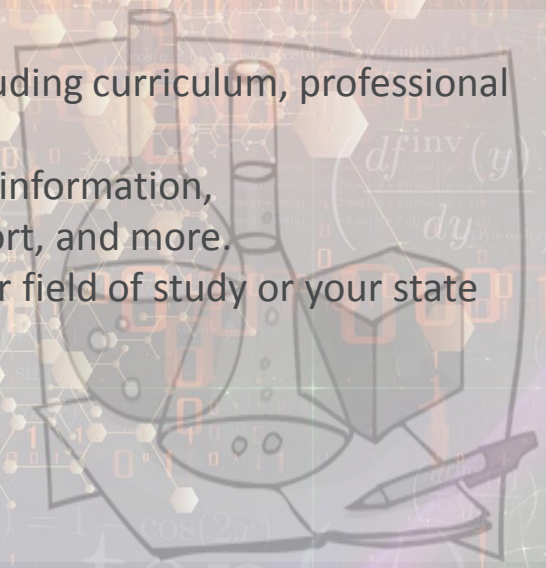
ATE Community Resources

ATE Centers Impact – Focus on ATE Centers.
http://atecenters.org
ATE Central – ATE resource archive, event calendar, *ATE@20* book+blog.
http://atecentral.net
EvaluATE – Evaluation support, resources, and webinars.
http://evalu-ate.org
MentorConnect – Mentoring support for those new to ATE.
http://mentor-connect.org
TeachingTechnicians – Professional development support and resources.
http://teachingtechnicians.org

ATE CENTRAL

Want to get your hands on more ATE Resources?

- **Resource Collection** – More than **6,000 ATE resources**, including curriculum, professional development materials, learning objects, and much more.
- **Information Hub** – ATE events and news, project and center information, ATE social media directory, sustainability and outreach support, and more.
- **Map Interface** – an easy way to find ATE collaborators in your field of study or your state or region.



http://atecentral.net

Stay In the loop with ATE

- Follow ATE news on social media
- Subscribe to ATE newsletters and mailing lists
- Check out event calendars
- Connect with ATE projects and centers in your region

http://atecentral.net/intheloop

Join us in Portland, OR!

July 27-30, 2015

HI TEC

HIGH IMPACT TECHNOLOGY EXCHANGE CONFERENCE • EDUCATING AMERICA'S TECHNICAL WORKFORCE •

www.highimpact-tec.org

Register for HI-TEC and TAACCCT Convening

HI-TEC Conference July 29-30 in Portland, Oregon

Register at http://www.highimpact-tec.org/registration.php

TAACCCT-specific session track during the conference.

Free follow-up TAACCCT technical assistance convening for grantees on Friday, July 31.

Join Us – All Webinars 3 pm Eastern

- **May 12 — Planning for Sustainability**

Funding agencies have the expectation that vital elements of funded projects will be sustained after awards are expended. How do grant funded college programs plan for sustainability? How will the project's goals, principles, and efforts necessary to achieve desired outcomes be continued? The NSF ATE program has focused on sustainability strategies for over 20 years. Learn from a panel of experts how to think and plan strategically and creatively to ensure your project's most meaningful work is sustained.

- **June 18 — Other Approaches for Ensuring Effective Business Engagement in Programs**

What are some secrets of success for strong industry engagement in your college's workforce programs and projects? What do they need to become active participants and partners – even if they do not need to hire your students today? With decades of experience behind them, the NSF ATE Centers have many strategies for starting and growing strong, sustainable and highly engaged industry partnerships.

Register at www.atecenters.org/ccta

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