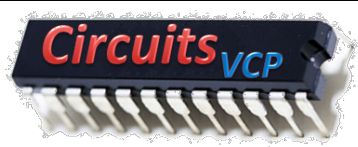


# Session 2 Review Polls

There are 2 active polls (multiple answer): While waiting for everyone to arrive, please respond.

1. For which of these principles did you hear an interesting idea that you plan to consider further and possibly use in your own course?
2. Which of these principles are the most challenging to apply?



# Circuits Virtual Community of Practice

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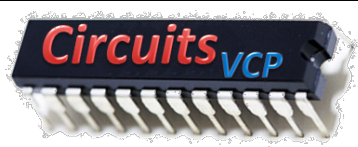
## Session 3: Learning Objectives and Bloom's Taxonomy

April 4<sup>th</sup>, 2013



# Agenda

- Welcome and Learning Objectives ~ 5 mins
- Activity & Discussion: Learning Objectives ~ 50 mins
- Wrap-up & Plans for Session 4 ~ 5 mins



# Announcements

- Sessions recordings are in the CircuitsVCP Notebook.
- Slides and reading materials for each session are in the session folder on the CircuitsVCP portal.
- A Blog has been added to share common student misconceptions.
- Another Blog will be added for research ideas.
- Please add to your [profile](#) on the portal. To link to a website with your publications, use the Address Box.
- Consider using ResearchGate to share papers.



# Session 3: Learning Objectives and Bloom's Taxonomy

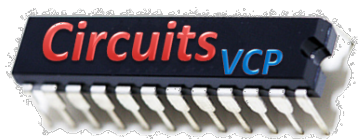
In preparation for Session 3 (April 4<sup>th</sup>):

- Read and be prepared to discuss HLW Appendix D: What are learning objectives and how do we use them?
- Review the two websites about (1) Changes to Bloom's Taxonomy and (2) the revised Bloom's Taxonomy:
  - <http://www4.uwsp.edu/education/lwilson/curric/newtaxonomy.htm>
  - [www.celt.iastate.edu/pdfs-docs/teaching/RevisedBloomsHandout.pdf](http://www.celt.iastate.edu/pdfs-docs/teaching/RevisedBloomsHandout.pdf)




# Session 3: Learning Objectives

- Describe attributes of learning objectives (e.g., the SMART criterion: specific, measurable, attainable, relevant, timely) and strategies for writing them
- Apply a taxonomy of learning to the organizing of learning objectives
- Apply principles and strategies to your own course



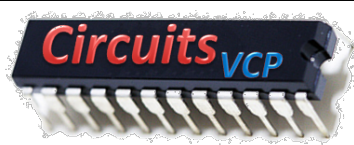
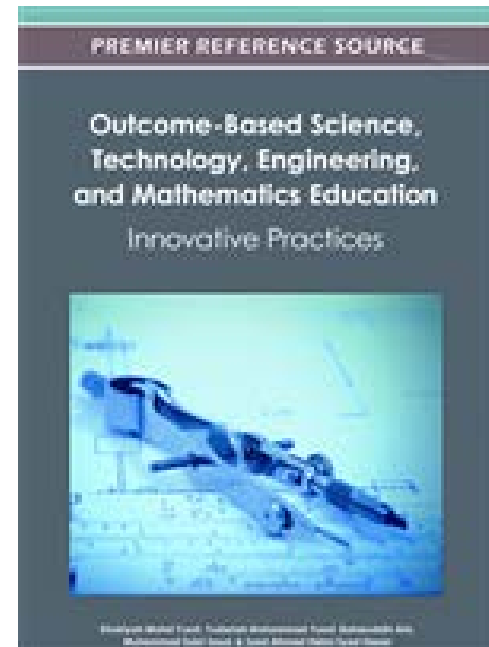
# Starting Point

- Our Present Learning Objectives
  - ABET process driven 
  - Play minor role in course & curriculum development
  - Little engagement with students
- The examples from our posted syllabi
  - All useful in some way
  - Rarely in the best form



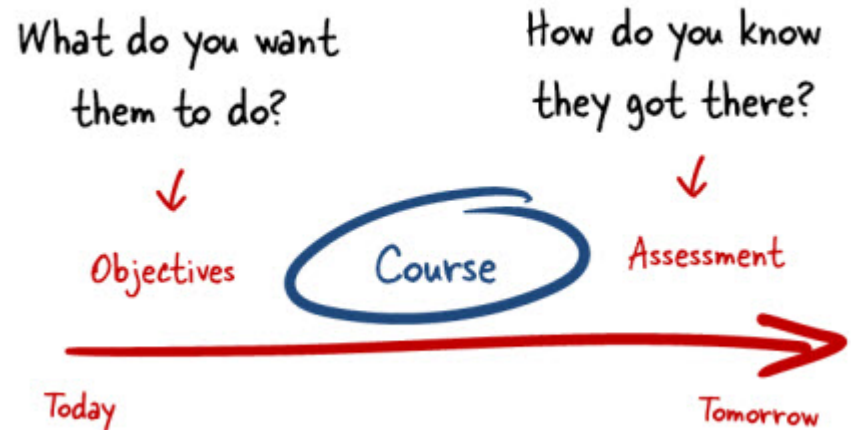
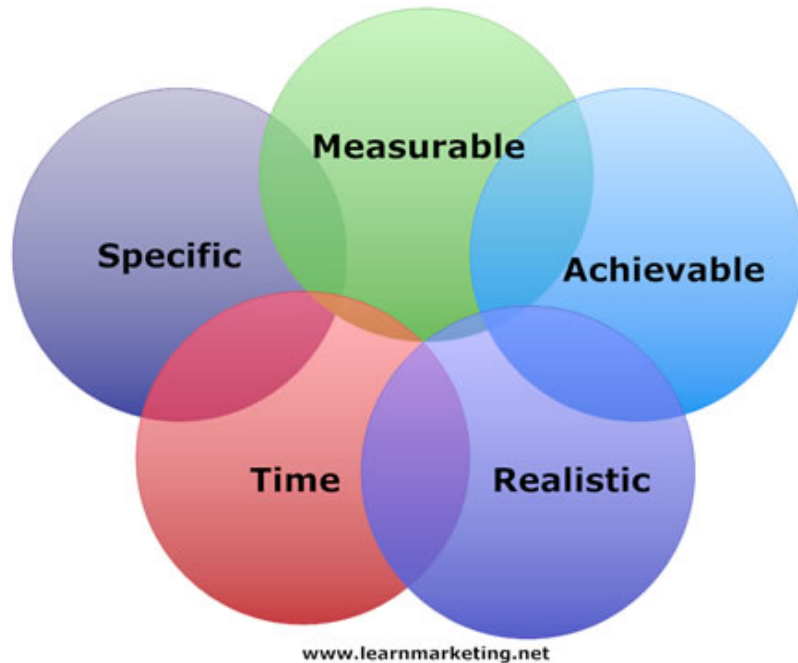
# Alignment of Course Content, Assessment and Delivery

- [http://www.ce.umn.edu/~smith/docs/Streveler-Smith-Pilotte\\_OBE\\_Chapter-CAP-v11.pdf](http://www.ce.umn.edu/~smith/docs/Streveler-Smith-Pilotte_OBE_Chapter-CAP-v11.pdf)

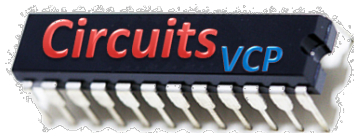




# Learning Objectives from Image Search

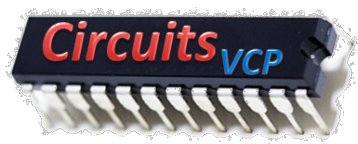


articulate.com

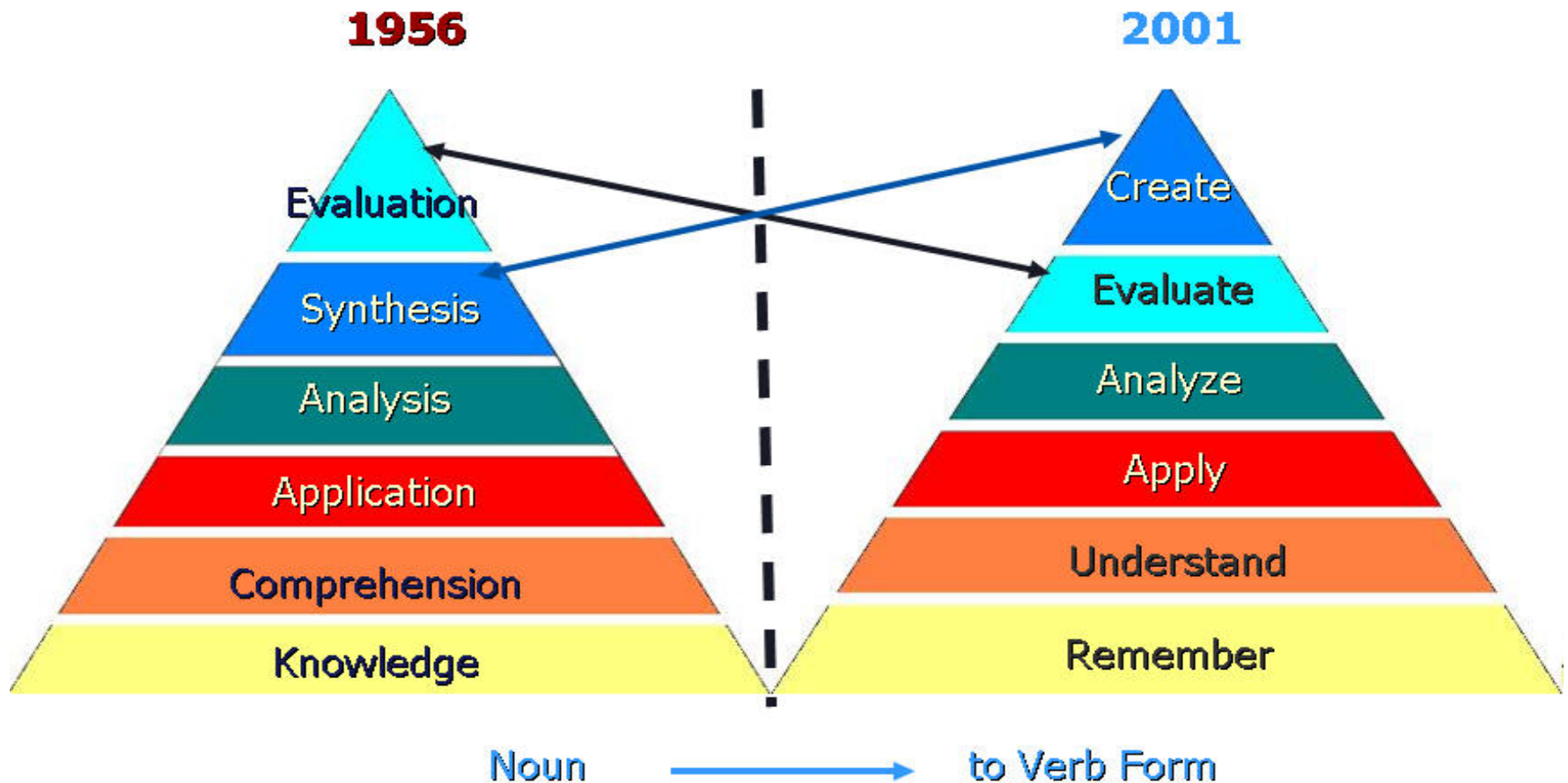


# Taxonomies of Types of Learning

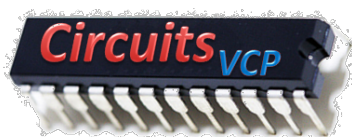
- From our reading:
  - Bloom's taxonomy of educational objectives: Cognitive domain (Bloom & Krathwohl, 1956)
  - A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives (Anderson & Krathwohl, 2001)
- Others:
  - Facets of understanding (Wiggins & McTighe, 1998)
  - Taxonomy of significant learning (Fink, 2003)
  - Evaluating the quality of learning: The SOLO taxonomy (Biggs & Collis, 1982)



# Changes to Bloom's



<http://www4.uwsp.edu/education/lwilson/curric/newtaxonomy.htm>



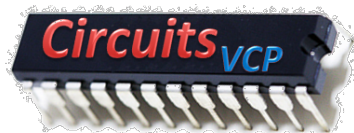
## Revised Taxonomy of Educational Objectives\*

Cognitive Process Dimension <span style="float: right;">→</span>						
<b>Knowledge Dimension</b>	<p><i>This revised Bloom's Taxonomy will assist you as you work to improve instruction to ensure that</i></p> <ul style="list-style-type: none"> <li><i>standards, lessons, and assessments are aligned.</i></li> <li><i>lessons are cognitively rich.</i></li> <li><i>instructional opportunities are not missed.</i></li> </ul>	<b>1. Remember:</b> retrieving relevant knowledge from long term memory 1. Recognizing 2. Recalling	<b>2. Understand:</b> determining the meaning of instructional messages 1. Interpreting 2. Exemplifying 3. Classifying 4. Summarizing 5. Inferring	<b>3. Apply:</b> carrying out or using a procedure in a given situation 1. Executing 2. Implementing	<b>4. Analyze:</b> Breaking material into its constituent parts and detecting how the parts relate to one another and to an overall structure or purpose 1. Differentiating 2. Organizing,	<b>5. Evaluate:</b> making judgments based on criteria and standards 1. Checking 2. Critiquing

Cognitive Processes						
The Knowledge Dimensions	1. Remember	2. Understand	3. Apply	4. Analyze	5. Evaluate	6. Create
Factual						
Conceptual						
Procedural						
Metacognitive						

<b>D. Metacognitive knowledge:</b> knowledge of cognition in general as well as awareness of one's own cognition a. Strategic knowledge b. Cognitive tasks, including appropriate contextual and conditional knowledge c. Self-knowledge						

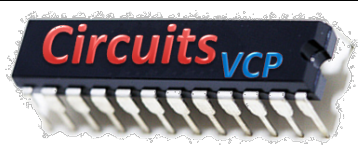
\* Adapted from Lorin W. Anderson, David R. Krathwohl et al (Eds.) *A Taxonomy For Learning, Teaching, and Assessing: A Revision of Bloom's Educational Objectives* © 2001; published by Allyn and Bacon, Boston, MA © 2001 by Pearson Education; reprinted by permission of the publisher.



# Activity: Learning Objectives

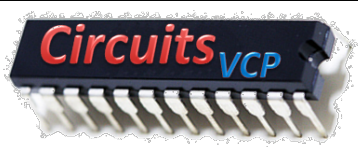
Listed are learning objectives from a course on introductory circuits and electronics. Each participant group has been given three of these objectives to consider. Identify at least one from your list that needs improvement and propose an alternative.

You are also given catalog descriptions for 3 circuits courses. Choose a topic from one of the descriptions and write 2 or 3 learning objectives.



# Activity Instructions

- Start Breakouts (pre-assigned groups)
- In breakout session (12-15 minutes)
  - Select a Recorder to take notes (to be shared later)
  - Re-write one of the learning objectives you have been given
  - Write a learning objective that supports one of the three catalog descriptions
- Report out (5 minutes per group)
  - The Recorder will
    - Present the original objective, the improved version and explain your changes
    - Present a learning objective and explain why it supports your chosen course description



# Sample Learning Objectives

1. Students will understand the behavior of simple DC and AC circuits and will be familiar with AC steady-state responses of resistance, inductance and capacitance.
2. Students will learn the basic properties of operational amplifiers and develop an understanding of how to analyze simple operational amplifier circuits.
3. Students will be familiar with common circuit symbols and understand the operations of logic gates.
4. Students will study the functions and characteristics of basic circuit elements.
5. Students will understand the frequency and transient responses of capacitors and inductors.
6. Students will be able to draw schematics and use them in experiments and simulation.
7. Students will understand electrical instruments
8. Students will understand sensors and actuators in electrical systems.



# Session 4: Student Motivation

In preparation for Session 4 (April 11<sup>th</sup>):

- Read and be prepared to discuss the Svinicki Idea Paper #41 on student motivation (on portal)
- Read and be prepared to discuss Chapter 3 of HLW: *What factors motivate students to learn?*

