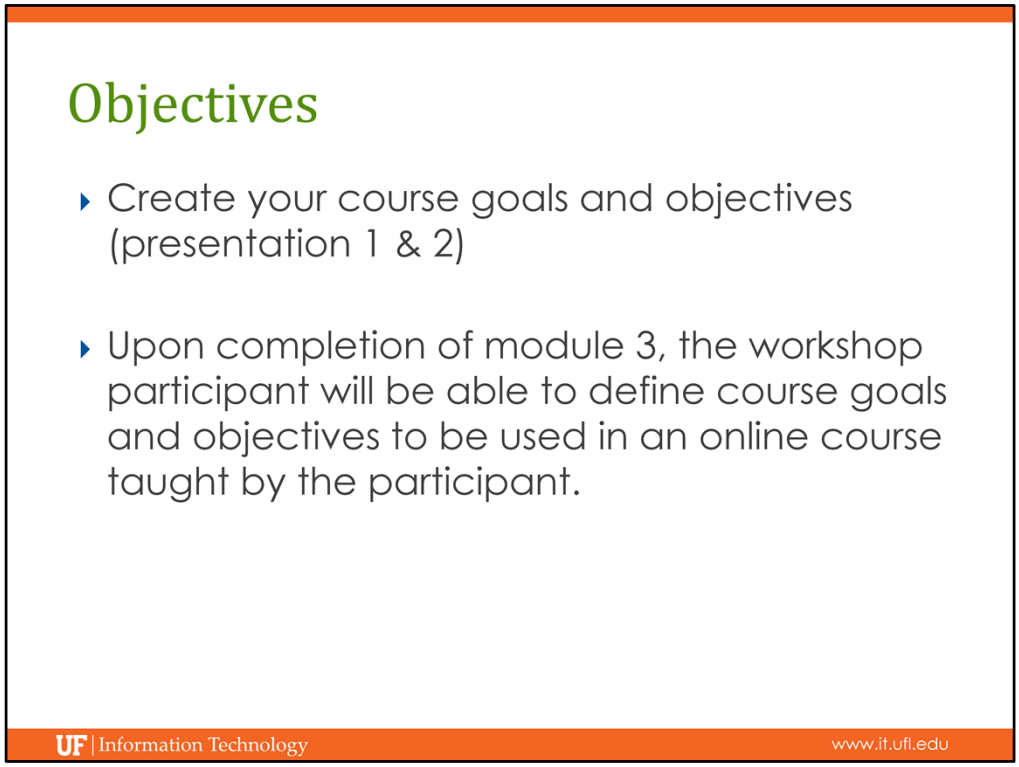
Reaching the Objectives

Stephanie McClelland
Instructional Designer
Center for Instructional Technology and Training

In this final presentation for module 3, we'll discuss how to help students reach your objectives.



Since we have been talking about learning objectives, you might want to take a look at the learning objectives for this module of the faculty institute. The first objective for this module is that you (the student) would be able to define your course goals and objectives.

If we were going to be formal about it, the objective might be: Upon completion of module 3, the workshop participant will be able to create course goals and objectives to be used in an online course taught by the participant.

Objectives

- Identify levels of Bloom's Taxonomy that best fit your course
- Identify student learning process necessary to achieve objectives
- Determine whether your learning objectives meet the UF Standards and Markers of Excellence

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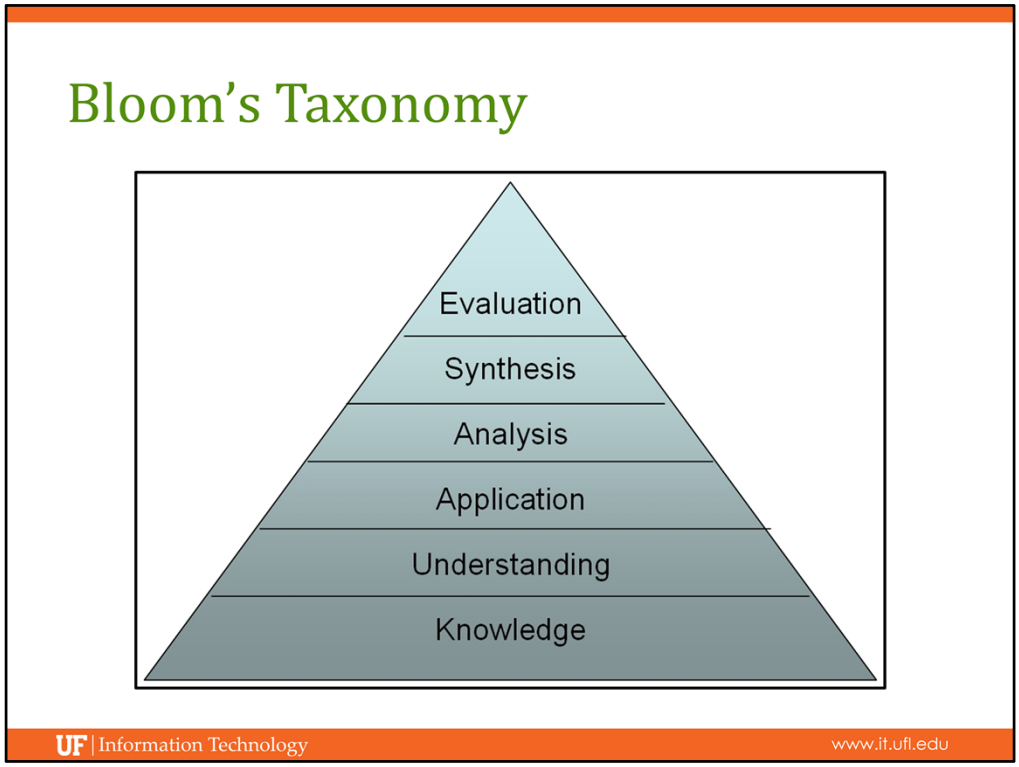
In this presentation, we'll be using Bloom's Taxonomy to help us create the learning objectives, and then we'll discuss how a student will reach the objectives. Finally, we'll take a look at the UF Standards and Markers of Excellence in relation to learning objectives.

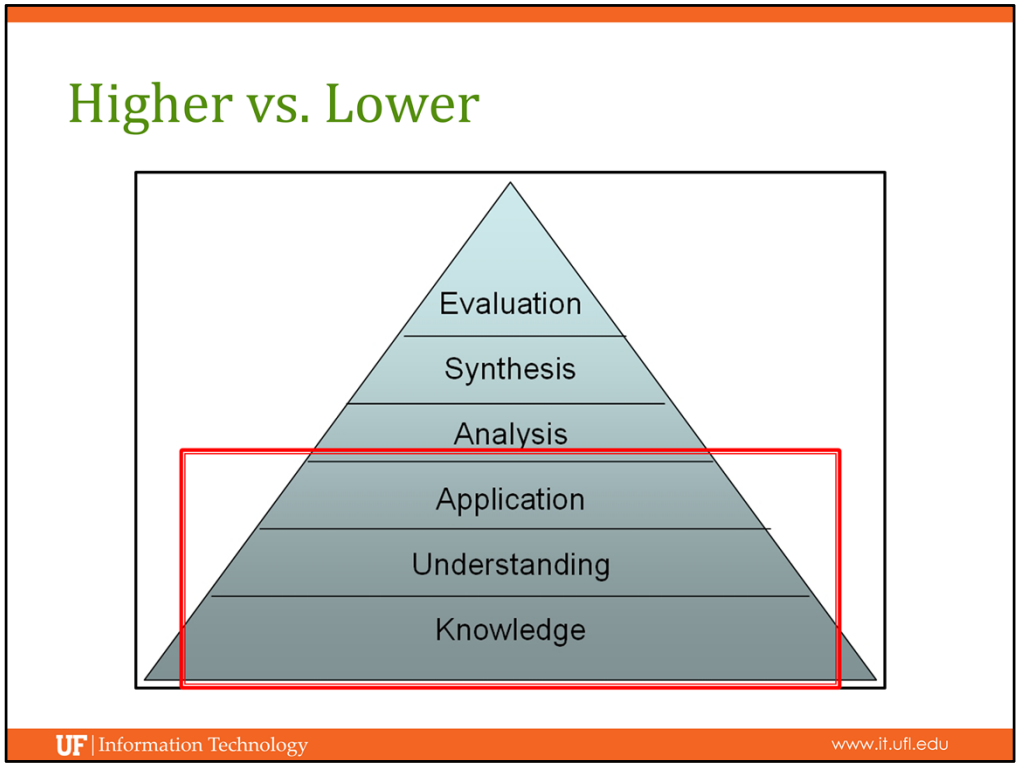


Benjamin Bloom created a classification of learning objectives. Learning at the higher levels—Evaluation, Synthesis and Analysis is dependent upon prerequisite knowledge and skills that are gained at the lower levels.

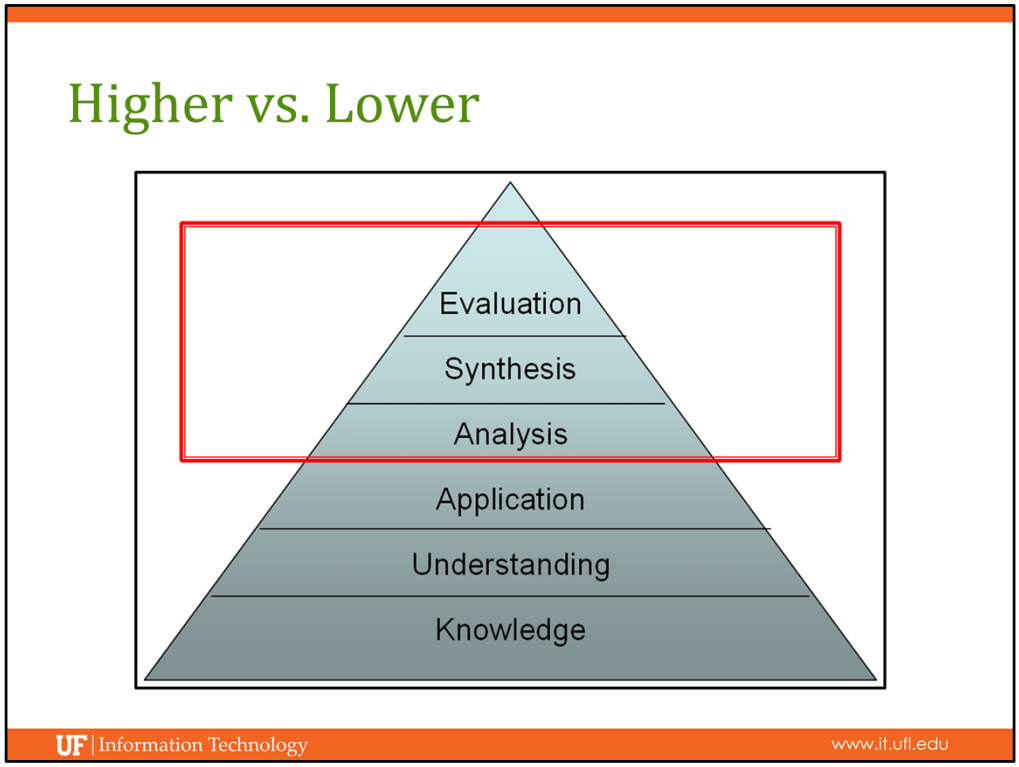
Essentially, it's important to make certain that your students can understand and apply basic knowledge so that they can move into the higher levels of learning that include critical thinking.

Why is Bloom's Taxonomy helpful? It can help you to make certain that you don't leave anything out. If you're teaching a high level course—perhaps one that has prerequisites the focus can be on more critical thinking skills rather than basic understanding. The basic understanding should have occurred in a previous course. If you are teaching a high level course that has prerequisites, you might want to give the students a pre-test to make certain that they have learned (and retained) the basic learning that will support the higher learning.

You'll want to set up your objectives so that students move from the lowest level of learning to the higher levels of learning. Just like the scaffolding in this picture, the upper levels cannot be built if the lower levels aren't stable.



The lower levels of learning are the easiest to teach and the easiest to assess.



Higher level skills are the critical thinking skills. This is when students can take what they have learned and apply that information to new situations. This includes retention and transfer as well.

Bloom's Taxonomy

- Is anything missing?
- Assessment method

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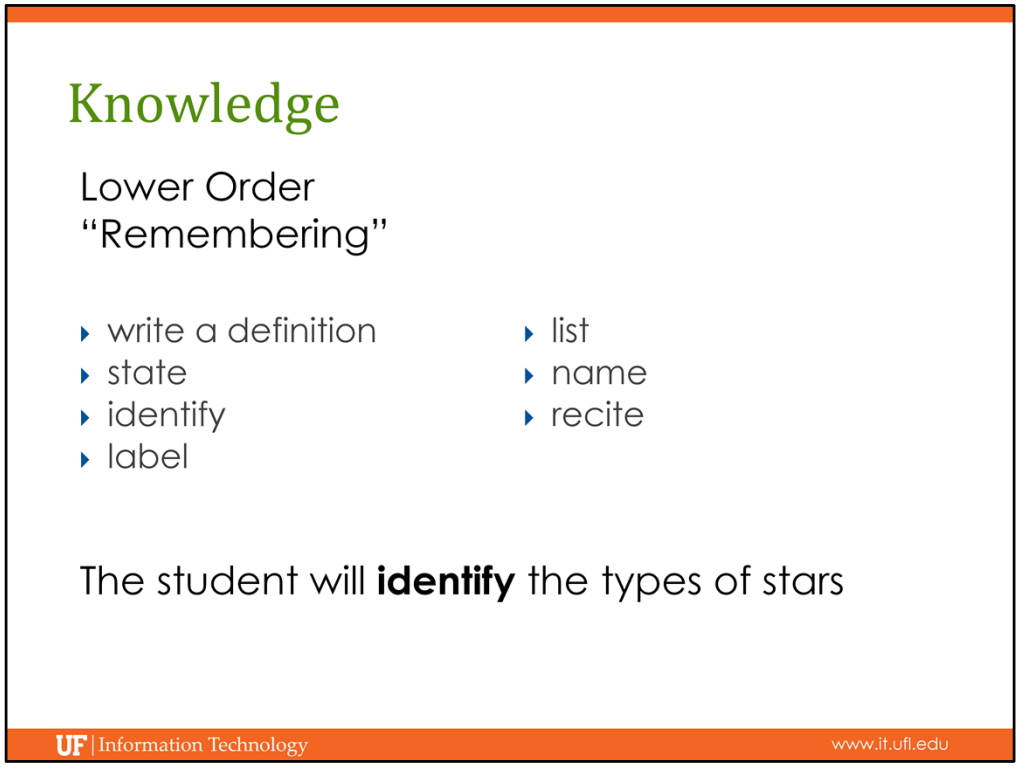
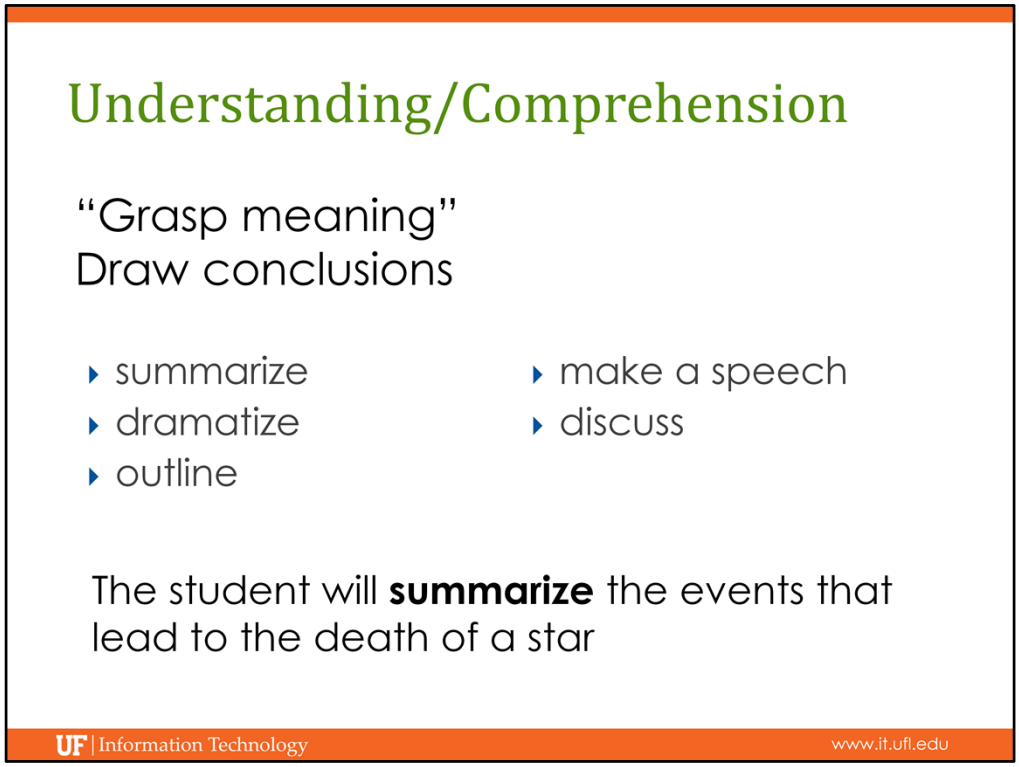
Once you have ordered your learning objectives, you'll be able to clearly see if you have missed anything that will be essential for your students' success.

The performance verb helps you to determine the best method to assess the objective. For example, you may have indicated that you want your students to "discuss" something. What type of discussion is it? A typical discussion requires students to have a basic understanding of the topic. This would be on the lower end of Bloom's Taxonomy. A debate can be classified as a discussion, but it takes a much higher level of understanding to create points for a debate. This would be on the higher end of Bloom's Taxonomy.



Knowledge is one of the lower order skills. At this level, students mainly focus on remembering information. At this level, the student will be able to write a definition, state a fact, identify or label an element and so forth.

In our astronomy course a sample objective might be: the student will be able to *identify* the types of stars. This is something that a student could reasonably expect to learn quickly and to answer as part of a multiple choice quiz or test.



At the second level of understanding or comprehension, the student is able to "grasp meaning." The student can not only regurgitate information, but can put it into context and draw a conclusion.

The sample objective in our astronomy course might be: The student will *summarize* the events that lead to the death of a star. In order to achieve this objective, the student will need to know the different types of stars. The student will be putting the events leading to the death of a star into their own words and will need to understand those events in order to achieve the objective.

Application

Use previously learned materials in new situations

- apply
- change
- demonstrate
- develop
- calculate
- predict
- solve
- interpret

The student will **calculate** the main sequence lifetime of a G-type star

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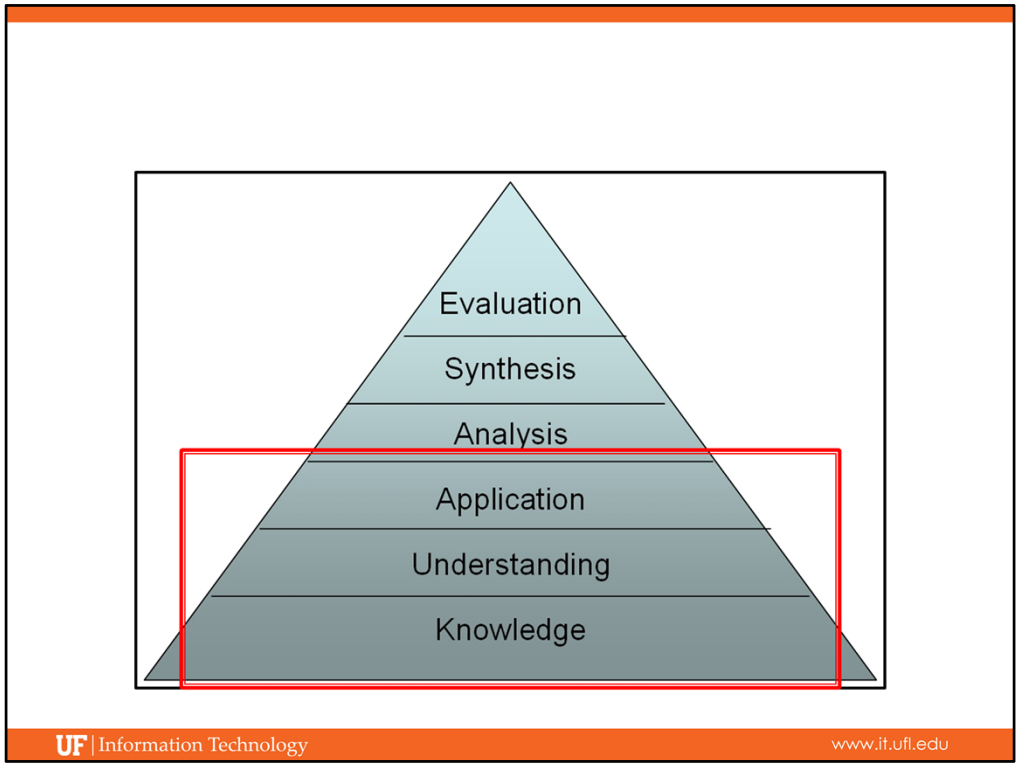
At the application level, students will take material they have already learned and apply it to a new situation. At this level they can apply a formula, calculate using a formula, make a prediction and so forth.

In our astronomy example, the student will *calculate* the main sequence lifetime of a G-type star. In order to make that calculation, the student will have to have learned the formula and then apply it.



That completes our discussion of the lower levels of Bloom's Taxonomy: knowledge, understanding and application.

Analysis

Higher Order
"Break down material into component parts"

- debate
- model
- report
- compare
- analyze
- argue
- discuss

The student will **debate** the current theories on the evolution and death of stars

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Next, we'll look at Analysis which is a higher order level of learning. For these upper levels, students will need to have mastered the lower levels. Students know the material, understand it, and can apply it. Now they can break down material into it's component parts. Verbs used in these types of objectives require students to use critical thinking.

In our astronomy class, the students will be able to *debate* the current theories on the evolution and death of stars. In order to debate at this level, the student will need to know all of the current theories of stars, both sides of the debates, and put this information into their own words and back up their points at a higher level.

Synthesis

"Put parts together to form a new whole"
Apply rules or principles in new ways

- formulate a hypothesis
- design an experiment
- invent
- propose
- summarize

When given the physical structure of a star, the student will **propose** a plausible life cycle for an 8 planet solar system

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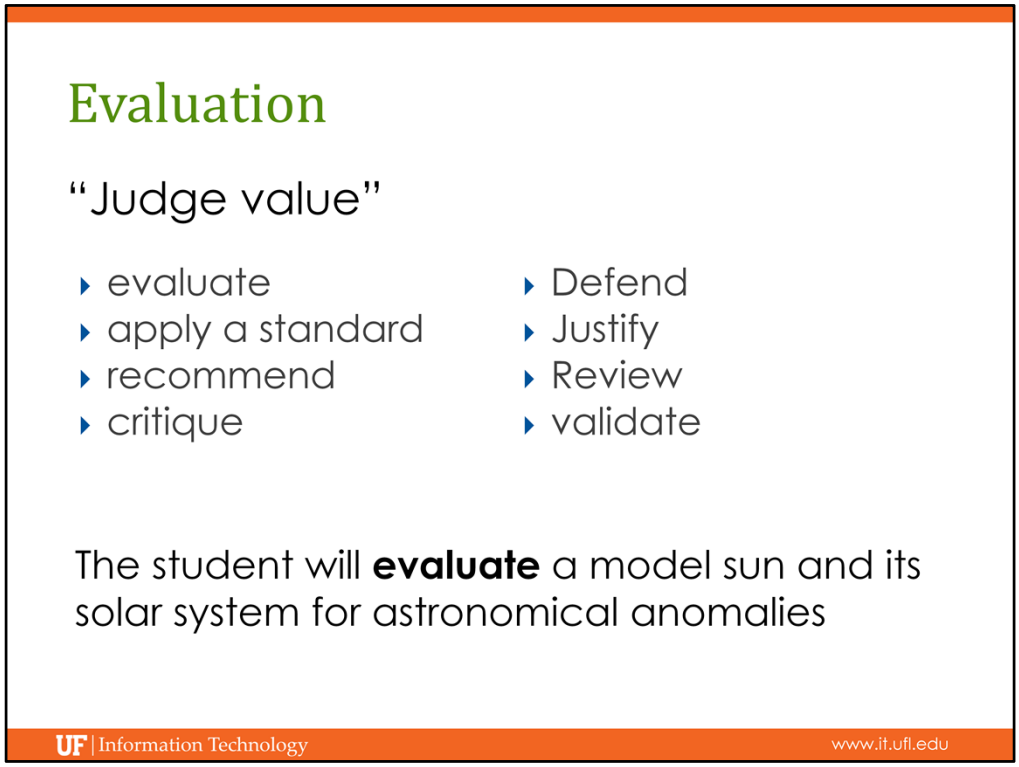
In synthesis, which is one of the highest levels of learning. Rather than tearing something apart as we did in analysis, we are taking all of the components we have learned and creating something new. This would include formulating a hypothesis, designing an experiment, or proposing a new theory.

The astronomy objective for this level might be, "When given the physical structure of a star, the student will *propose* a plausible life cycle for an 8 planet solar system." We are asking students to understand everything there is to know about a star, the theories and the mathematics behind the movement of the stars and planets. To evaluate this learning objective, you might ask the student to work on this project throughout the semester.



The highest level of learning is evaluation. In order to evaluate something, you need to understand everything about that subject on a high enough level to look at something someone else did and judge whether it is correct or not. At this level we would use critique, review and validate to describe the learning activities.

In the astronomy course, the student will *evaluate* a model sun and its solar system for astronomical anomalies. The student will now be able to look at what someone else has done and determine whether that work is correct and has value.

Why?

- Logically order content
- Higher vs. lower levels of learning
- Is anything missing
- Type of assessment

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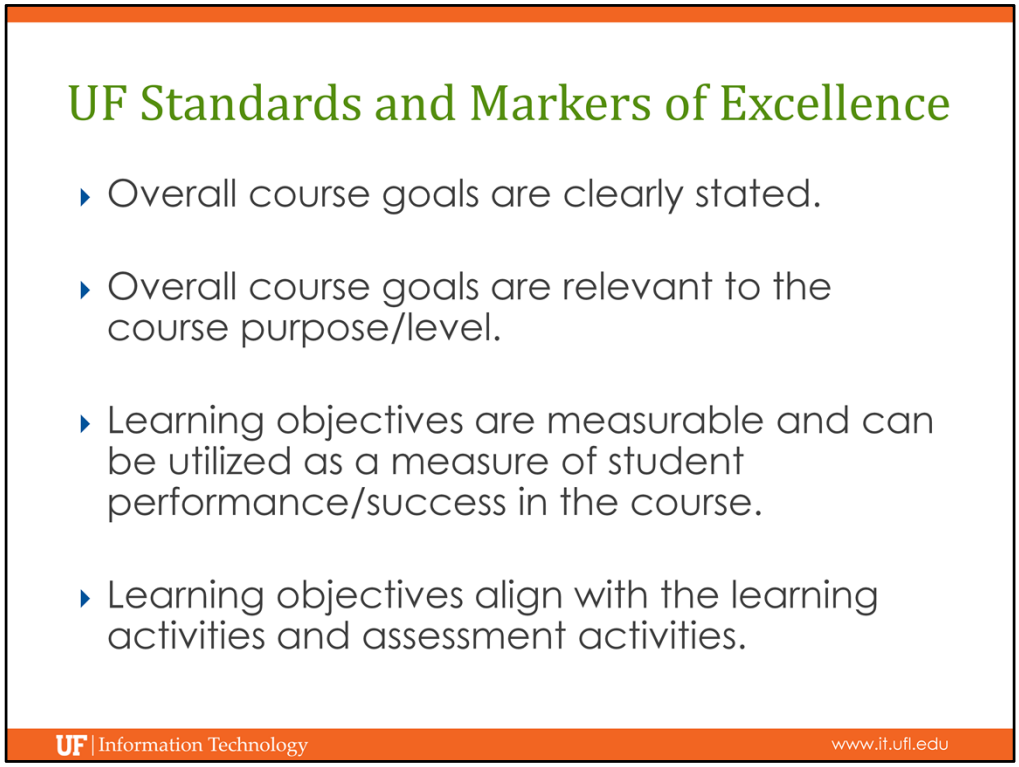
So why would we do this? This will help you to order your material. For example, if you have an objective that is high in the levels of learning and you haven't provided the students with the opportunity to reach the lower order levels that would support that objective, students will most likely be unsuccessful in completing the objective.

Using your learning objectives and identifying the levels of learning before hand can help you to identify things that are missing.

These levels of learning can also help you to determine how each objective should be assessed. Lower levels of learning can generally be assessed with multiple choice questions, but higher levels are much more difficult to assess in that manner. We'll talk more about that in the next module on assessment.



The UF standards recommend that you clearly state the course goals. The overall course goals need to be relevant to the course purpose and level. We've just discussed how the learning objectives relate to the level of the course—a lower level knowledge-based course may have few, if any higher level objectives. Likewise, an upper level course, may have few, if any lower level objectives.

We have discussed how to write your learning objectives so they can be measured. If you click on the next link below the link for this presentation, you'll be taken to a website that provides a variety of verbs to guide in creating learning activities.

And finally, it is important to make certain that your objectives align with your learning activities and how you will know that the student has succeeded. We'll talk more about this alignment in the next module.

Standard		
Standard	**Annotation**	**Example**
Overall course goals are clearly stated.	The course goals give students the big picture regarding what they should get out of the course	Goals are clearly stated in the syllabus in order for students to understand what they will learn in the course.
Course goals are relevant to the course purpose/level.	Course goals need to be appropriate for the content that is to be covered and the academic level of the students who are expected to take the class.	A lower 1000 or 2000 level course will most likely require students to be familiar with a body of information. A higher level undergraduate or graduate course will most likely expect students to peform tasks related to synthesis, analysis and evaluation.
Learning objectives are measurable and can be utilized as a measure of student performance/success in the course.	Learning objectives state what students will be able to do when they complete a segment of learning. These objectives are measured by assessments.	In an introductory astronomy class, many of the objectives use keywords such as, identify, list, summarize, discuss, and demonstrate.
Learning objectives align with the learning activities and assessment activities.	Activities and assessments are designed based on the objectives in order to measure student understanding.	A sample objective in an introductory astronomy class might be: The student will identify 8 types of stars with 100% accuracy. Such an objective could be measured through a quiz or test.

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Take a look at the UF Standards and Markers of Excellence with accompanying annotations. A link to this document is located below the link for this presentation.

Worksheet

- Identify an overall course goal
- Brainstorm the topics that support the goal
- Categorize topics into must know, should know and nice to know
- Order topics in chronological or scaffold order
- Choose a measurable performance keyword
- Specify conditions and criteria
- Do this for one module, chapter or unit

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Now it's time for the active learning portion of our program. You can use the worksheet that is provided, or any type of format you choose to put the things we have covered in module 3 into use.

Identify an overall course goal and then brainstorm all of the elements that will support that goal. Categorize the items into must know, should know and nice to know. Order the topics in chronological or scaffold order.

Next you can add your performance verb—be sure to click on the link to the Bloom's Taxonomy website that will provide some inspiration in that area.

Finally, specify the conditions and criteria for each item.

Don't worry about doing the entire course right away—just do one unit of instruction—that might be a week, a module, a chapter or a unit. We'll be using what you have written in the next module when we talk about assessment.

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