Assessment-Centered 1: Congruency in Assessment & Learning		
1	Title Slide	Welcome to this module, Congruency in Assessment & Learning, in the Assessment-Centered teaching series. To advance to the next slide, select the "forward" arrow located on the play bar at the bottom of your screen.
2	Introduction	Assessment-centered learning environments enhance student learning through purposeful feedback, as well as opportunities to revise work to deepen students' understanding (NRC, 2000). Assessment-centered environments present challenging standards, allow students to devise high-quality work, and describe assessment criteria explicitly (Tomlinson & McTighe, 2006). In this module, we will be discussing assessment-centered environments as it relates to aligning formative and summative assessments with learning outcomes.
3	Learning Objectives	By the end of this module, the learner will be able to align assessments and learning through the use of Backward Design and Assessment Blueprints.
4	Learning Outcomes	According to Stiggins (2001), the quality of the assessments we create depend on the clarity and appropriateness of the definitions we use to describe the targets of achievement we wish to assess. We cannot assess student achievement effectively without understanding what our target is. For the purpose of this module, we will be focusing primarily on how assessments link to learning outcomes. A learning outcome is a statement that describes the "knowledge, skills, attitudes, and values" that students gain from a program of study (NOVA, 2018), course, or unit of instruction. Attached as a link on this slide are two supplemental documents to help you write learning outcomes in regards to a students' cognitive, affective, or psychomotor domain.
5	Define Assessments	Let's briefly review the definitions for formative and summative assessments. Formative assessments are used as a source in which to obtain feedback to improve teaching and learning during instruction. Summative assessments measure what knowledge and skills students have gained at the end of an instructional unit, course, or program of study. We will be going more in detail about designing and conducting meaningful formative and summative assessments in the upcoming modules, but for now, we will be focusing on how to make our assessments congruent with the learning outcomes we set (NRC, 2010).
6	Define Assessments	According to the National Research Council, assessments that align with learning outcomes should: • Mirror good instruction. • Happen continuously, but not intrusively, as a part of instruction. • And provide information to teachers, students, and parents about the levels of understanding that students are reaching. (NRC, 2010, p. 244)
7	Alignment	Task analysis answers the question: "Given a worthy task to be accomplished, how do we get everyone equipped?" Task analysis procedures help teachers to

		align what content is taught, how it is taught, and how the content is assessed. Goals clearly established with task analysis help guide purposeful action toward the intended learning. A weak alignment in the goals of assessments and learning could result in students not being able to determine the value in what they are learning (NRC, 2010). Some examples of task analysis that we will cover in this module include Backward Design and Assessment Blueprints.
8	Assessment Design	Some instructors may approach a course with "forward design" meaning that they first consider which instructional activities they will use to teach the content, then develop their assessments, and then finally attempt to make connections to learning outcomes. On the other hand, "backward design" is just the opposite. Rather than designing assessments near the conclusion of an instructional unit, backward design suggests identifying the specific learning outcomes and assessment evidence before planning the unit (Vanderbilt, 2018). Think of it as "beginning with the end in mind."
9	Backward Design	Wiggins & McTighe's (2005) method for backward design first requires teachers to identify the desired results of the learning outcomes they wish students to know, understand, and/or do. This initial step allows teachers to consider their goals and analyze content standards in order to consolidate their learning priorities. Second, teachers must determine what they will take as evidence to show that students have achieved the desired results outlined in the first step. The backward design method emphasizes the need to "think like an assessor" about a unit in terms of what kind evidence will need to be collected to show that learning has been achieved, and not just content to be covered by instructional activities. The last stage in backward design is to plan the learning experiences and instruction. This means considering what knowledge and skills students will need to be equipped with in order to practice and achieve the desired results set at the very beginning of the process. Consider the following example as a potential way to keep track of outlining your learning outcomes with your planned assessments. Additionally, attached as a link within the module is an example of a backward design lesson plan, as provided by Vanderbilt University.
10	Assessment Blueprint	In addition to planning your lessons backward, an assessment blueprint can be used as a tool to ensure that the learning objectives you created using a learning taxonomy – such as Bloom's in this case – are aligned with the importance they hold within your assessments. An assessment blueprint helps in planning the balance and emphasis of content and thinking in the items or tasks in your learning outcomes. The first column lists the major topics the assessment will cover. This outline describes the content domain for your learning goals. The column headings

		across the top, list the classifications in the cognitive domain of the revised Bloom's taxonomy, however other taxonomies such as Webb's Depth of Knowledge can be used as well. The cells in the blueprint list the specific learning targets and the points allocated for each. The points you select for each cell should reflect the emphasis you placed on the learning outcomes addressed during instruction. Each time you do your own blueprint, use the intended total points of the actual assessment as the basis for figuring percent; it will not often be exactly 100 points, but we have used 100 points as an easier example. Notice that the blueprint allows you to fully describe the composition and emphasis of the assessment as a whole, so you can interpret it accurately. You can also use the blueprint to identify places where material should be added. However, it is not necessary for every cell to be filled, just as long as the cells that are filled reflect your learning outcomes. You can plan what percentage of each topic area is allocated to what level of thinking from the points and percentages within the rows. The total at the bottom tells you the distribution of kinds of thinking across the whole assessment. Attached as a link on the slide is a template you can use when creating your own assessment plan.
11	Review	"To best assist students in their science learning, assessments should attend to [the] many facets of learning, including content understanding, application, processes, and reasoning" (NRC, 2001). As we come to a close, let's consider all we have covered so far. We started this module by describing the importance of aligning assessments with learning outcomes and then explored some practical ways to implement this by discussing Backward Design and Assessment Blueprints. Incorporating these concepts should be beneficial in visualizing the alignment needed for a successful knowledge-centered learning environment.
12	Sources	Assessment, Backward Design, & Bloom's Taxonomy: designing your classes for meaningful learning (2016) Bowen, Ryan S., (2017). Understanding by Design. Vanderbilt University Center for Teaching. Retrieved] from https://cft.vanderbilt.edu/understanding-by-design/. Brookhart, S.M. (2010) How to Assess Higher-Order Thinking Skills in Your Classroom. Alexandria, VA: ASCD. Hess, K. (2009, updated 2013). Linking research with practice: A local assessment toolkit to guide school leaders Hess, K., Jones, B. S., Carlock, D., & Walkup, J. R. (2009). Cognitive rigor: Blending the strengths of Bloom's Taxonomy and Webb's Depth of Knowledge to

<table>
<tr><td></td><td></td><td>enhance classroom-level processes. Retrieved from: https://eric.ed.gov/?id=ED517804

National Research Council. 2001. Classroom Assessment and the National Science Education Standards. Washington, DC: The National Academies Press. https://doi.org/10.17226/9847.

Student Learning Outcomes Summary. (2018). NOVA Northern Virginia Community College. Retrieved from www.nvcc.edu/assessment/Outcomes.html

Wiggins, G. & McTighe, J. (2005). Understanding by Design (2nd Edition). Alexandria, VA: ASCD.</td></tr>
<tr><td>13</td><td>Credits</td><td>Thank you for viewing this module.</td></tr>
<tr><td></td><td></td><td>
<table>
<tr><td colspan="4">Alignment Example</td></tr>
<tr><td>Learning Goal</td><td>Outcome (content + behavior)</td><td>Summative Assessment (exam question)</td><td>Formative Assessment (in class activity)</td></tr>
<tr><td>What will students learn?</td><td>If they have learned it, what will students know and be able to do?</td><td>How will students demonstrate they know it or are able to do it?</td><td>What will students do to learn it?</td></tr>
<tr><td>Students will understand the transfer of information from DNA to proteins.</td><td>Students will be able to predict changes in amino acid sequences caused by mutations.</td><td>Students will predict the new amino acid sequence that results from a mutation in a given gene sequence.</td><td>Students are given DNA sequence and corresponding amino acid sequence. Students identify reading frame and predict amino acid changes due to</td></tr>
</table>
</td></tr>
</table>

						mutations in the given sequence.
		Adapted from Scientific Teaching Fellows Course, Yale				