

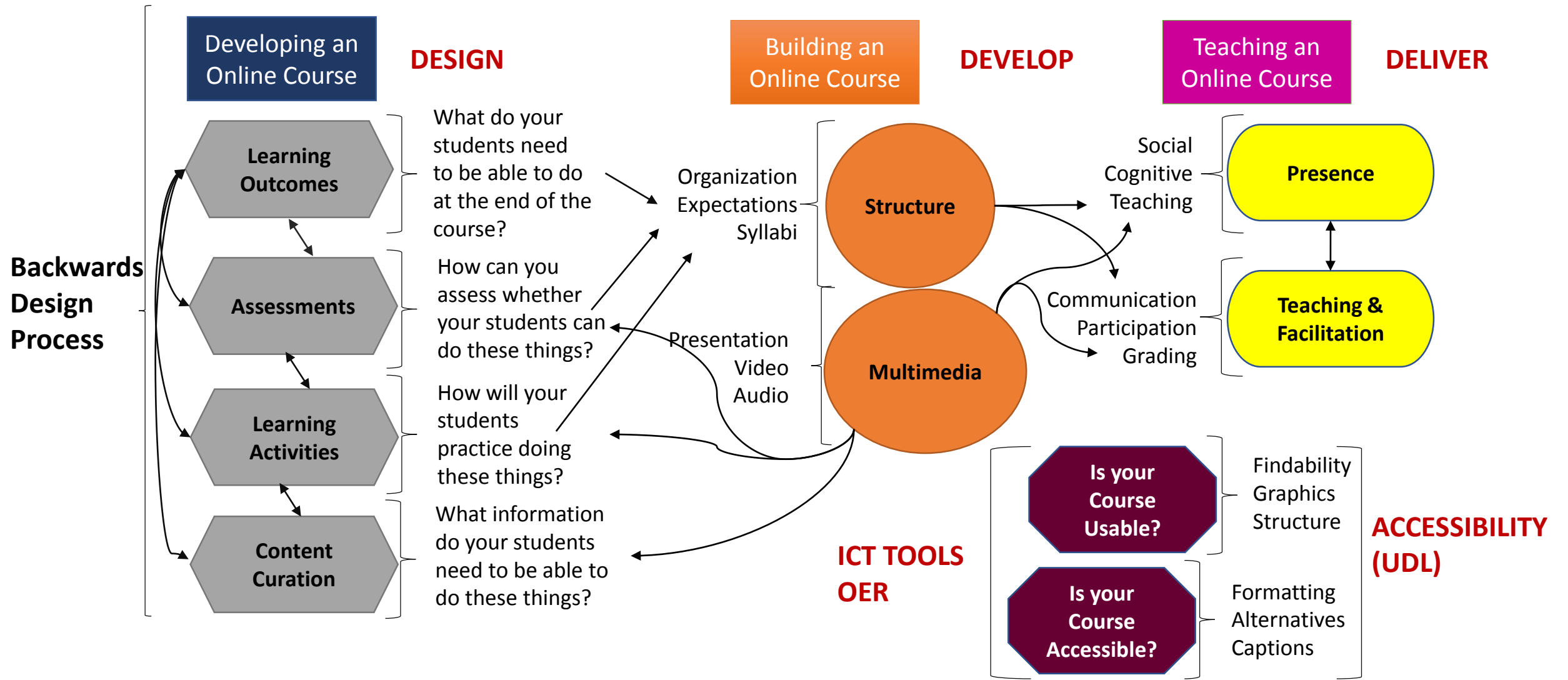
Designing an Online Course using OER: Mentor's Perspective

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Planning and Designing an Online Course





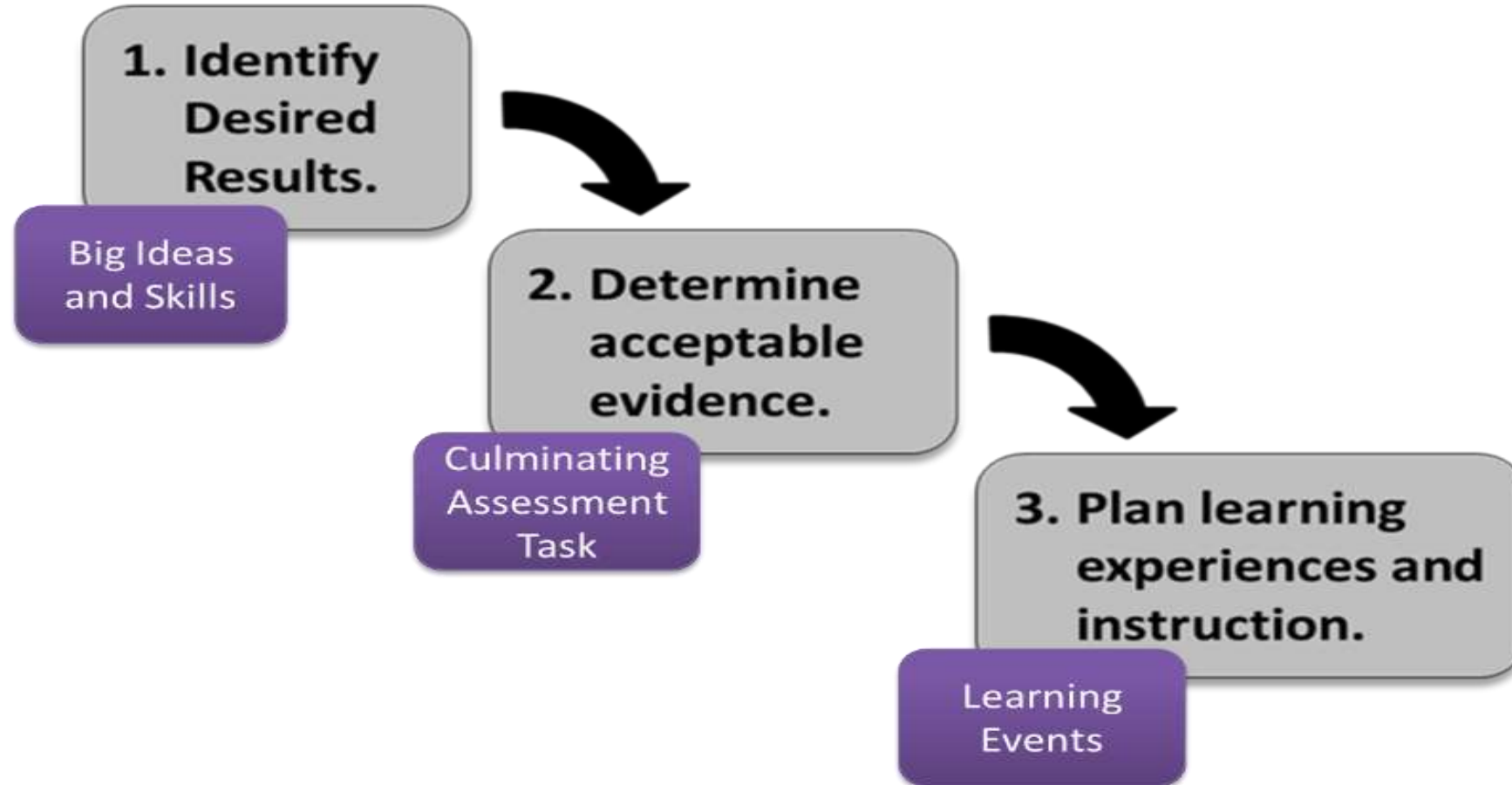
Backward Course Design

- Backward Design is a curriculum-planning framework that focuses on teaching for understanding.
- Backward design is called "backward" because it involves first thinking about what students will be able to do at the end of the course or lesson (goals and objectives), and then thinking about assessments and instructional activities.
- Backward design helps teachers create courses and units that are focused on the goal (learning) rather than the process (teaching).

The 3 stages of Backward Design

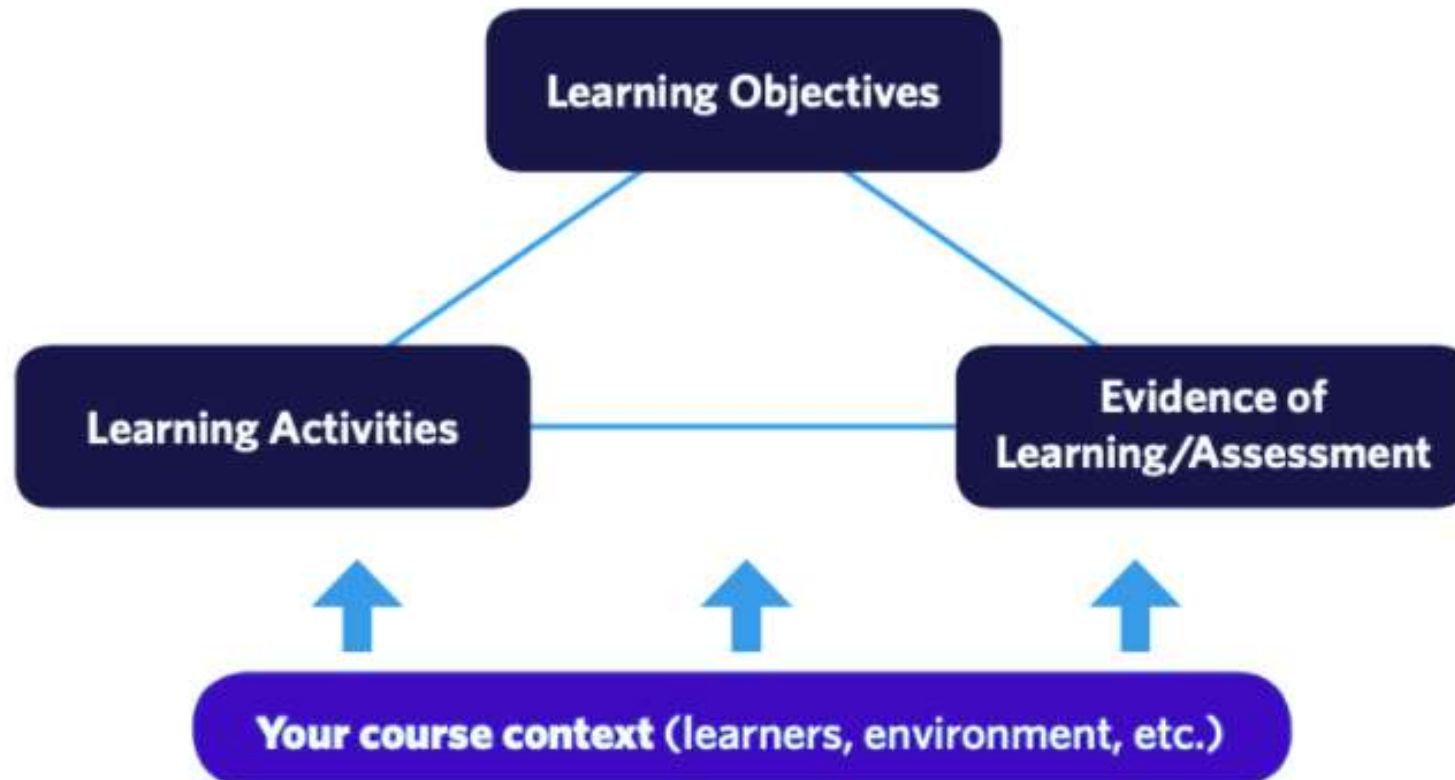
- 1. Identify desired results.** What should students know and be able to do at the end of the course? (Learning Outcomes)
- 2. Determine acceptable evidence** that students have achieved these learning outcomes. These are your formative and summative assessments.
- 3. Plan learning experiences, instruction, and resources** that give students the opportunity to gain an understanding, construct meaning from their knowledge, and place that knowledge into practice.

Backward Design

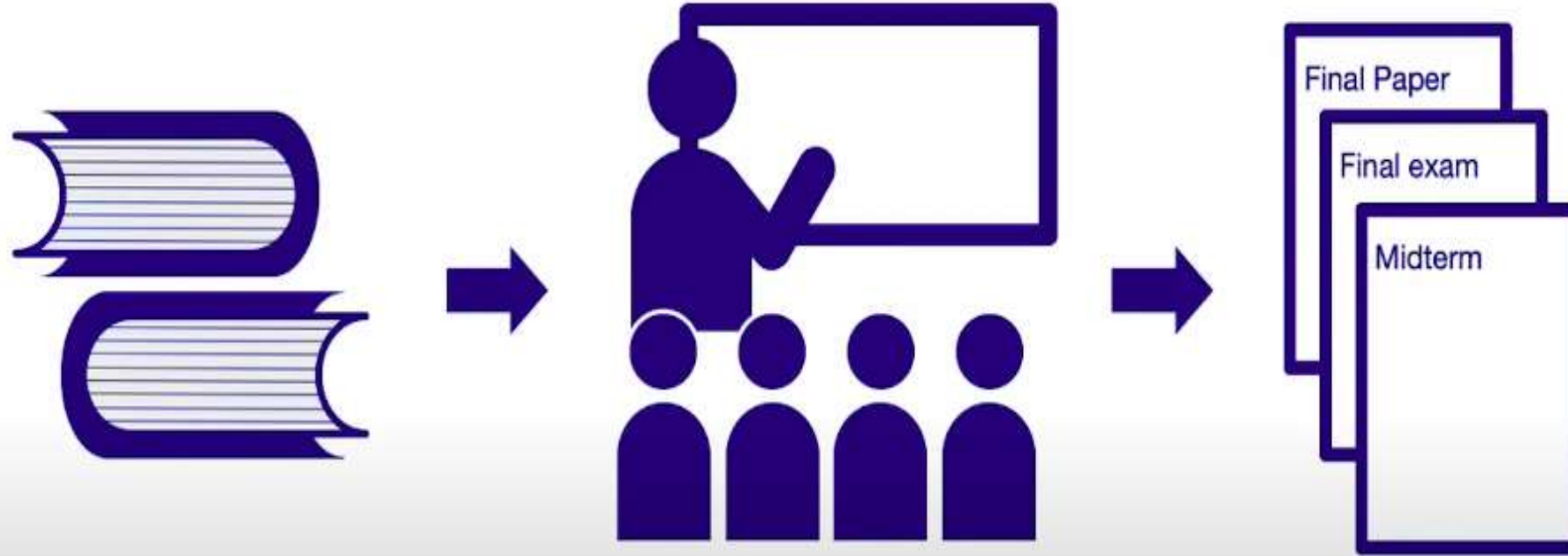


The goal of backward design is to achieve “constructive alignment” the coherence between learning objectives, assessment and teaching and learning activities (Biggs, 2003).

Constructive Alignment



Common Course Design Process

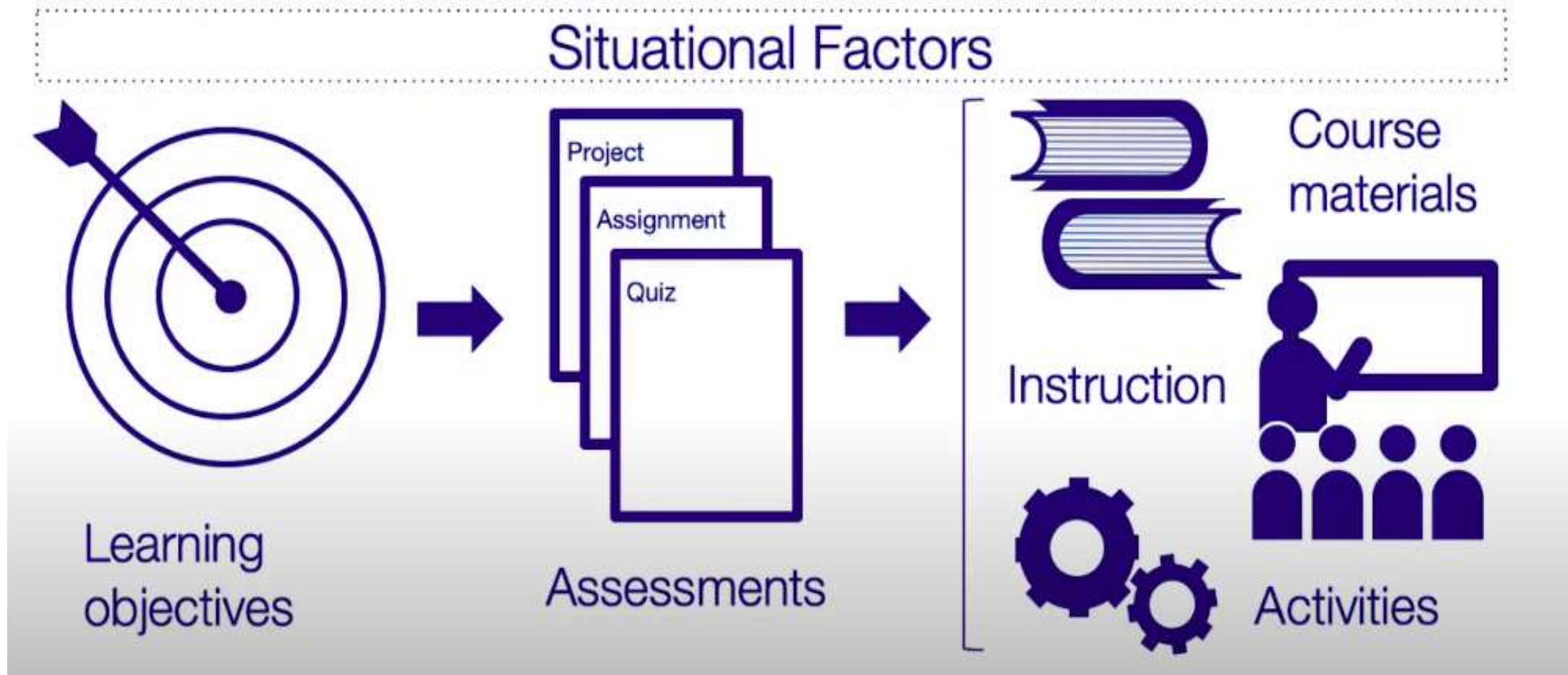


Textbook, course readings, CONTENT,

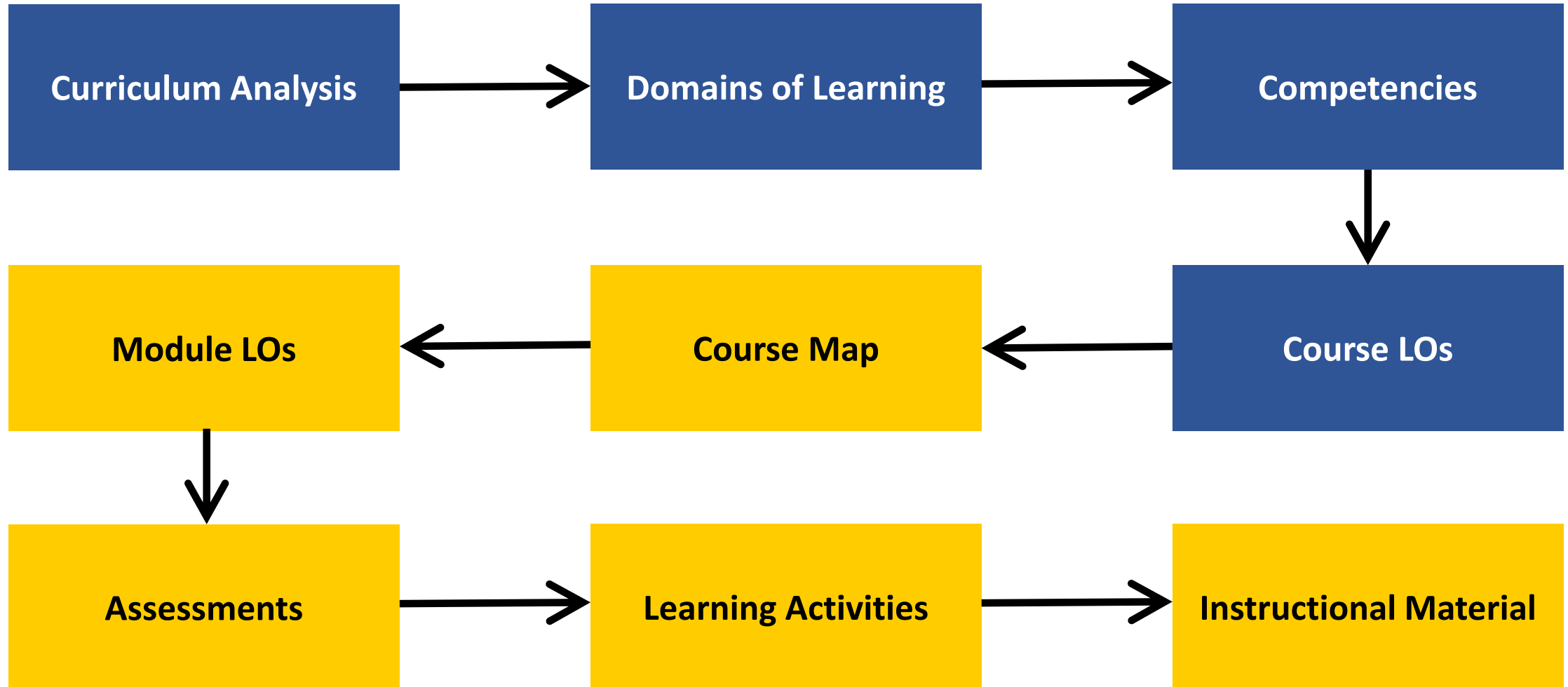
Lectures and activities.

Grades.

Course Design Process



The Process



Curriculum analysis

Professional goals

- What professions and roles does the program of study prepare learners for?
- How do those goals relate to learners' fields of practice and future professions?
- What kinds of experiences outside of the classroom might support the Professional goals of this course?

Program outcomes

- What are the overall goals and outcomes for the program of study your course is a part of?
- What external standards, if any, do the program outcomes align with?
- When do learners take your course in the program sequence?

Course Learning outcomes

- What skills, knowledge, and attitudes does this course equip students with?
- What are the prerequisites for this course?
- Are there any core proficiency skills or competencies that are addressed in the course?

Domains of Learning

To think about outcomes, it is important to familiarize yourself with the three domains of learning:

1. Cognitive Domain (Knowledge)
2. Psychomotor Domain (Skills)
3. Affective Domain (Attitudes)

Understanding the three domains will help you create or identify the competencies for your course, which is the first step in writing outcomes.

Competencies

Competencies are broad, long-range outcomes that refer to the general aims or purposes of education.

Course competencies target not only the educational goals, but they address the professional and interpersonal goals for the learner.

They help identify the general facts and principles (Knowledge), procedures and methods (skills), values and Characteristics (Attitudes) that learners will attain from completing the course.



Knowledge

- Facts and Concepts
- Terminology
- Classifications
- Categories
- Principles
- Theories
- Models
- Structures



Skills

- Procedures
- Steps
- Techniques
- Methods
- Algorithms
- Metacognition
- Critical Thinking
- Problem Solving



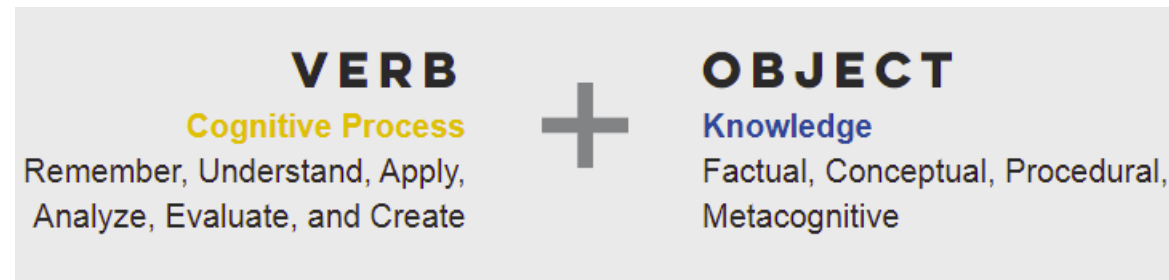
Attitudes

- Ethics
- Morals
- Values

Course Learning **OUTCOMES**

Course Learning Outcomes are specific and measurable statements that define the **knowledge, skills, and attitudes** learners will demonstrate by the completion of a course.

Writing an effective learning outcome that is measurable involves the structuring of two parts, a verb and an object. The verb phrase describes the intended cognitive process or what the learner is intended to do, and the object phrase describes the knowledge students are expected to acquire or construct (Anderson & Krathwohl, 2001).



Bloom's Taxonomy Verbs

lower order thinking → *higher order thinking*

Remember	Understand	Apply	Analyze	Evaluate	Create
define identify label match state locate recite record list recognize name select spell	explain describe interpret paraphrase summarize classify apply choose demonstrate express indicate organize	solve apply illustrate modify choose construct produce report articulate chart demonstrate write sketch show prepare	analyze compare classify contrast distinguish explain categorize differentiate break down dissect calculate conclude modify illustrate compute manipulate operate predict	evaluate appraise compare recommend deduce defend convince estimate grade measure conclude hypothesize justify argue assess rate value critique	design plan create formulate produce rewrite rearrange adapt reconstruct set up tell write develop arrange compose collect invent

HOW TO MAP YOUR COURSE

- **Modules:** Scaffold your Course Learning Outcomes and create a structure by organizing them into manageable units of learning.
- **Module Learning Outcomes:** Identify the specific learning outcomes for each module and note how they target Course Learning Outcomes.
- **Assessments:** Identify the formative assessments and the summative assessments. Determine acceptable evidence of the achieved learning outcome at different levels of mastery.
- **Activities:** Brainstorm the types of activities that will facilitate meaningful engagement, practice, and transfer of learning.
- **Instruction:** Determine the learning materials, resources, and key principles that will equip learners and provide a solid foundation of understanding.

Formative Assessments

Formative assessments are ongoing throughout a course and can be incremental or sequential, building upon one another.

Summative Assessments

Summative assessments occur at the end of a course or at the end of a series of modules and typically result in a score or a grade.

FORMATIVE ASSESSMENTS

- Quizzes and Surveys
- Prompted Discussions
- Journal Reflections
- Summaries
- Write-ups
- Peer and Self Assessments
- Group Collaborations
- Case Studies
- Photos of artwork
- Videos of field/site visits

SUMMATIVE ASSESSMENTS

- Essays
- Research papers
- Projects
- Reports
- Recordings
- Recitations
- Presentations
- Demonstrations
- Final Exams
- Portfolios

Learning Activities

Think about the level of interaction this course will encompass and the kinds of activities that will help learners gain practice and build their skills. Learning activities include interactions and engagements that allow learners to practice, self-assess, obtain feedback, and establish retention and transfer of their learning.

LEARNER-CONTENT INTERACTION

- self-paced learning material
- self-check quizzes
- drag-n-drop, matching
- digital textbooks
- videos with self-check quizzes
- labwork, field work
- practice items

LEARNER-LEARNER INTERACTION

- peer review
- discussion forum
- group collaboration
- community boards
- wiki
- file share
- breakout rooms

LEARNER-INSTRUCTOR INTERACTION

- office hours
- synchronous meetings
- discussion boards
- grading rubrics
- assignment feedback
- announcements

Instructional material

In backward design, instructional material is determined after establishing the learning outcomes, assessments, and activities for the course.

Now, consider the kind of instructional materials that will best equip your learners to participate in activities, succeed in their assessments, and achieve the intended outcomes.

Think about the learning experience you want your learners to gain in each module and in your course as a whole.

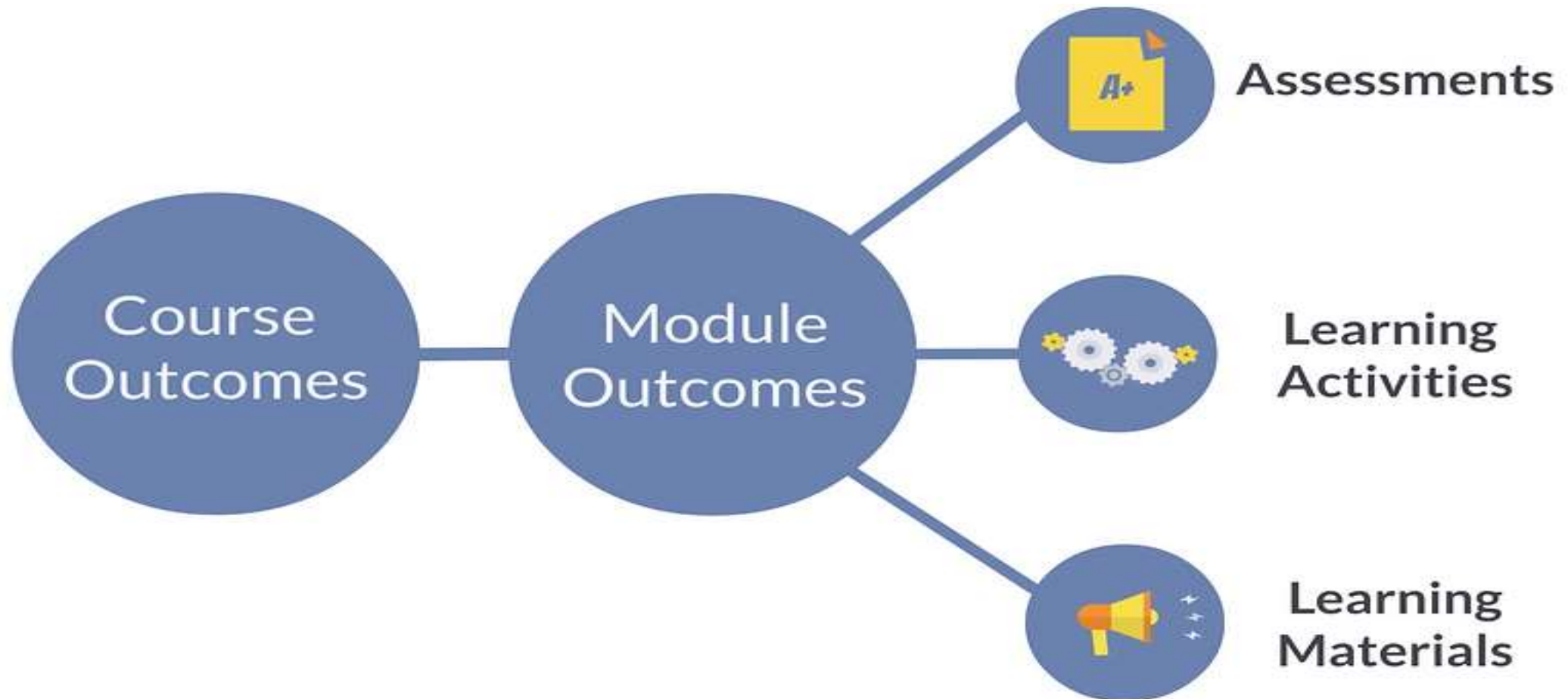
Determine the most appropriate materials and method(s) for instructional delivery, which include but are not limited to: **video, textbook readings, recorded demos, PowerPoint slides, articles, and graphics.**

Alignment

- Alignment is the direct link between learning outcomes and course components: assessments, activities, and learning materials.
- Alignment is a key part of backward design and is visualized through the course mapping process.
- Mapping out your course will help you determine the essential assessments and activities that build comprehension and application of the learning material, leading to achievement of the expected outcomes.
- A well-aligned course means that all components of the course contribute to the learner's experience and lead them directly towards achieving the expected outcome.

Constructive Alignment

A well-aligned course means that all components of the course contribute to the learner's experience and lead them directly towards achieving the expected outcome.



Course Map

- A course map is a visual overview of all components of an online course.
- Course maps organize the structure of a course around its learning modules.
- Each module is broken down into its components: module outcomes, assessments, activities, instruction, and then linked or mapped to the corresponding course learning outcome to show alignment.

Course Map 1/3

Course Map

Course Name:	
Instructor Name:	Date: [Last saved]
Designer Name:	Version: <u> </u> [Draft 1, Draft 2, Final]
Program Outcomes Addressed: [Optional]	
Course Learning Outcomes: I. II. III.	

Course Materials

Textbooks:

Resources:

Course Map 2/3

Module # and Title	Course Learning Outcomes (CLOs)	Module Learning Outcomes (MLOs)	Assessments and Rubrics	Activities: Learner Interaction & Engagement	Instructional Materials
The title should be short, yet descriptive and specific to content being explored.	List all course learning outcomes addressed in the module by their Roman numerals.	State the module's intended <i>measurable</i> learning outcomes. MLOs must describe student performance in specific, observable terms. Use suggested action verbs from Bloom's Taxonomy. In parentheses, include the course learning outcomes (CLOs) that align to each MLO.	Specify all assessments that will be used to measure the stated module learning outcomes . List the name of rubric (if applicable) that provides descriptive and specific evaluation criteria for the assessment. Also, list the MLO(s) that align with each assessment. If assessment does not count towards the student's grade they should be marked "Not graded" in place of the rubric name.	List all learning activities that promote achievement of the stated module learning outcomes and align with assessments . Learning Activities may also be listed in the assessment column if they are graded. In parentheses, include the MLO(s) that are being met <u>with</u> each activity.	List all instructional materials and technology/media used during the module that promote achievement of the stated module learning outcome . This may include readings, web resources, videos, podcasts, audio, etc. In parentheses, include the MLO(s) that align to the materials. If a learning material does not have an aligned MLO mark it as Supplemental or Optional.
Module 1: Introduction to Modern Physics	VII VIII IX	After successful completion of the module, the student will be able to: 1.1 Recall/employ the main concepts and equations of classical mechanics (kinetic energy, momentum, and vector addition). (CLO VII) 1.2 Recall/employ the fundamental concepts and equations of electricity and magnetism. Illustrate the kinetic theory of matter. (CLO VII) 1.3 Summarize the failures of classical physics in terms of time, space, velocity, and particle statistics. (CLOs VII, VIII, & IX)	Discussion <ul style="list-style-type: none"> Discussion rubric MLOs 1.3 & 1.4 Homework Problems involve concepts of space & time; classical physics & molecular energies (MLOs 1.1, 1.2, & 1.4)	Discussion Intro to Modern Physics (MLOs 1.3 & 1.4) Simulation Normal Modes http://phet.colorado.edu/en/simulation/normal-modes (MLO 1.1)	Read Chapter 1 of Krane (MLOs 1.1 – 1.4) Module 1 Exploration (MLO 1.1)

Course Map 3/3

Module # and Title	Course Learning Outcomes (CLOs)	Module Learning Outcomes (MLOs)	Assessments and Rubrics	Activities: Learner Interaction & Engagement	Instructional Materials
Module 2					
Module 3					
Module 4					
Module 5					
Module 6					
Module 7					

Thank You!
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