



UNIVERSITY OF  
CALGARY

# Course Design Program

Taylor Institute for Teaching and Learning  
University of Calgary

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University of Calgary

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# Overview of the Program

## Description

Welcome to Course Design!

This is a hands-on program where we will introduce you to a variety of concepts that are critical to designing a course, with time to apply them directly to your course design. Presentation and individual work time will be complemented by small group discussion. Some activities will be completed individually and posted online, as this program is offered in a blended format. Following the program, a facilitator will follow up with you as you refine and implement your course design in your classroom.

## Outcomes

### Overall goal of the program:

Participants will use a creative and systematic approach to designing or redesigning one of their courses.

### Program Outcomes:

By the end of the program, you will have the opportunity to practice the following:

- Conduct a front-end analysis in order to identify important elements in your course design.
- Write effective course learning outcomes for your course.
- Select and sequence the content for your course.
- Identify practical constraints for your course and select strategies to mitigate them.
- Choose student assessment strategies that are an accurate measure of the course learning outcomes.
- Select teaching and learning activities in alignment with course learning outcomes and assessment strategies.
- Evaluate their course design based on identified criteria.

## Credential of Completion

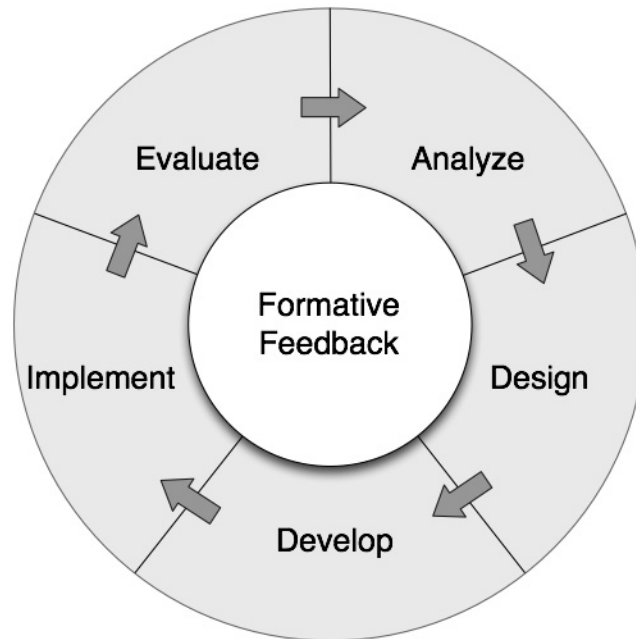
In order to receive a credential of completion for this program, you need to:

- Attend all sessions
- Complete online activities
- Complete a Design (or redesign) plan for a course that illustrates alignment

# ADDIE Model: Iterative Design

ADDIE, a basic instructional design model that can be used to structure the course design process, is an acronym that stands for:

Analyze  
Design  
Develop  
Implement  
Evaluate



Adapted from:

Regent University. (2008). Develop a course. Retrieved August 6, 2008 from <http://www.regent.edu/admin/ctl/addie/>.

## Analyze

Analyze is the first step in this model; it involves the front-end thought process that you go through to articulate the context of the course, the students who take it and their needs, and the course content. This is a critical stage in course design, since certain factors will affect many of the decisions you make about the course.

## Design

The design stage is where you plan your course systematically, dealing with learning objectives, assessment instruments, content, lesson planning, teaching and learning activities, and media selection. As you design the course, you may find out more information or realize you need a more thorough analysis. This can send you back to the beginning as new things come to light – the design process isn't as linear as this model might have you believe!

## **Develop**

The development stage is where you assemble all the elements of your course. This could involve selecting course readings, preparing online presentations, defining classroom and/or online discussions, creating tests, building the structure of a group project, and so on: anything you need to do to get ready for the course.

## **Implement**

At this stage you are teaching, or implementing your course design.

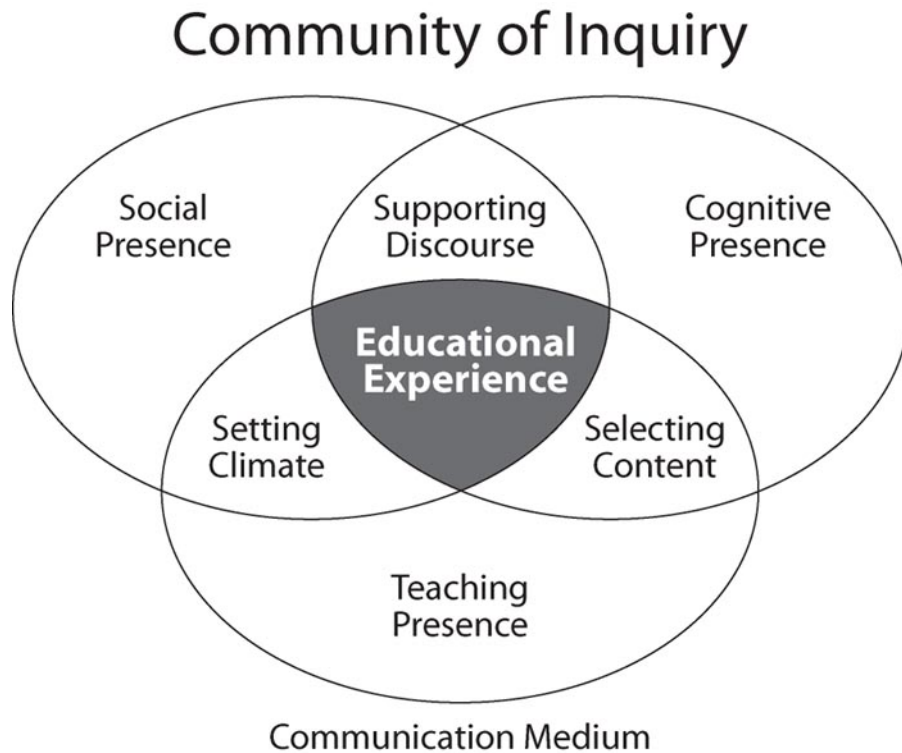
## **Evaluate**

Formative evaluation occurs throughout the entire process. As you design the course, you may find out more information or realize you need a more thorough analysis of certain things. This type of evaluation occurs throughout the whole design process, not at one specific point.

Summative evaluation happens at the end of the design process, after you've implemented your course. It could consist of student surveys or interviews, instructor notes, or a number of other ways that will inform you as to whether or not the course design was effective. It is also the beginning of a new phase of development if the results of the evaluation indicate that further changes are needed.

# Community of Inquiry Model

Another way to look at course design is through the Community of Inquiry Model, which contains three elements that are essential to an educational transaction: cognitive presence, social presence, and teaching presence.



Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education*, 2(2-3), 87-105.

In recent years, innovative approaches to teaching and learning in higher education were inevitably framed from a constructivist perspective. Constructivist learning theory is essentially about individuals making sense of their experience. However, meaning is not constructed in isolation. It is believed that the ideal educational transaction is a collaborative constructivist process that has inquiry at its core. It is essential that students be actively engaged in the process of inquiry. For this reason, higher education experiences are best conceived as communities of inquiry. A community of inquiry is shaped by purposeful, open, and disciplined critical discourse and reflection.

Each of the three elements of the Communities of Inquiry framework, social presence, cognitive presence, and teaching presence, reflects categories and indicators that operationalize the elements used to study and design the teaching and learning transaction.

**Table: Community of Inquiry Categories and Indicators**

<b>Elements</b>	<b>Categories</b>	<b>Indicators (examples only)</b>
Social presence	Open communication Group cohesion Affective/personal	Enabling risk-free expression Encouraging collaboration Expressing emotions, camaraderie
Cognitive presence	Triggering event Exploration Integration Resolution	Having sense of puzzlement Exchanging information Connecting ideas Applying new ideas
Teaching presence	Design & organization Facilitation of discourse Direct instruction	Setting curriculum and methods Sharing personal meaning Focusing discussion

From: Garrison, D. R. & Vaughan, N. D. (2008). *Blended Learning in Higher Education: Framework, principles and guidelines*. San Francisco: Jossey-Bass.



# Deep and Surface Approaches to Learning

One learning theory with implications for course design is deep and surface approaches to learning (Marton & Saljo, 1976; Biggs, 1993; Ramsden, 1988). Deep and surface approaches can be thought of as two different ways of approaching a learning task. According to this theory, learners are not deep or surface learners; instead, they tend to have different approaches to a learning task based on a number of factors such as how they will be assessed and how interested they are in the topic.

When people take a **deep approach to learning**, they tend to be intrinsically motivated to learn. They relate prior knowledge to the new concepts, extending the learning by bringing their own life experiences to it. They also tend to focus on the bigger picture. This allows them to analyze evidence and evaluate arguments, resulting in a learning experience that tends to have a more lasting effect (Ramsden, 1988). Learners using a deep approach to learning often connect facts, ideas, and concepts, and look at pros and cons in proposing new strategies. They might also support an argument or judgment with evidence, and look at a problem in a wider perspective than before (Entwistle & Waterson, 1988).

A **surface approach to learning**, on the other hand, may be characterized by extrinsic motivation, often related to student assessment and the desire to avoid failing. Learners tend to memorize factual knowledge without reflecting on it; concepts are not analyzed or compared to personal experiences. The learning task is seen as boring and learners just try to figure out what the teacher wants so that they can reproduce it on the exam. Typical characteristics of using a surface approach to learning include repeating a statement or problem without interpretation or adding new elements, reiterating information without contextualizing it or advancing the idea, proposing solutions without justification or explanation, and proposing several solutions without understanding which of them might be the most suitable (Entwistle & Waterson, 1988).

There may be a third approach to learning, the **achieving or strategic approach**. Learners who use this approach are trying to maximize their grades. They will adapt their learning to suit the task, and may even participate in academic dishonesty (Biggs & Tang, 2007). Some researchers think that the achieving or strategic approach may be used in addition to a deep or surface approach. In this case learners who want high grades will adopt either a deep or surface approach as needed to do the best they can in the course.

Research suggests that the learning environment encourages students to adopt a certain approach. One of the more important factors appears to be the student assessment methods used; students will frequently structure their study habits in a way that complements how they will be assessed. The following lists outline the factors that tend to encourage students to adopt a certain approach to learning.

Practices that encourage students to adopt a **deep approach** to learning:

- Learning activities that foster active student engagement with the topics
- Assessment strategies that emphasize higher order thinking skills (assessing for understanding)
- Providing feedback to students on misconceptions, areas requiring improvement, and areas of strength

- Making connections between various topics, courses, and disciplines
- Stimulating teaching that demonstrated the instructor's personal commitment to the subject
- Clearly stated academic expectations
- Opportunities for student choice regarding topics or methods in assignments
- Student interest in the topic
- Some background knowledge of the topic  
(Biggs & Tang, 2007; Ramsden, 2003)

Practices that encourage students to adopt a **surface approach** to learning:

- Overloading a course with content
- Short units presented as discrete topics
- Assessing students immediately on content and never coming back to it
- Assessing students on factual recall
- Grading student work without giving any other sort of feedback on their assignments
- Assessing discrete units without making connections to other units, courses, or disciplines

(Biggs & Tang, 2007; Ramsden, 2003)

# Scaffolding

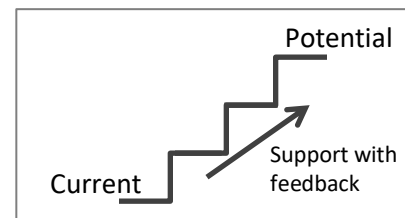
A primary goal of course design is to design a learning experience that helps students achieve goals and learn new content and skills. Students bring their own experiences and prior knowledge to the course that provides the foundations for a rich learning experience. However, many students still require support as they continue to learn and expand on their past experiences and knowledge (Hogan & Pressley, 1997, Ambrose et al., 2010). Vygotsky (1978) termed the gap between where students are and where they should be, the zone of proximal development. For students to achieve the intended course learning outcomes, they need practice working with the course content, yet often there is too much cognitive load that distracts students with the potential to cause frustration and demotivate students.

Scaffolding is a strategy to temporarily remove or adjust the cognitive load so students can focus on the central tasks. Ambrose et al. (2010) describe two types of cognitive load to consider when scaffolding student learning. Extraneous load refers to the aspects related to a task that are not necessarily related to what students need to learn. Germane load refers to what students eventually need to know yet creates a challenge to student progress. Depending on the type of cognitive load, support for students could vary. For example, in a mathematics course having to memorize formulas might lessen students' ability to solve problems. Therefore, if the focus is to solve problems then remembering the formulas becomes extraneous and the formulas can be provided to the students. However, if remembering and selecting formulas is part of the learning outcome, then strategies should be used to ensure students are able to remember the formulas before attempting to solve problems (Ambrose et al., 2010).

Much like creating stepping-stones or a staircase for student learning, scaffolding provides direction, focus, and the foundations for success. As students master the early steps, they build a foundation towards mastery of larger, more complex tasks. By revisiting the course learning outcomes, cognitive load can be adjusted to facilitate student learning. Scaffolding can be applied to an entire course, an activity or even an assessment. A key to successful scaffolding is time for practice and feedback that helps foster student development. Other guidelines include assessing learner's current abilities or prior knowledge and current knowledge to new content, theories or skills.

Examples of scaffolding:

1. Instructor modeling
2. Providing clues or hints at key stages
3. Adapting course material to help students focus on key aspects
4. Creating activities using manageable steps with feedback
5. Cumulative assessments
6. Providing feedback on draft work



# Learner Analysis

In this section you will think about who your students are and how that relates to course design. We will also look at some strategies to find out more about your students.

Learner Characteristics	How does it apply to learners in your course?	Implications for Course Design
What percentage of students take the course as: <ul style="list-style-type: none"> <li>• a required course</li> <li>• an elective</li> <li>• a course that fulfills a requirement</li> </ul>		
What year of program students are in		
General aptitude regarding course (ability to succeed in course)		
Percentage of English as a Second Language students in course		
Reading level		
Writing level		
Basic computer skills		
Percentage of students entering course with prerequisite knowledge		
Motivation to learn in the course		
Attitudes toward subject matter		
Anxiety level in course		
Cultural diversity		

Learner Characteristics	How does it apply to learners in your course?	Implications for Course Design
Comfort level with different teaching and learning activities		
Any students with identified disabilities? If so, what are your obligations?		

**Finding Out More about Your Students:**

You may not be able to answer some of the above questions very accurately. If you want to find out more about the students in your course, you might want to try one or more of these strategies:

- Conduct a student survey, either paper-based or online.
- Do a focus group.
- As a first assignment for the course, have students write a brief bio, including what year they are in and why they are taking this course. They can address the questions informally in class or post their bio on Blackboard.
- Have a TA interview a few students and write learner profiles on them (why they are taking the course, how they hope to use it). This can really help you focus on learner needs.
- Discuss learners with other instructors and department. Does the department keep any learner statistics?

**Questions You Still Have About Your Learners:**

Question about learners:	How you can find out this information:

# Context Analysis

The purpose of analyzing the context of a course at the beginning of the design process is to look at how it is situated within a program, faculty, institution, and the learning environment in general.

The following lists some advantages of conducting context analysis in course design process:

- Students usually take a course as a part of a program, not as an isolated learning experience. Therefore, analyzing the context of a course is an important step in understanding how it fits into an overall program.
- Analyzing the context will help you define the course content.
- Designing a course in an appropriate context will greatly enhance teaching and learning.
- Doing the analysis pinpoints factors that you are unsure of or need to find out more. It also uncovers challenges you'll have to deal with in your course design.

Please fill in your answer in the chart below. Some items in your context analysis will have more impact on the design than others.

<b>Course Name and Description:</b>		
<b>Contextual Factor</b>	<b>How does it apply to your course?</b>	<b>Implications for Course Design</b>
Level of course (first year, advanced, graduate level?)		
Prerequisites required to enroll in course		
Is it a prerequisite for other courses in the program?		
Is it a required course for students in the program?		
Is it restricted to students in the program?		
Where in the program does the course fit?		
Service course for the University?		
History of the course – are old syllabi available?		
Is there a course description in the calendar?		

Factors relating to Department/ Faculty/ University policies:	How does it apply to your course?	Implications for Course Design
Class size Large-enrollment course?		
Number of sections		
Number of classes per week and length of each class		
Number of course credits		
Are other instructors teaching the course? How many?		
Flexibility in teaching the course?		
Department policy on the course syllabus (eg. a template?)		
Does your department have a policy on norm or criterion-referenced grading?		
If more than one instructor, are there common exams?		
Philosophy of the Department/ Faculty		
Philosophy of the University: <a href="http://www.ucalgary.ca/provost/files/provost/Academic_Foundations_0.pdf">http://www.ucalgary.ca/provost/ files/provost/Academic_Foundations _0.pdf</a>		
What is the review process for the course syllabus?		
Who approves of the course syllabus? Do others need to be involved in the planning/ approval process?		
Other Department policies		

<b>Factors Relating to the Learning Environment:</b>	<b>How does it apply to your course?</b>	<b>Implications for Course Design</b>
Online, face-to-face, or blended course format?		
Using any online course management tools such as Blackboard?		
Room configuration		
Classroom technology use (projector, audio or video equipment, clickers?)		
Lab equipment, other supplies needed		
Time of day the class is offered		
Instructor's philosophy on teaching and learning issues		
Preconceptions about course		



## **Finding Out More about the Context**

If you have questions you can't answer or want to find out more about a course's context, you may want to try some of the following suggestions:

- Talk to other instructors who have taught the course.
- Talk to the administrative staff in your department.
- Visit your department web site for contextual information.
- Access the U of C academic plan at:  
[http://www.ucalgary.ca/provost/files/provost/Academic\\_Foundations\\_0.pdf](http://www.ucalgary.ca/provost/files/provost/Academic_Foundations_0.pdf)

## **Context Analysis Notes**

In the space below, summarize the information in your context analysis and how this will be taken into consideration in your course design.

# Course Learning Outcomes

## Course Learning Outcomes

Course learning outcomes are statements of what students should be able to accomplish after completing the course and can be both content and non-content focused. They should be concise, and be written as something the student may achieve. To facilitate student's focus on their learning and achievement, keep one learning outcome per statement, and write as many statements as required (often five to ten) to prevent vagueness in individual statements. By sharing course outcomes with students, they can create a roadmap of the course and discover purpose for specific outcomes.

## Guidelines for Writing Course Learning Outcomes

1. What are the most important things that students should be able to know or do by the end of the course?
2. What are the most important skills your students should develop and apply during and after the course?
3. When writing your course learning outcomes, consider whether you want students to be able to recall factual information, or to apply the learning in some way. The charts on Cognitive, Affective, and Psychomotor Domains include more detailed information.
4. Are there any affective learning outcomes for the course (i.e., what feelings and/or opinions should students develop)?

Outcomes should be meaningful and achievable. In this context, achievable refers to whether or not students can assess how successful they were in meeting the outcome. Think about the big picture when writing course outcomes. Put yourself in the student's position and brainstorm for ideas as to why the course is valuable.

To get started with writing course outcomes, consider a formula that includes the three foundational elements of a course outcome:

**Audience + Behaviour + Condition = Course Learning Outcome.**

A = the audience, will be the people (students) accomplishing the outcome.

B = the behaviour, is what is expected of them and is directly related to Bloom's Taxonomy.

C = the condition, content, or criteria, that elaborates on or extends the behaviour.

For example, in a fourth year geology course, the instructor would like students to demonstrate an advanced understanding of the water cycle (water evaporates from oceans, clouds form over land and it rains, water then flows back to the ocean) by finding unique solutions to real-world issues.

**A** = the students

**B** = hypothesizing (Bloom's Taxonomy level is create)

**C** = the impact of climate change on the water cycle.

Putting the pieces together the outcome becomes “By the end of the course, students should be able to hypothesize the impact of climate change on the water cycle”. Note that this is a course outcome, and therefore may take multiple classes, teaching and learning activities, and assignments in order for students to reach this final outcome.

When writing course outcomes, one method to ensure a strong outcome is to apply the SMART criteria. If one or more elements of the SMART criteria are missing consider revising the outcome.

- S**     **specific** and **student** focused
- M**     **measurable** in terms of student success
- A**     **attainable** by students (given their knowledge and skill level after learning takes place)
- R**     **relevant** to focus of the course
- T**     **time** frame for completion is realistic (consider the depth of knowledge required by students)

Applying the SMART criteria to the previous example, it is:

1. Specific in that it students need to hypothesis, or propose, new ideas
2. Measurable in that the instructor can gauge the level of students’ abilities using assessments with grading criteria (such as rubrics)
3. Attainable by targeting the outcome (i.e hypothesize) at a level for fourth year students for the given course (Based on program goals, related courses, and course content)
4. Relevant to the course and program goals.
5. Students can realistically achieve this outcome during the course based on a overall course plan with practical timelines.

**Additional examples of course outcomes:**

Students should be able to design and create a small applet or application using object-oriented design principles.

Students should be able to evaluate the differences between predicted and observed results obtained from conducting scientific experiments.

Students should be able to draw evidence-based conclusions from statistical analyses performed on collected data sets.

By the end of this course, students should be able to assess the relationship between two variables using the appropriate measure of association.

Students are expected to administer academic assessments (e.g., nomothetic, CBM) using standardized procedures.

Students should be able to identify the compositional elements of Art within a piece of artwork.

By the end of this course, students should be able to formulate a research hypothesis based on a critical evaluation of the current literature.

Students should be able to identify, articulate and practice elements that contribute positively to a safe and respectful learning environment in an inclusive classroom.

Students should be able to create a multi-layered piece of artwork using Adobe Photoshop, demonstrating technical skills, aesthetic principles of composition, and conceptual awareness.

Students should be able to summarize the historical context of development discourse from Colonialism to today.

By the end of this course, students should be able to perform and trouble shoot experimental methods in bioinformatics and molecular biology.

Students are expected to develop professional working relationships with their client, peers, parents, teachers and other relevant caregivers.

By the end of the course, the students should be able to create a reliable scoring instrument or instruments to assess performance in the simulation they have designed using the Modified Ebel Procedure.

Students should be able to determine the effect of geographical location, climate and season on photovoltaic power generation.

By the end of the course, students should be able to distinguish between immune assays and defend their choice of a particular assay in a given situation.

Analyze various childhood behaviours using theories and theoretical frameworks of developmental psychology.

Choose appropriate developmental research designs and methods to answer a given research question.

One way to approach course learning outcomes is to look at Bloom's Taxonomy (1956), a classification of the knowledge, skills and abilities that you want students to learn. Lower level thinking skills include remembering and understanding. Since the model is hierarchical, students must have the basic knowledge in order to achieve higher levels of learning, including applying, analyzing, and evaluating concepts, and creating new ideas. These points give a basic description of the different levels of thinking:

- Remembering (knowledge): Retrieving pertinent knowledge from long-term memory
- Understanding (comprehension): Constructing meaning from information by interpreting, summarizing, inferring, comparing, or explaining
- Applying (application): Solve problems, use information in new situations and apply a procedure
- Analyzing (analysis): Breaking content into components, and determining the relationship of each component to one another and overall
- Evaluating (evaluation): Making judgments based on standards or criteria
- Creating (synthesis): Putting elements together to form meaning, generating new patterns or structure using existing elements

### **Bloom's Taxonomy of learning domains: Course outcomes by domain**

The following charts can assist you in writing your course outcomes. The verbs in your course outcomes should align with the level of thinking students will need to do.

According to Blooms' (1956) theory, learning can be classified into three domains:

- **Cognitive:** mental abilities (*Knowledge*)
- **Affective:** attitudes, feelings, values, or emotional areas (*Attitude*)
- **Psychomotor:** manual or physical skills (*Skills*)

### **Verbs to Avoid**

When you are writing learning outcomes, some verbs are better than others. The following verbs are vague in communicating to others the intention of, and what level of learning is expected:

Understand  
Appreciate, gain an appreciation for  
Have an awareness of  
Know  
Perceive

## Cognitive Domain

The cognitive domain (Bloom, 1956) involves knowledge and the development of intellectual abilities. This includes the recall or recognition of specific facts, procedural patterns, and concepts that serve in the development of intellectual abilities and skills.

Category	Key Verbs	Examples	Example Student Assessments
<p><b>Remember:</b> Retrieve relevant knowledge from long-term memory.</p>	<p>tell, list, recognize, describe, recite, locate, label, identify, memorize, define, match, name, outline, recall, reproduce, select, state</p>	<p>Students should be able to: <i>Locate</i> different countries on the world map. <i>Identify</i> styles of architecture in urban settings, such as downtown Calgary.</p>	<p>Multiple choice exam questions Fill in the blank exam questions Matching exam questions</p>
<p><b>Comprehend:</b> perceive meaning and grasp mentally</p>	<p>explain, describe, clarify, compare, generalize, summarize, extend, paraphrase, represent, exemplify, illustrate, classify, contrast, convert, distinguish, instantiate, estimate, give examples, infer, interpret, rewrite, arrange, match, paraphrase</p>	<p>Students should be able to: <i>Compare</i> different artistic painting styles. <i>Explain</i> the formation process of igneous rock.</p>	<p>Definitions Graphic organizers (such as concept maps or charts)</p>

<p><b>Apply:</b> Carry out or use a procedure or process theory in a given situation</p>	<p>solve, show, classify, use, execute, carry out, implement, choose, report, apply, compute, construct, demonstrate, manipulate, modify, operate, prepare, produce</p>	<p>Students should be able to: <i>Solve</i> linear equations. <i>Use</i> rhetorical strategies to make arguments in writing.</p>	<p>Essay Research paper Case study assignment Online discussion questions Problem sets Labs Simulations (with write-up)</p>
<p><b>Analyze:</b> Break material into its constituent parts and determine how the parts relate to one another and to an overall structure or purpose.</p>	<p>analyze, sort, contrast, investigate, separate, differentiate, break down, compare, diagram, deconstruct, illustrate, infer, outline, relate, organize, integrate, structure, calculate, modify, solve</p>	<p>Students should be able to: <i>Differentiate</i> between plant and dwarf plant. <i>Sort</i> a given set of plants by genus or species.</p>	<p>Observation and analysis Written report Multiple choice exam question Written exam Matching exam questions</p>
<p><b>Evaluate:</b> Make judgments based on criteria and standards</p>	<p>judge, select, decide, debate, justify, verify, argue, assess, prioritize, predict, appraise, conclude, critique, defend, evaluate, estimate, test</p>	<p>Students should be able to: <i>Debate</i> the extent to which human activities might affect climate change. <i>Critique</i> the methodology section of a research article.</p>	<p>Create and implement a survey instrument Self-evaluation Inquiry project Poster presentation Oral presentation Predictions and estimates (on an exam, perhaps)</p>
<p><b>Create:</b> Put elements together; reorganize elements into a new pattern or structure.</p>	<p>create, invent, design, devise, formulate, hypothesize, produce, generate, plan, construct, compile, compose, organize, write</p>	<p>Students should be able to: <i>Generate</i> a business plan based on the clients' needs. <i>Produce</i> an Individual Program Plan (IPP) for students with a learning disability.</p>	<p>Design projects Create an action plan Portfolio of work</p>

## Affective Domain

The affective domain (Kraehwohl, Bloom, & Masia, 1973) includes the manner in which we deal with things emotionally, such as feelings, values, appreciation, enthusiasm, motivation, and attitudes.

Category	Key Verbs	Examples
<b>Receive:</b> Open to experience; willing to listen	ask, listen, focus, attend, take part, discuss, acknowledge, hear, read	Students should be able to: <i>Listen</i> to new information with neutrality.
<b>Respond:</b> React and participate actively	react, respond, seek, discuss, interpret, clarify, provide additional examples, contribute, question	Students should be able to: <i>Participate</i> actively in a group by contributing to or building on new ideas.
<b>Value:</b> Identify values and express personal opinions	demonstrate, differentiate, explain, justify, propose, affirm	Students should be able to: <i>Demonstrate</i> sensitivity towards individual and cultural differences.
<b>Conceptualize Values:</b> Reconcile internal conflicts; develop value system	Build, develop, formulate, defend, modify, relate, prioritize, reconcile, contrast, arrange, compare, propose, verify	Students should be able to: <i>Prioritize</i> emergency responses after a disaster.
<b>Internalize Values:</b> Adopt belief system and philosophy	act, display, influence, solve, practice, propose, revise, defend, organize	Students should be able to: <i>Revise</i> judgments and change behavior in light of new evidence.



## Psychomotor Domain

The psychomotor domain (Simpson, 1972) includes physical movement, coordination, and use of the motor skills.

Category	Key Verbs	Examples
<b>Imitate:</b> Copy action of another; observe and replicate	Copy, follow, replicate, repeat, adhere	Students should be able to: <i>Observe</i> and <i>copy</i> dance steps.
<b>Execute:</b> Reproduce activity from instruction or memory	Re-create, build, perform, execute, implement, follow	Students should be able to: <i>Follow</i> instructions to dissect a shark.
<b>Perform:</b> Execute skill reliably, independent of help	Demonstrate, complete, show, perfect, calibrate, control, measure	Students should be able to: <i>Fix</i> a leaking faucet.
<b>Adaption:</b> Adapt and integrate expertise to satisfy a new objective	Construct, solve, combine, coordinate, integrate, adapt, develop, formulate, modify, master, illustrate	Students should be able to: <i>Drive</i> a vehicle in various weather conditions.
<b>Naturalize:</b> Create new movement to fit a particular situation or specific problem.	Design, specify, manage, invent, convert, create, fix, generate, plan	Students should be able to: <i>Create</i> a new gymnastic routine.

# Content Analysis

The goal in this section of the program is to identify the concepts for your course and how they will be organized. Some of the time, you won't have much flexibility regarding the course concepts: if the course serves as a prerequisite for other courses, or the knowledge, skills, and attitudes learned are essential for students in that field, then many of the decisions are made for you. However, you may have more flexibility in other areas. In this session, you will address the following questions:

- What will you teach?
- How does it align with your learning outcomes?
- How important is each topic?
- What content is mandatory and what is optional?
- How much emphasis will you place on the various concepts?
- What order will they be presented in?

## Identifying the Course Content:

Similar to the fact that you would carefully select what you pack into a suitcase when going on vacation, you will put careful consideration into what the content of a course will be. If you haven't taught this course before, there are a few strategies you could use to find out about course concepts:

- Review old course syllabi for the course. These are often available online.
- If the course has been taught before, read the course description.
- Contact the instructors of previous sections of the course and get their view points. You might find a syllabus you like, and then contact the instructor for that course to find out more about it.
- Prepare your own draft syllabus and run it by students who've already taken the course and those who will likely take it in the future.
- If you have access to a class list before the course begins, you could contact some of these students and ask for input or use Blackboard to conduct a survey.

## Sequence and Emphasis of Content

Chances are some course topics are more important than others. Certain concepts can be trickier for students to get a handle on than others, and consequently you will need to devote more of the course to them than other topics. Looking at your list of topics, think about the following questions:

- Which topics are foundational for the course? In the discipline?
- If the course is a prerequisite for other courses, what concepts will students need to have a grasp on for future course work?
- What content do students need to know? Are there any topics that would be 'nice to know', but aren't strictly required in this course?
- How can you accommodate student interests?
- Is there a logical order that topics should follow? How much flexibility do you have in terms of sequencing the topics?
- How much course time will be required to address each of the topics?
- Will you spend any time going over prerequisite knowledge and concepts, or will this be something that students will have to tackle outside of class if they need to get up to speed?

In his book, *What the best college teachers do*, author Ken Bain (2004) poses the following questions that help to differentiate between the important ideas and those that don't really add to a course:

- Why would anyone want to remember this bit of information?
- What does it help you to understand?
- What problem does it help you to address?

## Organizing the Content

There are several possible ways to arrange course content, the method you choose may be influenced by the content itself. This list outlines some possible approaches.

### **General to Specific**

Start by giving an overview of the topic, to give the big picture. As you go into more detail, students will gain context and make connections.

### **Simple to Complex**

Begin with the easier material and examples, working up to more challenging content and tasks.

### **Familiar to Unfamiliar**

Start with something that many people are likely to know and gradually add in details that are new to them.

### **Chronological**

Presenting material in chronological order works well for things such as steps in a procedure and historical events.

### **Interest**

You may decide to start with highly engaging materials to spark motivation in a topic, before approaching less interesting topics.

### **Spiral Design**

In a spiral design, content is revisited (perhaps several times), bringing in new aspects of it each time to broaden students' understanding. For example, the first time students study a topic they may gain a basic introduction to it. They may then move on to other topics, later coming back to the first one to apply newly learned concepts to it. The topic may come up again at a later stage when students pull in multidisciplinary knowledge or other topics to gain a more rounded understanding of essential concepts.

Note that it's possible to use more than one strategy at a time when sequencing content.

## Charting the Course Content

In the space below, identify your major concepts for the course. You may want to do a list, chart, or concept map. While you are creating your chart or map, think about the following:

- Sequence the concepts in chronological order.
- Estimate the amount of time needed to address the concepts. As a general guideline, 10% of a course equals about a week of a regular 3-credit course.
- Rank the concepts in order of importance (high, medium, low)
- If you are having difficulty finding enough time for all the concepts, decide what is not critical for the course and remove it.

## Practical Constraints

Now that you've done a thorough analysis, it's time to look at some of the practical constraints for the course and think about what you will do about them.

Note that some issues don't have any clear cut solutions to them, but are things you will have to design around – at least for the time being. Examples of this might include outdated lab equipment, TAs who have limited English skills, or an overarching departmental philosophy that is vastly different from yours.

Using the two sections about, Context Analysis and Learner Analysis, jot down the major practical constraints that you will have to deal with when designing your course. Next, brainstorm for some ideas that could help to mitigate the constraints. Then select one or two that you will implement in your next course offering that will address the issue.

<b>Constraint</b>	<b>Possible Solutions or Mitigating Factors</b>	<b>Next Steps</b>

<b>Constraint</b>	<b>Possible Solutions or Mitigating Factors</b>	<b>Next Steps</b>

**Notes:**

# Student Assessment

Once you have done your analysis and established your course outcomes, the next step is to consider how to determine if students have met those outcomes, and more specifically, how well they have met the intended outcomes.

Students are always very concerned about how they will be assessed. There are many ways to assess students – including multiple choice exams, papers, presentations, learning journals, project reports, problem solving, and peer evaluation.

Assessment is an ongoing process, generally composed of two main parts: formative and summative. Formative assessment is the type of assessment that provides feedback so that people can understand their strengths and growth areas, and can be done at any point in the learning process. Summative assessment is the measurement we use to give students a grade, and is typically done at the end of a unit of instruction.

A good approach is to include both types of assessment: formative assessment allows students to do well on summative assessment. For example, getting feedback on a draft report allows students to improve the final product and receive a higher grade. So, when designing your course, you will want to build in opportunities for both types of assessment.

## Purposes of Assessment

Summative assessment: Typically done at the end of a unit of instruction

- To pass or fail a student
- To grade a student
- To rank students
- To ensure a student is ready to progress with further study
- To ensure a student is ready to enter into a program or course
- To communicate to students how well they've learned the concepts of the assessment.
- To identify concepts that need further review
- To identify areas where improvement is needed in quality of teaching

Formative assessment: Can occur throughout the learning process

- To provide feedback to students about how well they understand course concepts
- To allow students to practice key skills (problem solving, applying concepts, writing tests, etc. )
- To motivate students in their learning
- To diagnose students' strengths and weaknesses
- To identify concepts that need to be reviewed (entire class or individual students)
- To identify areas where improvement is needed in quality of teaching



## Why student assessment is high stakes assessment

In higher education, assessment is also critical in the following:

- Determining which students will continue on in a given field and which ones will not.
- Contributing to grade point averages that will decide which students are accepted into faculties such as Medicine or Graduate Studies.
- Contributing to grade point averages that will determine which student receives a particular scholarship or bursary.

# Choosing Appropriate Assessment Approaches

Here are some things to consider when deciding on a student assessment plan:

## Consider the outcomes:

- What assessment approach best matches the outcome? For example, if an objective states that you want students to outline different perspectives of an issue, multiple choice exams would not be the best fit.
- Are you measuring attitude, cognitive, or psychomotor abilities? Consider a driving test: the test of cognitive knowledge is a multiple choice exam while the test for driving skill is a road test. You would not want to give them a driver's license if they could not pass the skills test; on the other hand, you would not want to give them a driver's license if they did not know the rules of the road.
- Are you measuring the desired level of complexity?
- Does your assessment approach measure what you want to measure?

## Consider your teaching and learning activities:

- Assessment methods should be in alignment with your teaching and learning activities. Students should have the opportunity to practice something; the first time they try an activity shouldn't be on the test. For example, if one of your outcomes is for students to be able to write objectives, then they should practice this as a teaching and learning activity, then have a graded assignment where they write objectives.

## Consider the practicality:

- The testing approaches you can use in a large class often differ from those that work well in a small class. While papers, long answer exams, and portfolios are manageable for small classes in terms of marking load, you may need TA support in order to use them in large classes.
- Assessment items need to be manageable for students as well. Have you included so many assessment items and approaches that students can't complete them all, or the workload is unrealistic for you?

## Consider variety:

- Are all your assessment methods the same, or have you included the variety that will allow more students to succeed? Some students have greater strength in written work while others do better at multiple choice exams, and still others do better at oral presentations, group projects, or real problems or projects.

## Consider balance:

- Have you assigned marks to assignments fairly? For example, if a 20-page paper is only worth 5% of the course grade, students will not put much effort into the paper.

## Consider timing:

- Have you spread assessments throughout the term? Don't have them all due close to the same time.

- Allow time to mark assignments and return them to students so they know how they are doing and can improve for the next assignment. Your department may have guidelines about when you need to provide initial feedback on a graded assignment.

**Consider how you will grade the assignment:**

- Does your department use criterion-based or norm-referenced grading practices? What leeway do you have?
- Can you create a rubric or other guideline so that marking is consistent and equitable?
- If the assessment is formative, can students grade their own assessment or another student's assessment?
- Does everything need to be graded? If you are considering participation marks, how will you assess participation in a fair and consistent way? Note: it is often better to avoid participation grades and add something that is more easily graded, such as in-class quizzes, reflective papers, or learning journals.

# Essential Features of Student Assessments

When looking at the merit of student assessment strategies, check to make sure they have the following six features. If any of these are missing, your assessment item is bound to be problematic.

## 1. Reliability

The reliability of a student assessment is the extent to which it consistently and accurately measures learning. A reliable assessment tool will repeatedly provide consistent results.

There are several things that can affect reliability:

- Length of the assessment. A longer assessment generally has more reliable results than a shorter one.
- Phrasing and terminology of the questions
- Consistency in test administration. Are all students given the same conditions such as amount of time? Do they get the same instructions? Have they all had the same preparation before doing the assessment?
- Marking schedule and procedures. For example, in a course with multiple lab sections, are all Graders using the same criteria to grade student lab reports?
- Student readiness. If students are not adequately prepared for the assessment, it is not reliable. For example, if an exam tests them on units they haven't taken yet, it is not reliable.

## 2. Validity

A valid assessment technique assesses what you want it to assess. For example, if you want to assess students' writing of academic research papers, that can only be done through writing an academic research paper.

Validity also refers to specific test items. Are the questions matching the level of learning outlined in the outcomes? For example, if you want to assess students' analysis skills, you could include a case study on an exam. Students would need to analyze the case and answer short answer and multiple choice questions on it.

## 3. Utility

Utility refers to how useful the assessment item is. If the assessment does not yield any useful information, it is problematic. For example, if you are conducting peer assessments of group projects and all group members give each other perfect scores, you might question the utility of that assessment.

## 4. Feasibility

An assessment tool must be feasible in order to be effective. Feasibility relates to how suitable and reasonable the assessment is to implement. For example, the best way to test student learning in a specific course might be to implement an essay and short answer final exam. Even

though the exam is reliable and valid, if there are 300 students in the course and no TAs, this exam is not feasible.

Feasibility is often related to cost.

#### 5. Acceptability

Some student assessment techniques are not acceptable, based on either the instructor's viewpoint or department guidelines. An example of this might be that the final exam has to be at least 40% of the final grade in the course. A rationale for this policy is that the weighting allows students to improve their final grade in the course, especially if they are close to failing the course.

#### 6. Cost

Some assessment techniques are too expensive to implement, and therefore a modification or alternative must be found.

# Sixteen Indicators of Effective Assessment in Higher Education

This is a checklist for quality in student assessment, written by the Centre for the Study for Higher Education, for the Australian Universities Teaching Committee.

1. Assessment is treated by staff and students as an integral component of the entire teaching and learning process.
2. The multiple roles of assessment are recognized. The powerful motivating effect of assessment requirements on students is understood and assessment tasks are designed to foster valued study habits.
3. There is a faculty/ departmental policy that guides assessment practices. Subject assessment is integrated into an overall plan for course assessment.
4. There is a clear alignment between expected learning outcomes, what is taught and learned, and the knowledge and skills assessed.
5. Assessment tasks assess the capacity to analyze and synthesize new information and concepts rather than simply recall information that has been presented.
6. A variety of assessment methods is employed so that the limitations of particular methods are minimized.
7. Assessment tasks are designed to assess relevant generic skills as well as subject-specific knowledge and skills.
8. There is a steady progression in the complexity and demands of assessment requirements in the later years of courses.
9. There is provision for student choice in assessment tasks and weighting at certain times.
10. Student and staff workloads are considered in the scheduling and design of assessment tasks.
11. Excessive assessment is avoided. Assessment tasks are designed to sample student learning.
12. Assessment tasks are weighted to balance the developmental ('formative') and judgmental ('summative') roles of assessment. Early low-stakes, low-weight assessment is used to provide students with feedback.
13. Grades are calculated and reported on the basis of clearly articulated learning outcomes and criteria for levels of achievement.
14. Students receive explanatory and diagnostic feedback as well as grades.

15. Assessment tasks are checked to ensure there are no inherent biases that may disadvantage particular student groups.
16. Plagiarism is minimized through careful task design, explicit education, and appropriate monitoring of academic honesty.

(James et. al., 2002, p. 9)

# Student Assessment Guidelines for Higher Education

1. Assess students and provide feedback (marks and other feedback such as written comments if possible) early in the course, generally before the course drop date. The assessment item shouldn't be so heavily weighted that students can't recover from a bad grade. An alternative to an instructor-graded assignment is to put a self-assessment quiz online for students to complete. They can then practice and see how they might do on a regular test.
2. Include 4-6 assessment items for a 3-credit course. Fewer than 4 will result in heavily weighted assessment items, while more than 6 tends to result in regression towards the mean. There will always be exceptions to this guideline, however; your course might fall in this category. Also, you might have several small weekly assignments that add up to one regular assignment.
3. Check with your department & faculty in case they have assessment guidelines you have to follow. For example, if the department head has the authority to change student grades, students need to know that the grade you assign them is not their final grade but their recommended grade.
4. Assessment should align with course outcomes. Your course outcomes will help you to define how to assess students: the types of assessment instruments to use, the level of learning to assess (according to Bloom's Taxonomy), and the type of questions to pose.
5. When thinking about exams and graded assignments, ask yourself if you're assessing what is important about the course. If not, you could be focusing on trivial details or peripheral learning, and this is where students will spend their time and what they'll learn.
6. There should be congruence between the exam questions and the learning activities students have been doing leading up to the exam. In other words, students should have the chance to practice the sort of questions that will be on the exam. If students have been listening to lectures exclusively, and then for the exam they are expected to apply the principles that were presented to them, there is a disconnect between the learning activity and the student assessment technique. This can be fixed by posing questions in class for students to answer individually or in groups, putting practice self-assessment quizzes in Blackboard for students to complete on their own time, using clickers to check for understanding, etc.
7. If at all possible, student grades should be made up of different types of assessment instruments. Exams should have more than one type of question, such as multiple choice, short answer, and problem solving. In addition to written exams, can you include a student project or portfolio piece in the course? A variety also helps minimize the limitations of particular methods. Having different types of assessment techniques will not only allow students to demonstrate their competence in different ways, but also motivate them to approach their learning in different ways.
8. Provide feedback and opportunities for students to use and apply that feedback that facilitate student learning. If detailed written feedback to each student isn't feasible, consider pulling out some major themes and addressing them in class orally. Before the assignment is due, consider



showing some examples of past student work in class (it can be on a different topic or assignment), commenting on why the assignment got the grade it did and how it might be improved. This gives students an idea of the level of work you expect.

9. When creating your assessment plan for your course, construct an assessment blueprint. This will help you to keep you on track in terms of the level of understanding for the various topic areas, and the amount of course time you devote to particular topics. An assessment blueprint can also be used for an individual exam.
10. When conducting a multiple choice exam, do an item analysis on the results to see which questions are problematic.

### **Assessment in large classes**

Creating a student assessment strategy in large classes can be problematic due to a variety of reasons, including:

- Instructors often want to assess students using more than one technique, but class sizes create an unreasonable workload in terms of marking
- Adhering to one or two assessment techniques can limit higher order thinking and make it difficult for students to show how much they know about the material
- It can be challenging or impossible giving individual feedback
- Monitoring plagiarism and cheating is time-consuming
- Exams and assignments that are graded by more than one person may be compromised in terms of consistency

Suggested strategies for student assessment in large-enrollment classes:

- Give an online quiz. Many question types can be graded instantly, and the grade and feedback given to the student immediately. Use randomized questions and question pools to discourage cheating.
- If you teach a common first or second-year course, it may be possible to find commercial software that you can use for student assessment. For example, a software tool called Aplia has student exercises in micro and macroeconomics that involve calculating answers, interpreting graphs, and other questions that would be too time-consuming for instructors to mark on a weekly basis. Students get instant feedback and the marks make up a percentage of their final grades.
- Peer evaluation is another strategy for giving students feedback on assignments, though you really have to think through whether or not you want students to grade one another.
- Depending on your goals for the course, group assignments could be an option to consider. Less marking demands would allow you to give the sort of assignment that would otherwise not be possible, such as a research paper or online presentation.
- If it is appropriate for your course, consider having a small portion of the grade as self-assessment. Students would have to provide a short rationale for their grade.
- Rather than having a long multiple-choice exam, have less MC questions and include a couple of short-answer questions.

## Course Assessment Plan Worksheet

Construct a chart of your assessment plan for your course:

- Assessment item/ type: If a midterm or final, note the types of questions (multiple choice, short answer, etc.)
- Aligned with outcome: Does the assessment item evaluate what you want to evaluate?
- Practical: Is the assessment item feasible? For example, it might not be realistic to assign an essay with a large class unless you have help with grading.
- Weight: Note the percentage of the final grade that is determined by this item. This column will add up to 100%
- Marking plan: Jot down how the item will be graded – machine, rubric, peer evaluation, TA, and so on.
- Formative or summative: Note the type of assessment.

Assessment item/ type	Aligned with outcome(s)?	Practical?	Weight	Marking plan	Formative or summative

### Evaluate Your Assessment Plan

Do you have an appropriate variety?	
Is the timing spread out?	
How many formative tasks are required? Will formative tasks help students to do well on summative tasks?	
How early in the course do students get formative feedback?	
How many summative tasks are required?	
Does the weighting add up to 100%?	
Have you measured the course outcomes adequately?	
Is it fair?	
How will you provide feedback to students?	
Can you explain your approach to students?	

## Assessment Blueprint Overall Assessment Plan for the Course

Use this chart as a tool to plan out your student assessment items for the course. In the left-hand column, note the ways in which students will be assessed in the course (paper, midterm, labs, and so on). Next, decide what the weighting will be toward students' mark in the course. Then consider what levels of Bloom's Taxonomy will be emphasized in these assessment items. Does your course emphasize the level of thinking that you would like students to achieve in the course?

Assessment Item	% of Course Grade	Level of Understanding (Bloom's Taxonomy)					
		Knowledge	Comprehension	Apply	Analyze	Evaluate	Create



# Teaching and Learning Activities

In this session you will learn about one way to approach the selection of teaching and learning activities for your course. Due to time constraints, we will not be exploring a comprehensive approach to teaching and learning activities. If you are interested in improving your classroom teaching skills, we recommend that you sign up for the Instructional Skills Workshop, through our website at: <http://ucalgary.ca/taylorinstitute/>

Key topics that are addressed in the Instructional Skills Workshop include:

- Questioning skills
- Constructive feedback
- Learning styles
- Classroom assessment techniques
- Learning environment

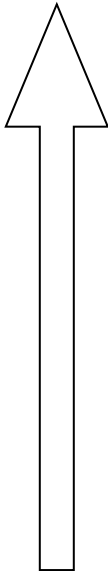
## Linking Teaching and Learning Activities to Course Outcomes and Student Assessment

You should have fidelity between your course outcomes, student assessment, and teaching and learning activities. Therefore, when selecting teaching and learning activities, think about what will best support your course outcomes and student learning. For example, if one of your course outcomes is for students to analyze conflicting or incomplete information, yet your student assessment instruments are multiple choice exams, students will spend time where they get the biggest payoff and prepare for the exams.

Looking back at the section on course outcomes, you wrote some statements about what you wanted students to know or do at the end of the course. Later you identified some ways in which you could evaluate whether or not students achieved those outcomes. In this section, you will generate some ideas for teaching and learning activities that will support the course outcomes.

Selecting teaching and learning activities that will support your course outcomes can be challenging, given some of the practical constraints you might face, such as class size. You may find you have to make some changes such as revising your course outcomes, lobbying your department head for a Teaching Assistant, or coming up with some creative approaches to the course design. Lecturing is often a critical part of a course and a way to deliver essential content. However, if your teaching and learning activities are restricted to lecturing, most of your students will not progress to higher level thinking skills with the course concepts. When the time comes to assess students on the course concepts, they won't have had any experience applying, analyzing, or evaluating concepts, making it difficult to justify examining them on anything other than factual recall.

The following chart is an extension of the one in Course Outcomes, with an extra column outlining some examples of teaching and learning activities for the various levels of thinking. This is meant as a starting point for you to think about what teaching and learning activities would be appropriate in order to support your course outcomes.



Level of Thinking	Verbs	Teaching and Learning Activities
Create	Create, invent, predict, design, devise, formulate, infer, hypothesize, produce	Design a survey (or a course), construct a concept map, do a role play, generate a plan, compose a song or poem
Evaluate	Judge, select, decide, debate, justify, verify, argue, assess, prioritize	Participate in a debate, panel discussion, prepare a case to present your view
Analyze	Analyze, sort, contrast, investigate, separate, defend, predict, differentiate, break down	Derive information from a flowchart, write an investigative paper, defend a statement
Apply	Solve, show, illustrate, model, draw, classify, use	Use a formula to solve a math problem, construct a model, classify items according to given criteria
Comprehend	Explain, discuss, describe, compare, generalize, summarize, extend, paraphrase, match	Illustrate a main idea, summarize, match, do a diagram, graph
Remember	Tell, list, describe, locate, label, identify, memorize, define, describe	Write multiple choice questions, read, listen to lectures, write an item list, make a timeline

The Teaching and Learning Environment (TLE) is where the teaching and learning activities (TLA) take place. Multiple environments highlight the fact that learning can take place both inside and outside of the classroom and depends on who manages the learning:

1. Teacher managed: lecturing, tutorials, assigned readings
2. Teacher managed with student participation: peer teaching, interactive class work
3. Student managed: learning groups
4. Individual student managed: reading, websites, interviews, listening to lecture

Teaching and learning activities can be divided into two components: **Teaching activities** and **learning activities**. Teaching activities are what the instructor does to facilitate student learning. For example, during class an instructor might assign readings, do a presentation, lead a discussion, and assign homework. Learning activities are what the students do throughout the process. This might include readings, studying, listening to lectures, participating in discussions and group activities, working through examples, completing homework, and preparing for exams.

The following TLA form should help in deciding which teaching and learning activities are most appropriate for students to meet the course outcomes. This TLA form is intended to ensure TLA's are aligned with your course outcomes and student assessment plans, and should be completed as general as possible. This form can also be used to plan TLA's that take place outside of class. To plan the finer details of each lesson or activity, refer to lesson plans, which is covered in ISW.

Course Outcome	Teaching and Learning Activities	Student Assessment
	Instructor does:    Students do:	
	Instructor does:    Students do:	
	Instructor does:    Students do:	



	<p>Instructor does:</p>   <p>Students do:</p>	

**Example:**

Consider both the outcome and student assessment when strategizing which teaching and learning activities will best prepare students to achieve the course outcome, “By the end of the course, students should be able to hypothesize the impact of climate change on the water cycle”.

This outcome is written at the Create level of Bloom’s Taxonomy. Student assessments will enable students to demonstrate their ability to hypothesize, generate solutions to, or formulate ideas on how or if climate change impacts the water cycle. Therefore, teaching and learning activities could be small group discussions, watching movies, reading the text, lecturing, demonstrations, worksheets, and answering questions in class. Activities should align with assessments to give consistency to the course design.

<b>Course Outcome</b>	<b>Teaching and Learning Activities</b>	<b>Student Assessment</b>
By the end of the course, students should be able to hypothesize the impact of climate change on the water cycle.	<p>Instructor does: lecture on climate change and water cycle details, provide resources such as movies or diagrams, setting up small group discussion and have them work on case studies or other problems.</p> <p>Students do: take notes during lecture, completing in-class activities, group discussions, answering questions, complete out of class readings and assignments.</p>	<p>Midterm: Case study having student analyze a situation and propose solutions. Some short answer and multiple-choice questions to assess foundational knowledge on topics.</p> <p>Final Project: Poster Presentation of a real-world issue. Students also submit a brief summary.</p>

# Active Learning Strategies

Here are some of the many active learning strategies:

## Think – pair – share

Each person considers the topic/question and writes down some ideas/answers. S/he joins with one other for discussion. This provides a good basis for wider discussion.

There are many variations of T-P-S including think-pair-listen, think-pair-square (share with another group), think-write/draw-share, think-tweet-share.

## 'Buzz' groups

Working in small groups, people discuss an issue. Topics can include:

- How much they already know about a topic
- What they are not sure about
- Opinions on a topic

## Round

Every person takes a turn to make a statement. Useful topics:

- One thing I need to know about ...
- Something that I learned today
- One important point (about the topic) ...

## Case studies

A 'story' or scenario is presented to the group. Groups discuss the story or work together on questions.

## Group discussion

Groups (up to 6 people) talk about a topic. A set of questions from the lecturer helps to structure the discussion and focus the group. The larger the group, the more difficult it is for everyone to participate actively.

## Continuum

Everyone cooperates to form a line according to their capabilities/confidence/whatever the topic is. For example, the length of time their families have been in NZ, their ages, the number of times they have attended an interview, etc..

## Fishbowl

One group discusses a topic. The second group observes the discussion and each person records:

- A partner's contributions (and gives individual feedback afterwards), or
- The important parts of the discussion (may be identification of issues, applications, generalisations, etc., depending on the task instructions)

## Presentations

Individuals or small groups find information on a topic, then prepare and deliver a short informative session to the wider group.

**Panel**

Several 'experts' are invited to the session and answer questions from the class.

**Question and answer session**

This is a useful activity to check students' understanding. A time is set aside for a discussion/answer session. Questions may be submitted in writing at the previous session (good for shy students), or they may be oral.

**Group Project**

Groups of students work together on a project(s) which entails researching and presenting (written and/or oral) information. Useful for focusing on group and cooperative skills while covering discipline content.

**Brainstorming**

Everyone thinks of as many different ideas as possible. All ideas are accepted and recorded without comment. The ideas are evaluated after a set time period or when inspiration ends.

**Student/teacher role swap**

The facilitator asks students to write their ideas/information on the white board and then explain them. S/he places several white board pens on the desk and sits with class members.

**Matching**

This activity is one way to divide a large group into pairs. Members of the group are given cards which contain either a title or a definition. They have to find the person with the complementary card. In finding their partners, they come across a range of definitions and have to think about the topic. Content can be simple or complex depending on people's abilities. The pairs then work together on an exercise/problem related to their title and definition. Reporting back afterwards widens the learning.

**Withdrawal**

While groups work together or alone on set work, the lecturer spends time with individual students or small groups. The individual assistance can be rotated through the course so that everyone gets a turn, or it can focus on people who need extra help.

**Concept maps**

A topic is written on the board. The class/group suggests and organizes ideas and information, presenting them visually, often in clusters. Students often enjoy writing on the board (bring several whiteboard pens); where numbers are large, this activity is better carried out in groups with a display of the results at the end.

**Organising information**

Information items are provided out of sequence. Students work (in pairs or small groups) to arrange them in order. The results can then be reported by each group and/or discussed by the wider group. The information can be given to students on a single worksheet or already cut into pieces for them to arrange in order.

### **'Ignorance'**

Before the class begins, students consider what they would like to know by the end of the session. They write down some questions - five is a good number to aim for. Some students may like to share their questions, which can be recorded on the board. The students write more questions at the end of the session. These questions are likely to be different from the earlier ones; they should involve a higher level of thinking; there may well be more of them; and they can be a useful basis for further private study.

### **Reference:**

Teaching and Educational Development Institute. (2006). Strategies for doing small group work in large classes. University of Queensland. Retrieved February 18, 2011 from <http://www.tedi.uq.edu.au.largeclasses/>.

# Evaluating Course Design

Most people evaluate their courses at different points in time. This will yield different information at each phase of the design process. For example, at the beginning you will look at factors such as whether or not you're placing the proper emphasis on important concepts. After delivering the course, you will examine things such as the extent to which students were able to achieve the objectives of a course.

You'll probably find that you're never really done evaluating or modifying your course design: the content of the course might change, or you find better activities than the ones you're using, or any of a number of other factors could prompt you to alter certain aspects of the course. Every offering of the course could be a slightly different iteration.

It's a good idea to create an evaluation plan early on; this program will help you to do that. For more information about evaluation, you might consider taking the University Teaching Certificate or the Faculty Teaching Certificate.

## **Prior to the Course**

While in the preliminary planning stages, you can assess your course according to a number of factors such as workload, content, and diversity of teaching and learning activities. A worksheet is included in this section to prompt you to think about your course design.

You may be required to send your syllabus to your Department Head, Dean, or another individual who will read and approve it or send it back to you with suggested changes.

If time permits, you may also want to get feedback from other people, such as a colleague who has taught the course or an instructional designer. People who specialize in educational technology, student assessment, or other educational fields may be able to provide feedback as well. At the end of this workbook you will find a page with contact information for various people at the Educational Development Unit who can offer guidance.

## **During the Course – Formative Evaluation**

While it is being offered, you can use formative evaluation to collect important information that will help you to strengthen the course. In addition to your own observations, students can provide a lot of feedback about the course. The most important thing is to assess student learning: are they learning what they should be learning?

There are a number of different strategies you could use to solicit student feedback throughout the course. Some instructors have students write comments on paper and hand them in a couple of times during the course. Other instructors put a survey in Blackboard, which is useful for large classes as the tool will compile student answers and percentages for Likert scale questions. The survey doesn't have to

be complex; a few basic questions should provide some illuminating information. Below is a simple example:

State how strongly you agree or disagree on the following statements:

1. I have a good grasp on the major concepts of this unit/module/topic. (strongly agree to strongly disagree)
2. What concepts are still unclear to you? (essay format)
3. Please add any additional comments you have about the unit/module/topic. (essay format)

### **End of Course – Summative Evaluation**

After the course is done, there are a number of ways you can examine its success based on different criteria.

Student satisfaction:

- Universal Student Ratings of Instruction (USRI) surveys
- How do USRI scores compare with previous course offerings?

Student Engagement:

- National Survey of Student Engagement (NSSE). Although this survey is at a university level, there are many indicators that can be applied to course design  
[http://nsse.indiana.edu/html/engagement\\_indicators.cfm](http://nsse.indiana.edu/html/engagement_indicators.cfm)

Student learning:

- Student work can give you an indication of what they're learning in your course. Assignments, exams, and even the questions they are asking as they progress through the course can enlighten you on the following:
  - Are students learning the same amount as they were prior to the course redesign? Or perhaps more than before? Less?
  - Is student learning broader or deeper than it was prior to course redesign?
  - Are students learning at the desired level of outcomes according to Bloom's Taxonomy?

Retention/ attrition rates:

- What percentage of students is able to pass the course? Is this reasonable? How does this compare to previous years?

Learning goals:

- What percentage of students is able to achieve the course outcomes? How does this compare to previous years?

## Evaluating Your Course Design Checklist

Criteria:	Notes:
<b>Course Outcomes</b>	
<input type="checkbox"/> Does each course outcome use an active verb consistent with levels in Bloom’s taxonomy (see <a href="https://tinyurl.com/bloomsverbs">https://tinyurl.com/bloomsverbs</a> ) that can be measured with at least one scored assessment?	
<input type="checkbox"/> Is each of the course outcomes adequate in terms of articulating expectations of student learning in the course? <input type="checkbox"/> Represents a fundamental result (student learning) of the course <input type="checkbox"/> Are at the appropriate level for the course/university <input type="checkbox"/> Reasonable given the time constraints of the course <input type="checkbox"/> Aligns with other courses in a sequence, if applicable	
<input type="checkbox"/> Are students likely to understand each learning outcome?	
<b>Student Assessments</b>	
<input type="checkbox"/> Is each assessment clearly aligned with at least one course learning outcome?	
<input type="checkbox"/> Are the assessment methods valid? (i.e., does each assessment <b>effectively</b> assess the intended course learning outcome(s)?)	
Do the assessments emphasize (check all that apply) <input type="checkbox"/> foundational understanding? <input type="checkbox"/> critical thinking? <input type="checkbox"/> applying theories and concepts? <input type="checkbox"/> innovation?	
<input type="checkbox"/> Do the assessment weightings reflect the degree of work required and the importance of the work?	
<input type="checkbox"/> Can the assignments be reasonably completed within the given time frame?	
<b>Teaching and Learning Activities</b>	
<input type="checkbox"/> Does your course include a variety of teaching and learning activities (e.g., lecture, discussion, case study, group work, projects, presentations, etc.)?	
<input type="checkbox"/> Do the teaching and learning activities support student learning of the course outcomes? (e.g., if you want students to apply concepts, do they have opportunities to practice prior to a graded assignment?)	
<b>Mental Health and Wellness</b>	
Approximately how many hours/week are students expected to work on the course? <input type="checkbox"/> Is this reasonable?	
<input type="checkbox"/> Is the course free from “high-stakes” assessments (i.e., one item weighted 40% or more towards final grade)?	
<input type="checkbox"/> Do course policies support wellness rather than being punitive?	

## Next Stages of Planning

Once you have defined your course outcomes, created your student assessment plan and identified some teaching and learning strategies, you are ready to do more detailed planning. You will need a syllabus to hand out to students; additionally, you will probably want to create a detailed planning document for yourself.

We recommend that you also create a lesson plan for each session. Lesson plan creation will not be covered in this manual, but is addressed in workshops such as Instructional Skills Workshop (ISW).

### Writing Your Syllabus

Some faculties and departments have a template that they use for syllabi or course outlines. Check with your department to see if they have a template that you're required to use. With your course plan done, your syllabus will come together fairly quickly.

### Schedule of Course Topics

One nice thing to include either in your syllabus or as a separate handout is a schedule of course topics, readings, and due dates for students. Such a tool will help to keep them on track and organized in the course. A partial example is given below.

Date	Topics	Readings/ prep and Due Dates
July 4	Historical antecedents What is educational technology? Academic articles	Read the Horizon Report, 2011: Executive Summary
July 5	Behaviorism Evaluating new technologies	Read blog post, Crash Course in Learning Theory: <a href="http://headrush.typepad.com/creating_passionate_users/2006/01/crash_course_in.html">http://headrush.typepad.com/creating_passionate_users/2006/01/crash_course_in.html</a>
July 6	Cognitivism	Read p. 32-48 (in chapter 2) of the Januszewski & Molenda text

This example is organized according to date as it's a 2-week condensed course, but you could organize yours by week if it makes more sense for your course.

### Detailed Course Notes

You will probably want to make detailed course notes for yourself (not to hand out to students). Your detailed course notes will describe what you'd like to do for each class or topic. There are a variety of



approaches you can use at this stage; we will offer one format, but please use one that works for you. Some of the things that would be helpful to include are:

- Any prep you need to do for this session
- Description of the teaching and learning activities
- Links and resources needed
- Announcements

Using the example above, here are the detailed course notes for the first day of class:

## **Day 1: Monday, July 4**

### **Introductions:**

Introduce myself

Student Introductions: Students pair up, ask a few questions so they can introduce their partner.

- Name, where they work, grade level and subjects
- What interests them about Ed Tech? Any special topics of interest?
- First course at Master's level? Taking morning course?

### **Course expectations:**

Go over course outline, answer student questions

### **What is Educational Technology?**

- Intro to topic: Introducing the Book video  
<http://www.youtube.com/watch?v=xFAWR6hzZek>
- What is educational technology? Definition from book
- One-minute interviews: Show videos
- Students do concept mapping in small groups and share with large group

### **Break**

### **Historical antecedents:**

Jigsaw activity using Michael Molenda's article, Historical Foundations

- 5 groups:
  - Early Visual Media (p. 6 – 8)
  - Ed. Media in WW II, up to Radical Behaviorism (p. 8 – 11)
  - Radical Behaviorism to Advent of Computers (p. 11 – 14)
  - Advent of Computers – The Digital Age (p. 14 – 16)
  - The Digital Age – Conclusion (p. 16 – 18)
- For each section students read and get ready to report back to class: In a couple of paragraphs, give a summary of this section. What are the educational and technology

features of this time period? What were educators interested in, and why? What did this add to the field?

- One student per group posts their summary to the Blackboard discussion forum. Another student gives an oral overview to the rest of the class

**Academic articles:**

Students read:

Anderson, T. (2008). Is videoconferencing the killer app for K-12 distance education? *The Journal of Distance Education*, 22(2), 109-124. Retrieved June 3, 2011 from <http://www.jofde.ca/index.php/jde/article/view/18/552>.

In pairs, they work through the process for assignment #1. If time permits, bring it to a group discussion.

**Homework:**

Read the Horizon Report Executive Summary

### Week-by-Week Course Plan

Week	Topics	Student readings, Prep/follow up from class	Student Assessments
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			

# Course Development

Although the ADDIE model separate course design and development into different stages, in reality there's usually a lot of overlap between the two. In the development stage, you might find out more information that affects design considerations. Or in development you come across some great resources that prompt you to make changes to the design. So quite often, as you proceed from design to development, you will revisit design decisions to ensure the best possible learning experience for students.

Below is a resource that you can use as a checklist or starting point in organizing the design and development of your course. You may want to indicate the due dates for various activities, or use it as a checklist to mark off each task as you complete it. Please note that the activities listed are not necessarily sequential.

Due Date/ Completed	Activity
	Course description listed in University Calendar
	Learner analysis
	Context analysis
	Learning outcomes
	Consult with specialists as needed throughout the process (Instructional Designer, Educational Technologist, Peer Mentoring Coordinator, Service Learning Coordinator, and so on)
	Overall instructional strategy is defined (eg. problem-based course, service learning, lecture/labs, independent study, etc.)
	Sequence content
	Develop week by week plan (and revise throughout as needed)
	Student assessment plan
	Mode of delivery is selected (face-to-face, blended, online)
	Define specific teaching and learning activities
	Make an inventory list of everything that needs to be developed or located
	Select readings and texts
	Select or create media elements (videos, websites, images, simulations, podcasts, etc.)
	Acquire copyright permissions
	Write the syllabus
	Submit the syllabus to the appropriate person for approval; make revisions as needed

	Order course packs
	Select specific in-class and online activities: What will learners be doing?
	Make detailed course notes
	Write lesson plans
	Create PowerPoint, Adobe Presenter or other presentations
	Create student assessment pieces: create exams, write assignment guidelines, create rubrics, etc.
	Critique the overall design
	Develop the online course site (write discussion board questions, add resources to site, structure site, etc.)
	While offering the course: Gather formative and summative data on the effectiveness of the course, analyze the data
	Make revisions to course as needed

## Examples

The following charts contain a real example from the Faculty of Nursing (used with permission). The course is a required first-year course. Some students are taking this degree as an after-degree; therefore, there are two distinct groups of learners in the course.

### NURS 203 Learner Analysis

Learner Characteristics	How does it apply to learners in your course?	Implications for Course Design
What percentage of students take the course as: <ul style="list-style-type: none"> <li>• a required course</li> <li>• an elective</li> <li>• a course that fulfills a requirement</li> </ul>	Required course First psychomotor course, mandatory attendance	Need explicit and transparent expectations Need to clearly identify and articulate learning goals
What year of program students are in	First year OR fifth year (for after-degree students)	Same content Students will have widely different study strategies, expectations, ability levels
General aptitude regarding course (ability to succeed in course)	First year: 30% fail rate Fifth year: 1% fail rate	Engagement for success Student Success Centre
Percentage of English as a Second Language students in course	5% both groups	Variety in teaching/learning activities Use Adobe Connect for some concepts
Reading level	Not a major issue	Little impact on assigned readings
Writing level	Variable; not an issue for most	Use a rubric to outline expectations for assignments and grade consistently
Basic computer skills	Variable	Refer students to Help Desk if they have problems accessing resources in Blackboard
Percentage of students entering course with prerequisite knowledge	Most	Refer students to supplementary resources as needed

Motivation to learn in the course	Varies Mandatory course	Work on building resilient learners as opposed to resistant learners
Attitudes toward subject matter	Variable	Vary teaching and learning activities Use active learning strategies Allow for student choice - paper
Anxiety level in course	High (both groups)	Clear student assessment criteria Supportive learning environment Frequent and early feedback
Cultural diversity	Broad	Use it to our advantage in the course – what does it add to understanding of our patients?
Comfort level with different teaching and learning activities	Fined	
Any students with identified disabilities? If so, what are your obligations?	Always: <ul style="list-style-type: none"> <li>Physical (chronic illness, hearing, etc.)</li> <li>Mental/emotional (most common is anxiety)</li> <li>Substance addiction (alcohol, drugs)</li> </ul>	Work with Disability Services as needed, for accommodations Refer to Counseling Services Refer to Wellness Centre

### Summary of Primary Audience and Implications for Design:

#### First-year students:

- High school graduates assimilating to an academic and professional program
- GPA higher than 70%
- Conflicting social norms with program/course expectations (eg. mandatory)
- Tend to be tech savvy

#### Implications:

- High failure rate for first-year students should be addressed in a variety of ways
- Transparent expectations
- Leave time for rationale and explanations
- More/larger curriculum and professional linkages





## Summary of Secondary Audience and Implications for Design:

After-degree students:

- Post-degree learners and some career learners
- GPA very high
- Transferable knowledge and skills, both professional and non-professional

Implications

- Motivation is high, highly critical and tend to be perfectionists
- Self image and competence closely associated
- Transparency of expectations
- More/larger curriculum and professional linkages

## NURS 203 Context Analysis

Contextual Factor	How does it apply to your course?	Implications for Course Design
Level of course (first year, advanced, graduate level?)	First year	Little disciplinary knowledge to build on Don't assume students have any prior learning in this area
Prerequisites required to enroll in course	No	
Is it a prerequisite for other courses in the program?	Yes, required to enter Year 2	Little flexibility in terms of learning outcomes or course content
Is it a required course for students in the program?	Yes	Motivation will range from low to high
Is it restricted to students in the program?	Yes	Cohort-based activities possible
Where in the program does the course fit?	First semester	Role modeling is critical: Professionalism, active learning, inquiry-based learning, problem-based learning
Service course for the University?	No	
History of the course – are old syllabi available?	Yes	Established course, not starting from scratch

Is there a course description in the calendar?	Yes	
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<b>Factors relating to Department/ Faculty/ University policies:</b>	<b>How does it apply to your course?</b>	<b>Implications for Course Design</b>
Class size Large-enrollment course?	16 per section	Flexibility for lots of discussion, group activity, active learning, student presentations, etc.
Number of sections	Multiple (10 or more)	Challenging to give consistent experiences to students 'Binder' is given to instructors to help achieve consistency Want some standardization across sections Need to coordinate with other instructors
Number of classes per week and length of each class	?	
Number of course credits	3	
Are other instructors teaching the course? How many?	Yes, 10 or more	Need to teach to same course outcomes, but might reach goals in different ways Need to coordinate with other instructors
Flexibility in teaching the course?	Some aspects are not flexible TLAs have most flexibility 'Binder' is given to instructors as starting point for course	Ensure that learning outcomes are met Customize as allowed to meet student needs
Department policy on the course syllabus (eg. a template?)	Yes	Use template
Does your department have a policy on norm or criterion-referenced grading?	Yes	Check with Course Coordinator
If more than one instructor, are there common exams?	Yes – same exams for all sections	No flexibility to adapt exams
Philosophy of the Department/ Faculty	Yes	See website
Philosophy of the University:	Yes	Include notes in syllabus

<a href="http://www.ucalgary.ca/provost/files/provost/Academic_Foundations_0.pdf">http://www.ucalgary.ca/provost/files/provost/Academic_Foundations_0.pdf</a>		
What is the review process for the course syllabus?	<ul style="list-style-type: none"> <li>• Course Coordinator</li> <li>• Associate Dean reviews</li> </ul>	Time management Need awareness of current policies and processes
Who approves of the course syllabus? Do others need to be involved in the planning/ approval process?	<ul style="list-style-type: none"> <li>• Dean's Admin Team (DAT)</li> <li>• DAT Admin Support</li> <li>• Course Coordinator</li> </ul>	
Other Department policies		

<b>Factors Relating to the Learning Environment:</b>	<b>How does it apply to your course?</b>	<b>Implications for Course Design</b>
Online, face-to-face, or blended course format?	F2f	Can still use tools such as Blackboard if needed
Using any online course management tools such as Blackboard?	Yes	Communication tools, share documents and links
Room configuration	Not known at this point	
Classroom technology use (projector, audio or video equipment, clickers?)	Yes, lots	Book as needed with Com Media
Lab equipment, other supplies needed	Yes	
Time of day the class is offered	Various, depends on scheduling	Will not necessarily be at the same time of day each day
Instructor's philosophy on teaching and learning issues	Recognize diversity and personal style	Offer flexibility where possible (student assignments)
Preconceptions about course	Students 'hear' the workload is heavy	Student preconceptions are valid; structure is critical

		Goal oriented rather than content oriented
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### Example Course Outcomes: Draft NURS 203

Outcome #1: In this course, students should demonstrate specific examples of listening and speaking skills used in relational communication practice exercises.

Outcome #2: In this course, students should be able to model a selected foundational nursing practice using benchmark self-assessment tools with an 80% achievement expectation.

Outcome #3: In this course, students should be able to use theoretical content to explain relational nursing practice.

### Practical Constraints

**Constraint:**

This course has many sections with many instructors and different philosophies and approaches to teaching. How do we give students a consistent learning experience?

Possible Solutions or Mitigating Factors	Next Steps
Role model best practices – engagement	<ol style="list-style-type: none"> <li>1. Create weekly teaching bulletins with information and rationale</li> <li>2. Post teaching articles</li> </ol>
Work within the parameters of ethical teaching and Nursing Practice Standards	<ol style="list-style-type: none"> <li>1. Work with peers to exchange ideas/ brainstorm</li> <li>2. Take time each class to review course objectives and metaparadigm concepts</li> </ol>
‘Agree to disagree’ about certain things	<ol style="list-style-type: none"> <li>1. Review curricular constraints</li> <li>2. Be explicit about learning activities, and why</li> </ol>
Agree to ‘value added’ teaching energy	<ol style="list-style-type: none"> <li>1. Review and explore evaluation strategies</li> </ol>

**Course Assessment Plan Worksheet**  
**NURS 203**

<b>Assessment item/ type</b>	<b>Aligned with outcome?</b>	<b>Practical?</b>	<b>Weight</b>	<b>Marking plan</b>	<b>Formative or summative</b>
Weekly quizzes (10)	1, 2, 3	Yes Online – automated feedback	30%	Multiple choice, in Blackboard	F, S
Skills OSCE	2	Yes Individual Instructor	30%	OSCE benchmark criteria	S
Skills OSCE	3	Yes Individual Instructor	30%	OSCE benchmark criteria	S
Edose software	1, 3	Yes Online, automated feedback	10%	Bb test, multiple choice/ simulation	F, S

## Assessment Blueprint – NURS 203

Topic Area	Level of Understanding (Bloom's Taxonomy)					
	Knowledge	Comprehension	Apply	Analyze	Evaluate	Create
Learning to learn	10%	20%	20%	20%	30%	
BP & VS	10%	20%	30%	20%	20%	
Assessment techniques	10%	30%	30%	15%	15%	
Sterile dressing	10%	10%	50%	15%	15%	
Medication administration	10%	10%	50%	15%	15%	
Documentation	10%	5%	65%	10%	10%	
Review (OSCE)	10%	5%	70%	5%	10%	

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## Contact Information

If you would like individual consultation after the program, related to any aspect of your course design, we would be happy to meet with you.

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