Course Design

In designing your course, consider the four teaching questions:

Learning Objectives: What do I want my students to be able to do/to know (intellectual, social, practical, personal learning outcomes) as a result of taking this course?

Teaching Methods: How will my class help my students achieve these learning outcomes?

Assessments: How will I know if my students have achieved these learning outcomes?

Evaluation: How will I know if and how my teaching has contributed to my students' learning outcomes?

Constructive Alignment

- Students *construct their own meaning* through learning experience
- Learning experience (activities and assessment) is *aligned with course learning objectives*
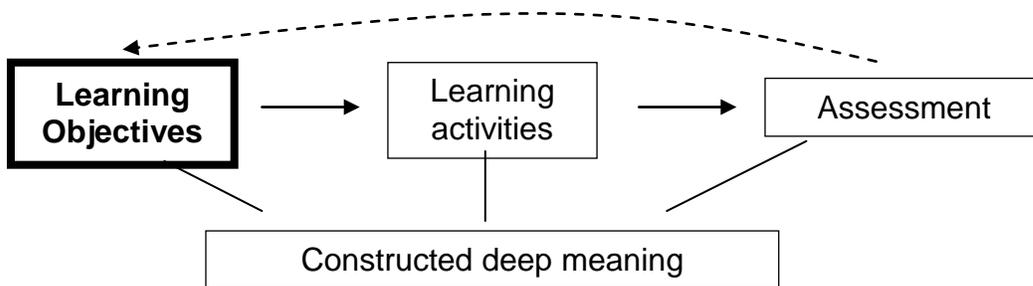
Biggs, 1996

Creating Learning Objectives/Outcomes[1]

There are three main domains of learning: **Cognitive** (mental skills; knowledge); **Affective** (growth in feelings or emotional areas; attitude or self); **Psychomotor** (manual or physical skills). In designing learning objectives, it is important to:

- Focus on what you want your students to be able to do, know or value as a result of taking your course
- Indicate specific expectations or criteria for assessment

Bloom's Revised Taxonomy (Cognitive Domain)

Higher order thinking ↑ (arrow) Lower order thinking	Creating	Generating new ideas, products, or ways of viewing things Designing, constructing, planning, producing, inventing
	Evaluating	Justifying a decision or course of action Checking, hypothesising, critiquing, experimenting, judging
	Analysing	Breaking information into parts to explore relationships Comparing, organising, deconstructing, interrogating, finding
	Applying	Using information in another familiar situation Implementing, carrying out, using, executing
	Understanding	Explaining ideas or concepts Interpreting, summarising, paraphrasing, classifying, explaining
	Remembering	Recalling information Recognising, listing, describing, retrieving, naming, finding

(Anderson & Krathwohl, 2001)

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[1] Objectives refer to what is intended; Outcomes refer to what is achieved

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Examples of Cognitive Learning Objectives:

Linguistics
By the end of the course, students will be able to
- identify and explain core concepts related to the evolution of language
- analyze evidence to reconstruct the evolution of language for problems in each area of linguistics (syntax, meaning, phonetics, and phonology."

Medicine
Students will be able to
- analyze factors that support and compromise the body's immune response
- evaluate the treatments associated with common immune disorders.

English/Literature
Students will be able to:
- critique post-colonial theorists' positions on the necessity of violence in formerly colonized regions
- evaluate alternatives to the use of violence in post-colonial literature

Sociology/public health
Students will be able to:
- analyze current threats to public health
- evaluate short and long term prevention strategies to specific public health threats
- create professional proposals that articulate strategies.

Engineering
Students will be able to:
- Construct well-supported, clearly articulated, and sustained arguments based on the collection, interpretation, and analysis of experimental data
- Form a hypothesis and evaluate it to justify a course of action
- Compose a written scientific report that contains well-supported arguable theses and demonstrates personal engagement and clear purpose

Affective Learning: Focuses on feelings, values, appreciation, motivation and attitudes. Krathwohl, Bloom & Masia (1973) created a taxonomy to display five categories, listed here in descending order from the most complex behavior to the simplest:

Internalizing values	**Acts, influences, performs, qualifies, questions, revises, verifies, discriminates** (e.g. Shows self-reliance when working independently; cooperates in group activities; revises judgments)
Organizing values	**Adheres, alters, compares, defends, explains, formulates, generalizes, prepares, synthesizes** (e.g. accepts professional ethical standards; accepts responsibility for behavior)
Valuing	**Completes, demonstrates, differentiates, explains, initiates, invites, justifies, proposes, reports, shares, studies** (e.g. Is sensitive to cultural differences; values diversity; shows ability to solve problems)
Responding to phenomena	**Answers, assists, conforms, discusses, performs, practices, presents, reads, recites, selects, tells, writes** (e.g participates in class discussion; questions new concepts; knows & practices safety rules
Receiving phenomena	**Asks, chooses, describes, follows, gives, holds, identifies, locates, names, replies** (ex. Listens to others with respect)

Examples of Affective Learning Outcomes

English:
Students will be able to:
- contribute *meaningfully* to class discussion by identifying their own questions about the readings
- articulate their insights about the readings
- respond respectfully to others' comments.

Engineering:
Students will be able to:
- Work collaboratively in a group setting
- Display leadership by keeping the team on task, while listening carefully to the ideas of others
- Articulate and display the professional ethical standards of the field.

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Psychomotor skills: This would include physical movement, coordination and use of the motor-skill areas. These might focus on speed and efficiency, precision, procedures or techniques in execution. Dave's (1975) taxonomy is shown here, in descending order from most complex ability to least complex.

Naturalization	**Design, Develop, Master** (e.g. mastering a high level performance until it becomes second nature or natural)
Articulation	**Adapt, constructs, creates, modifies** (ex. Combines a series of skills or activities to meet a novel requirement)
Precision	**Calibrate, demonstrate, master, perfect** (e.g. working and reworking something to be "right;" perform a skill or task without assistance; demonstrate task to beginner
Manipulation	**Act, execute, perform** (ex. Being able to preform a skill of one'sown after taking lessons; follows instructions to build a model)
Imitation	**Copy, follow, mimic, repeat, reproduce, trace, replicate** (ex. Copying a work of art; preforming a skill while observing a demonstrator)

Examples:
Orthotics:
- Fabricates and assembles prosthetic/orthotic devices, specific to the needs of the patient

Music:
- Masters violin piece, playing with speed, accuracy and technical precision
- Interprets piano sonata musically, by using tempo and dynamic variations, to convey personal meaning. (note: this might also be in affective domain)