USING CURRICULUM MAPPING TO IMPROVE LEARNING

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Participants will be able to:

1. Explain the role and importance of curriculum mapping in teaching.
2. Develop student-centered student learning outcomes.
3. Assess course outcomes in relation to the program outcomes.
WHY CURRICULUM MAPPING?

“...there is a fuzziness about what faculty teach and what is expected from students.”
(Miller & Malandra, 2006, p.3)
WHY CURRICULUM MAPPING?

It is part of the ongoing process of assessment of courses and programs:
WHY CURRICULUM MAPPING?

Benefits:

• Improves program coherence
• Increases the likelihood that students achieve program-level outcomes
• Improves communication among faculty
• Encourages reflective practice
• Aligns instruction with desired learning outcomes
Curriculum Map Defined

- Graphical illustration of relationship between a program’s course learning outcomes and the program’s overall learning outcomes.

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Program Outcome 1</th>
<th>Program Outcome 2</th>
<th>Program Outcome 3</th>
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</thead>
<tbody>
<tr>
<td>CRS 101</td>
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<td>CRS 151</td>
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<td>CRS 240</td>
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<td>Introduced</td>
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<td>CRS 290</td>
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<td>Reinforced/Practiced</td>
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<td>CRS 301</td>
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<td>Reinforced/Practiced</td>
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<td>Reinforced/Practiced</td>
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<td>CRS 430</td>
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<td>Reinforced/Practiced</td>
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<td>CRS 480</td>
<td>Mastered &amp; assessed</td>
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<td>Mastered &amp; assessed</td>
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<td>CRS 490</td>
<td>Mastered &amp; assessed</td>
<td>Mastered &amp; assessed</td>
<td>Mastered &amp; assessed</td>
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</tbody>
</table>
CREATING A CURRICULUM MAP

• Faculty compile:
  • Program’s student learning outcomes
  • Required and recommended courses
  • Required experiences/events (internships, licensure exams)

• Map is created in the form of table/matrix

<table>
<thead>
<tr>
<th></th>
<th>Course 1</th>
<th>Course 2</th>
<th>Course 3</th>
<th>Course 4</th>
<th>Course 5</th>
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<tbody>
<tr>
<td>Outcome 1</td>
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<td>Outcome 2</td>
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</tbody>
</table>
**CREATING A CURRICULUM MAP**

<table>
<thead>
<tr>
<th>Outcome 1</th>
<th>Course 1</th>
<th>Course 2</th>
<th>Course 3</th>
<th>Course 4</th>
<th>Course 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I</td>
<td>P</td>
<td>R</td>
<td>M</td>
<td></td>
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<tr>
<td>Outcome 2</td>
<td>I</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>R</td>
</tr>
</tbody>
</table>

- Courses and experiences/events coded according to learning outcomes they address
  - **I** – Students introduced to outcome
  - **P** – Students afforded opportunities to practice
  - **R** – Students receive reinforcement of practiced outcomes
  - **M/C** – Students demonstrate level of mastery (competency)
Creating a Curriculum Map

Faculty analysis of completed map
- Is each learning outcomes introduced, and do students receive sufficient time to practice before assessment of mastery?

<table>
<thead>
<tr>
<th></th>
<th>Course 1</th>
<th>Course 2</th>
<th>Course 3</th>
<th>Course 4</th>
<th>Course 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outcome 1</td>
<td></td>
<td>I</td>
<td>P</td>
<td>R</td>
<td>M</td>
</tr>
<tr>
<td>Outcome 2</td>
<td>I</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>R</td>
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<tr>
<td>Outcome 3</td>
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<td>P</td>
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</tbody>
</table>
PURPOSES OF CURRICULUM MAPS

Alignment

• Clarify relationship between learning outcomes and what students actually do in programs, courses, etc.

• Curricula MUST be systematically aligned with program outcomes
PURPOSES OF CURRICULUM MAPS

Helps with identification of:

- **Program strengths:** Student learning outcomes currently addressed thoroughly

- **Program gaps:** Student learning outcomes currently not addressed or addressed minimally

- **Assessment Measures:** Courses that can provide assessment data for specific student learning outcomes

A way to provide students with an overview of the role of each course and logical rationale for course sequencing
Student Learning Outcomes*

Course Student Learning Outcomes

Program Student Learning Outcomes

Program Accreditation Specific Outcomes (if applicable)

Institutional Student Learning Outcomes

* Clearly Identifiable and Measureable
STUDENT LEARNING OUTCOMES

• Student-focused rather than instructor-centered.

• Focus on the learning resulting from an activity rather than on the activity itself.

• Specific, measurable, observable.
**STUDENT LEARNING OUTCOMES**

- **Good outcomes have action words:**

<table>
<thead>
<tr>
<th>Target</th>
<th>Possible Verbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>cite, define, describe, identify, indicate</td>
</tr>
<tr>
<td>Comprehension</td>
<td>arrange, classify, convert, describe</td>
</tr>
<tr>
<td>Application</td>
<td>apply, change, compute, construct</td>
</tr>
<tr>
<td>Analysis</td>
<td>break down, calculate, contrast, solve</td>
</tr>
<tr>
<td>Synthesis</td>
<td>organize, modify, construct, assemble</td>
</tr>
<tr>
<td>Evaluation</td>
<td>contrast, explain, justify, interpret</td>
</tr>
</tbody>
</table>

http://manoa.hawaii.edu/assessment/
STUDENT LEARNING OUTCOMES

Learning outcomes can span a range levels of learning as described by Bloom’s Taxonomy.
STUDENT LEARNING OUTCOMES

By the end of this course, students will be able to:

• **predict** the appearance and motion of visible celestial objects
• **formulate** scientific questions about the motion of visible celestial objects
• **plan** ways to model and/or simulate an answer to the questions chosen
• **select** and integrate information from various sources, including electronic and print resources, community resources, and personally collected data, to answer the questions chosen
• **communicate** scientific ideas, procedures, results, and conclusions using appropriate SI units, language, and formats

http://www.teaching.utoronto.ca/topics/coursedesign/learning-outcomes/examples.htm
YOUR TURN

• Take a few minutes to write down two student learning outcomes that are relevant to courses you teach.

• Pair up with someone and trade student learning outcomes. Provide a peer assessment.
  • Is it precise?
  • Is it measurable?
  • Is it action-oriented?

Would these outcomes align with the program outcomes in your department?
Students progress through courses and other experiences/events to be able to demonstrate increasing levels of sophistication/integration of skills throughout program.
**Student Learning Outcomes**

**Institutional Level Outcome** - The knowledge, skills, and abilities students are expected to demonstrate as a result of their overall experiences with the university.

**Program Level Outcome** - Demonstrated behaviors, skills, and abilities a student is expected to achieve as a result of completing a specific program.

**Course Level Outcome** - Those learning outcomes that are specifically measured, assessed, and associated with the completion of a specific course.

**Individual Assignments (deliverables)** - Clearly aligned with one or more Course Outcomes. The assignment assessment demonstrates level of achievement of the Course Level Outcome.
**Critical Thinking** - UTC students will think critically, analytically, and reflectively...will use existing knowledge to generate new ideas and demonstrate the ability to solve problems.

**Design Process** - Entry-level interior designers need to apply all aspects of the design process to creative problem solving... identify and explore complex problems and generate creative solutions.

**Student Learning Outcomes**

**Responsive Design Project & Presentation** - student demonstrates application of concepts, principles, and theories of sustainability as they pertain to building methods, materials, systems, and occupants...

**Students will analyze evolving global issues to develop creative design ideas in response to health, safety and welfare of the public, as well as the environment.**
EVALUATING LEARNING OUTCOMES

• Well-represented program learning outcomes are:
  • Introduced and assessed in early courses
  • Practiced and / or Reinforced, as well as assessed in subsequent courses
  • Assessed for level of Mastery in upper level/comprehensive courses

• Poorly-represented program learning outcomes may be:
  • Not introduced at all
  • Introduced early yet never assessed, Practiced, or Reinforced
  • Introduced minimally yet assessed for mastery at the comprehensive level
• Do students receive adequate introduction to, practice in, and reinforcement of skill before expected demonstration of mastery?
• Should any courses/learning outcomes be restructured to improve frequency and depth of practice for students?
• Are learning outcomes addressed in logical order allowing for student progression from introduction to levels of mastery?
• Do all required courses contribute to 1+ program-level student learning outcomes
CURRICULUM MAPS AS AN ASSESSMENT PROCESS

• Curriculum map identifies level of skill expected for student learning and work products
• May be used in interpreting patterns to evaluate curriculum coherence
<table>
<thead>
<tr>
<th>Program Curriculum Map Worksheet</th>
<th>Outcome 1</th>
<th>Outcome 2</th>
<th>Outcome 3</th>
<th>Outcome 4</th>
<th>Outcome 5</th>
<th>Outcome 6</th>
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<tbody>
<tr>
<td></td>
<td>Disciplinary Knowledge</td>
<td>Disciplinary Methods</td>
<td>Disciplinary Applications</td>
<td>Disciplinary Ethical Standards</td>
<td>Analysis and use of Evidence</td>
<td>Written Communication Skills</td>
<td>Interpersonal &amp; Team Skills</td>
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<td><strong>Courses</strong></td>
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<td>Introductory Course 1</td>
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<td>Intermediate Content Course 2</td>
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**Legend:**
- **I** – SLO is Introduced and Assessed
- **P** – SLO is Practiced and Assessed
- **R** – SLO is Reinforced and Assessed
- **M** – Level of Mastery is Assessed
HOW TO IMPACT LEARNING?

- Consider the role your course plays in the curriculum.
- Align assignments around program outcomes.
- Share teaching practices and concerns with your colleagues and peers.
APPLICATION TO THE DISCIPLINES

Individually:

- Consider the program you teach in. Determine one program outcome and a course you teach that contributes to that outcome. Jot down some ways you address and assess that outcome in your class.

As a Group:

- Share the place your course serves in your program of study.
- Share assessment strategies and teaching practices to help meet that goal.
BEST PRACTICES IN CURRICULUM MAPPING

• Build in practice and multiple learning opportunities for students
  • Introduce
  • Practice
  • Reinforce
  • Mastery (Level of mastery)
• Use curriculum map to identify learning opportunities (assignments, activities) that support/demonstrate program learning outcomes
• Eliminate outcomes which aren’t highly valued
• Focus on highly-valued outcomes; include in multiple courses
• Set priorities as department/program
  • Faculty working together toward common measurable outcomes can increase likelihood of students meeting/exceeding expectations

• Communicate about student learning outcomes:
  • Publish curriculum map and distribute to students and faculty
  • Faculty should make explicit connections across courses for students
    • Don’t assume students can/will make connections by themselves
HELPS US FOCUS ON WHAT IS IMPORTANT TO THE DISCIPLINE
CURRICULUM MAPPING LIAISONS

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