



TUNING: IDENTIFYING AND MEASURING SECTOR-BASED LEARNING OUTCOMES IN ONTARIO

SYMPOSIUM ON LEARNING OUTCOMES ASSESSMENT: A PRACTICAL GUIDE
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Higher Education
Quality Council
of Ontario

Informing the Future of Higher Education

WHY LEARNING OUTCOMES

- PSE massification demands different measures
- Beyond measuring systemic inputs and outputs
- Provide accountability to students and employers

LEARNING OUTCOMES PROJECTS

- HEQCO research projects to identify and measure learning outcomes in postsecondary education:
 - *Measuring the Value of a Postsecondary Education Conference, May 2011, forthcoming edited volume of proceedings*
 - *Collegiate Learning Assessment (CLA)/College Collegiate Learning Assessment (CCLA)*
 - *Assessment of Higher Education Learning Outcomes (AHELO): Civil Engineering Strand*
 - *'Tuning': Identifying and Measuring Sector-Based Learning Outcomes in Postsecondary Education*
- These projects affiliate with, and advance, other complementary learning outcomes projects in the OECD, European Union, USA, and the Ontario college and university sectors



TODAY'S PRESENTATION

- Mary Catharine Lennon – Tuning Background
- Rhonda Lenton (Social Sciences) – Growing need for competence based education
- Joy Warkentin (Health Sciences) – The development of Learning Outcomes
- Brian Frank (Physical Sciences) – Developing thoughts on Assessment and Measurement



BACKGROUND

- Tuning originated in Europe as a means to support the European Higher Education Area
- Intended to promote mobility, credit transfer and degree recognition
- Aim to establish what students should know and be able to do within a discipline (i.e. psychology, economics, history)
- Brought together discipline experts from around Europe to discuss the learning outcomes of their disciplines across diploma, degree and masters levels
- The model has been exported around the world
 - Latin America, Africa, Russia, US – Lumina foundation is supporting the activities in 5 states

BROAD TUNING GOALS

- Establish reference points not standardization
- Clarify and create transparency in communications among the public, students and potential employers about what a student should know and be able to do with their diploma or degree
- Create clear educational pathways so that students understand what they need to do in order to achieve their goals
- Make process of articulating coursework across systems simpler and aid in credit transfer
- Ensure match between skills acquired and skills needed in the workplace



HEQCO'S PROJECT

- Sector-based learning outcomes
 - Social Sciences, Physical Sciences, Life and Health Sciences
- Across 2/3 year certificates, 4 year undergraduate degrees and research masters degrees
- Understandable to students and employers
- Bridge between program and system wide learning outcomes
- Ensuring that the learning outcomes are clear and assessable
- Identify ways of assessing and measuring learning outcomes



HOW IT WORKS

- Up to 12 individuals sit on each sector panel
- Monthly face-to-face meetings of each panel
- Groups given full autonomy, with some guidance and rough deadlines
- Began November 2011 and will conclude Spring 2013
- Small advisory group provides guidance to entire project

ACTIVITIES

- Each group led by two co-chairs
- Reach consensus on broad competencies within each group
- Independently determine appropriate learning outcomes for their sector
- Validate learning outcomes with stakeholders – students, faculty, professional associations, employers, etc.
- Discuss outcomes with small advisory group
- Develop options for assessment and measurement of learning outcomes



OUTPUTS AND OUTCOMES

- Produce reports on the competencies and student learning outcomes
- Provide options/recommendations for assessment techniques
- Produce report on overall Tuning process
- Support program development
- Contribute to development of student and employer understanding of credentials



COMPETENCIES AND LEARNING OUTCOMES

SOCIAL SCIENCES PANEL
RHONDA LENTON

WHAT DOES IT MEAN FOR US?

- Colleges have been working with the Ontario College Program Provincial Standards for some time and as a consequence have clearly articulated student learning outcomes for their 2-year and 3-year diplomas
- Universities on the other hand developed undergraduate and graduate degree level expectations
- These have informed the Ontario Qualifications Framework (Ontario, MTCU: 2009) and the Quality Assurance Framework that now governs our quality assurance processes (2011)



DEGREE LEVEL EXPECTATIONS

Most of you will be familiar with the six broad sets of competencies that are specified in the Ontario Undergraduate and Graduate Degree Level Expectations:

- Depth and breadth of knowledge
- Knowledge of methodologies/Research and Scholarship
- Application of knowledge
- Communications skills
- Awareness of limits of knowledge
- Autonomy and professional capacity

NEXT STEPS WITH DEGREE LEVEL EXPECTATIONS

Global trends reflected in MTCU policy and an ever-increasing literature highlight:

- need to focus on student-centred approach to learning
- opportunities to enhance quality through clear statements of student learning outcomes
- the value of transparency of qualifications for students, employers and PSE

(continued)

NEXT STEPS WITH DEGREE LEVEL EXPECTATIONS

- increased portability of credentials across universities/countries
- the internationalization of education, joint/dual degrees, articulation agreements
- lifelong learning/seamless education including pathways between colleges and universities
- recognition of prior learning (i.e., PLAR)

Coherence of program - constructive alignment between the program, the courses and assessment are essential and we need to frame degree level expectations accordingly.

SOCIAL SCIENCES PANEL

- In order to assess these challenges and explore the potential for the articulation of competencies and SLOs, three sector-specific groups were set up by HEQCO.

Name	Position	Institution
Dean, Anne	Associate Dean, Program Development	Humber College
Bhushan, Alka	Faculty	Seneca College
Coker, Meaghan	Graduate Student	University of Toronto
Evers, Fred	Faculty	Guelph University
Joordens, Steve	Faculty	University of Toronto
Julig, Patrick	Faculty	Laurentian University
Lenton, Rhonda	Vice Provost Academic	York University
Madsen, Kirsten	Faculty	Sheridan College
Millar, Wendy	EVP & Chief Risk Officer, BMO Financial Group	Advisor
Nossal, Kim	Faculty	Queen's University

ONTARIO TUNING PROJECT – THE SOCIAL SCIENCES

The Social Sciences group:

- Began with an extensive review of the literature
- Held several meetings to reach consensus on the competencies that we expected our graduates to have
- Referenced back to UDLES and GDLES for consistency
- Now in the process of specifying the SLOs for each competency focussing initially on the 2-year college diploma, the 4-year university undergraduate degree and the Master's degree
- Next steps will be to:
 - define assessments
 - undertake consultations at various institutions

CHALLENGES FOR THE SOCIAL SCIENCES GROUP

- Breadth of programs in the social sciences – anthropology, sociology, law, business, social work, political science, and so on.
- Includes programs that have professional accreditation
- Includes programs with applied aspects to the program
- At the Master's level, there are both professional degrees where the Master's is the terminal degree as well as research-based Master's degrees
- Decided to focus on fundamental social sciences programs with the aim of adding/commenting on program-specific competencies later



COMPETENCIES - DEFINITION

Competencies are:

- The broad statements about what students will know or be able to do when they complete a program – you can think about competencies as the knowledge, skills and/or values that are developed by and that belong to the student (*Tuning Educational Structures in Europe. A Guide to Formulating Degree Programme Profiles*, Jenneke Lokhoff et al., eds. 2010:21)
- The language of competencies is general and not usually measurable - typically involves a definition

COMPETENCIES ACROSS THE THREE SECTORS

Health and Life Sciences	Physical Sciences	Social Sciences
Communication – written, verbal, visual	Communication	Communication
Critical and creative thinking – problem solving, intellectual skills	Critical and creative thinking	Critical thinking and problem solving
Knowledge Fundamental knowledge/key concepts (relevant to field of study)	Knowledge Universal knowledge	Knowledge – universal and field specific
	Declarative knowledge	
Social responsibility – ethical, legal, professional framework and practice	Social responsibility	Social responsibility - autonomy and professional responsibility
Personal and interpersonal skills – leadership, diversity, HR	Personal and interpersonal skills	Personal and interpersonal skills
Applied learning/practice – lab, professional practice	Procedural knowledge	Application of knowledge and research



COMPETENCIES - APPROACH

- *Illustration*: Start with the name of the competency and then add a short definition
 - *Communication* - the ability to communicate effectively with a range of people from different backgrounds
 - *Research methodology* – comprehension of core methodologies in the social sciences and the ability to evaluate their applications, strengths and weaknesses
- Should think about both generic competencies and subject-specific competencies
- Three sectors identified 5 - 6 core competencies

COMPETENCIES - ILLUSTRATION

- Focusing on the social sciences sector, if we were to continue with the example of “communication,” we have incorporated several competencies within this broad category as follows:
 - Reading comprehension – understanding authors’ intents and ability to tell others content of material
 - Effective writing – written argument, coherence, proper sourcing, accuracy, originality, styles
 - Verbal/presentation skills – informal discussions, formal presentations, arguing points, effective use of technology and media
 - Active listening – attentive while others are speaking and responding effectively to others while communicating

MOVING TO STUDENT LEARNING OUTCOMES

- For each competency, you write Student Learning Outcomes (SLOs):
 - statements of the measurable results of a learning experience
 - allow us to determine to what extent a competency has been formed
 - describe the particular levels of knowledge, skills and abilities, and values that students have attained by the end of a particular class, assignment, course or program.

STUDENT LEARNING OUTCOMES

A degree program might have perhaps 20 SLOs that describe:

- what students will know at the end of the program: facts, concepts, principles, theories
- what students will be able to do (skills):
 - cognitive (information literacy, thinking strategies, computational skills)
 - social/interaction (communication skills, collaboration skills, leadership skills)
 - aesthetic (arts appreciation, creativity)
- what students will appreciate or value: diversity of perspective, lifelong learning, integrity, social responsibility

[Source: *Institute for Evidence-Based Change*, Presentation at the Ontario Tuning Process Workshop, November 17th, 2011]

GOOD STUDENT LEARNING OUTCOMES

Good SLOs are SMART (adapted from *Institute for Evidence-Based Change*, Presentation from the Ontario Tuning Process Workshop, November 17th, 2011):

- **Student centred** - focussed on the learner, not the instructor
- **Measurable** - should express the intended learning in a form that can be *assessed* (in the US over 200 institutions are voluntarily participating in the Collegiate Learning Assessment or CLA) – i.e., they need to be realistic
- **Action oriented** - use active language (e.g., Bloom's taxonomy)* – verbs should also reflect level of understanding required
- **Results driven** - emphasize application and integration now and for the future
- **Tailored to a specific degree level** – should reflect what the program is about

**Note: Social Science Sector found Bloom's Taxonomy of Learning Domains helpful in articulating SLOs*

PROBLEMS TO AVOID

Pitfalls to avoid (revised from *Institute for Evidence-Based Change*, Presentation at the Ontario Tuning Process Workshop, November 17th, 2011):

- Wordy statements (be concise)
- Stacked outcomes (avoid too many outcomes in a single statement)
- Procedural statements (focus on outcomes, not processes)
- Outcomes that cannot be measured (this does not assume quantitative measures but it does assume specific observable outcomes)
- Vague language - verbs like “understand, demonstrate, or discuss” because they are open to multiple interpretations

NEXT STEPS

- Turn it over to my colleagues to discuss some specific examples of SLOs, assessment and curriculum mapping
- But will leave you with just one example from the social sciences sector regarding SLOs
- Returning to the example of communication (verbal/presentation)...

SLOS – AN EXAMPLE IN SOCIAL SCIENCES

Competency	2 year diploma	4 year Bachelor's degree	Masters
Verbal/ presentation skills	Graduates with a 2 year diploma will...	Graduates with a 4 year baccalaureate can...	Graduates with a Masters degree can...
Informal discussions, formal presentations, arguing points, effective use of technology and media	<ul style="list-style-type: none"> - Present, alone or as part of a team, on defined topics to a group of peers in a coherent and organized form - Modify presentation to suit a specific lay audience - Where appropriate, use presentation software effectively 	<ul style="list-style-type: none"> - Present alone or as part of a team, the results of research, reflection or analysis to a group of peers in a coherent and organized form - Articulate an understanding of a subject as well as manage a question and answer session - Where appropriate, use presentation software effectively 	<ul style="list-style-type: none"> -Articulate complex theory and terminology to colleagues including experts in the field - Answer questions succinctly and effectively and defend or elaborate a position on the fly



DEVELOPMENT OF COMPETENCIES AND LEARNING OUTCOMES

HEALTH AND LIFE SCIENCES TUNING
JOY WARKENTIN

LIFE AND HEALTH SCIENCE PANEL

Name	Position	Institution
Abdel Omri	Professor	Laurentian University
James Humphries	Professor and Coordinator	Seneca
Joy Warkentin	Chair	OCQAS
Shelly Hosman	Professor	Northern College of Applied Arts and Technology
Sandra Murphy	Dean, School of Community and Health Studies	Centennial
Cathy Collinson	Past CEO	Nipigon District Memorial Hospital
Tara Hayes	Professor	Sheridan Institute of Technology and Advanced Learning

PROCESS / APPROACH

- Develop overall competencies for sector
 - Develop learning outcomes for the diploma, degree, and graduate (Masters) level under each competency
 - Sources drawn from:
 - MTCU policy framework, vocational standards, essential employability skills for various programs
 - Ontario Universities Council on Quality Assurance – Quality Assurance Framework
 - Core Competencies for Public Health in Canada
 - Lumina Degree Qualifications Profile
 - Professional Standards
 - Personal and professional experience
 - Each meeting, worked on learning outcomes under one or two competencies

COMPETENCY AREAS IDENTIFIED

1. Social Responsibility (ethical, legal, and professional framework and practice)
2. Communication (written, verbal, visual)
3. Critical and Creative Thinking (problem solving, intellectual skills)
4. Personal and Interpersonal (leadership, human relations, diversity)
5. Fundamental Knowledge / Key Concepts (relevant to field of study)
6. Applied Learning / Practice (lab, professional practice)

LEARNING OUTCOMES

- For each competency, for each education level, developed 1-5 draft learning outcomes
 - Needs to be vetted
 - Need to ensure that each outcome is leveled, measurable, and stated in appropriate outcome language
- Example: Learning outcomes under Social Responsibility

COMPETENCY: SOCIAL RESPONSIBILITY

Competency	Diploma Learning Outcomes	Degree Learning Outcomes	Graduate (Masters) Learning Outcomes
1. Social Responsibility	<ul style="list-style-type: none"> - Describe the ethical and legal standards that are applicable to the field of study - Apply ethical principles of the area/discipline of study - Adhere to professional and legal standards in the practice of the area/discipline of study. - Demonstrate the awareness of the role of advocacy on the advancement of the workplace / profession / client 	<ul style="list-style-type: none"> - Articulate the major ethical, professional, and legal challenges practitioners in the specialized field will face - Apply ethical and legal principles to complex, multidisciplinary, and / or multi-sector situations - Develop and participate in an advocacy plan on a particular issue 	<ul style="list-style-type: none"> - Integrate ethical and legal principles into the research process - Utilize advocacy skills to initiate change in the profession / workplace

CHALLENGES

- Representation at baccalaureate and masters level
- Finding congruence between Health and Life Sciences -
Developing learning outcomes that apply to the wide range of specializations within the sector
- Dealing with the affective domain
- Determining broader applicability of work
- Varying levels of expectation dependent on professional standards

LESSONS LEARNED

- Consistency and commonality between sectors
- Generic and essential employability skills
- Importance of varying perspectives
- Importance of language

NEXT STEPS

- Write descriptors for each competency
- Develop a glossary
- Validation: Focus groups / broad based consultation
- Develop assessment strategies for each learning outcome



ASSESSMENT AND MEASUREMENT

PHYSICAL SCIENCES TUNING
BRIAN FRANK

PHYSICAL SCIENCES PANEL

Name	Position	Discipline	Institution
Amir Asif	Faculty	Computer Engineering	York University
John Dekker	Faculty	Engineering Technology/Physics	Centennial College
Brian Frank	Director, Prog. Dev.	Electrical Engineering	Queen's University
Rhian Halsey	Student	Electronics technology	Seneca College
Maura Lecce	Faculty	Civil Engineering	Seneca College
Brian McCarry	Dept. Chair	Chemistry	McMaster
Dougal McCreath	Former dept. chair	Civil/Geological Engineering	Laurentian
Peter Taylor	Faculty	Mathematics	Queen's University
Roderick Turner	Former dept. Chair	Engineering Technology/Physics	Seneca College
Garin Schoonhoven	Student	Electronics technology	Centennial College
Naeem Ahmed	Adjunct Faculty	Physics	Laurentian University

PROPOSED PANEL DELIVERABLE

- Part A: Rationale
- Part B: Leveled activities as context for assessment
- Part C: Competencies
- Part D: Definitions and clarifying text
- Part E: Exemplars

PROPOSED STRUCTURE OVERVIEW

- Part A: Rationale
- Part B: Description of leveled activities
 - Differences between levels highly related to the context of the activities performed at those levels
 - Rather than describing those activities for every learning outcome, the characteristics of those activities is described in this section

E.G.: AN UNLEVELED SLO

“Communicate clearly, concisely and correctly in the written and graphical/visual forms that fulfills the purpose and meets the needs of specialized and non-specialized audiences.”

Like many SLOs, some of the differences between levels related to *context* of the work done/problem solved.

e.g. degree of autonomy in decisions, degree of novelty of the work, scope of the problems solved

Students will demonstrate the learning outcomes below in the context of activities described below:

Characteristic	2 yr	3 yr	Bachelors	Masters
	Well-defined Activities	Broadly-defined Activities	Complex activities	Research activities
Depth of knowledge	Can be resolved using limited theoretical knowledge but normally requires extensive practical knowledge	Detailed knowledge of principles and applied procedures and methodologies	Fundamental knowledge based on first principles in mathematics and science	Requires research-based knowledge at, or informed by, the forefront of the discipline
Familiarity	Require a knowledge of practical procedures and practices for widely-applied processes	Require a knowledge of normal operating procedures and processes	Can extend beyond previous experiences by applying principles-based approaches	Develops new approaches

PROPOSED STRUCTURE OVERVIEW

- Part C: Competencies
 - Learning outcomes leveled, with hyperlinks to definitions and clarifying text as needed
 - For each outcome, include:
 - An example of a course-specific learning outcome derived from the sector learning outcome
 - An example of how that could be assessed
 - A link to an exemplar

Learning outcome	Level (builds left to right for some outcomes)				E.g. course learning outcome	Exemplar
	Diploma - 2 yr	Diploma - 3 yr	Bachelors	Masters		

Competency I: Broad fundamental knowledge

Knowledge creation	Describes how new knowledge is created in the field	Describes how new knowledge is created in the field	Applies approaches used to develop knowledge in the field	Applies or develops cutting-edge knowledge through independent inquiry	<i>In this course you will...</i>	
Evaluate information	Critically evaluates technical documentation using provided criteria	Critically evaluates technical documentation using provided criteria	Critically evaluates the range of information sources using self-determined criteria	Critically evaluates and uses comprehensive primary literature in a specialty	<i>In this course you will...</i>	BACH: Yr 1 engineering
Limits of knowledge	limitations of personal knowledge	Know limitation and seek to address limitation	Describes uncertainty, and limits of knowledge	limitation of knowledge in field		

Competency VI: Declarative knowledge in physical sciences

Uncertainty and ambiguity	Recognizes and lists uncertainties	... and describes nature and possible causes of uncertainties	... and evaluates and incorporates uncertainty;	... and evaluates and incorporates uncertainty;		BACH: Yr 1 engineering
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POSSIBLE STRUCTURE FOR DELIVERABLE

- Part D: Definitions and clarifying text
- Part E: Exemplars
 - Sample deliverable descriptions (e.g. assignment instructions) with course learning outcomes derived from sector-wide outcomes, and scoring proposal (e.g. rubric)
 - Examples of course syllabi keyed to sector-wide learning outcomes
 - Examples of mapping of sector-wide outcomes to program

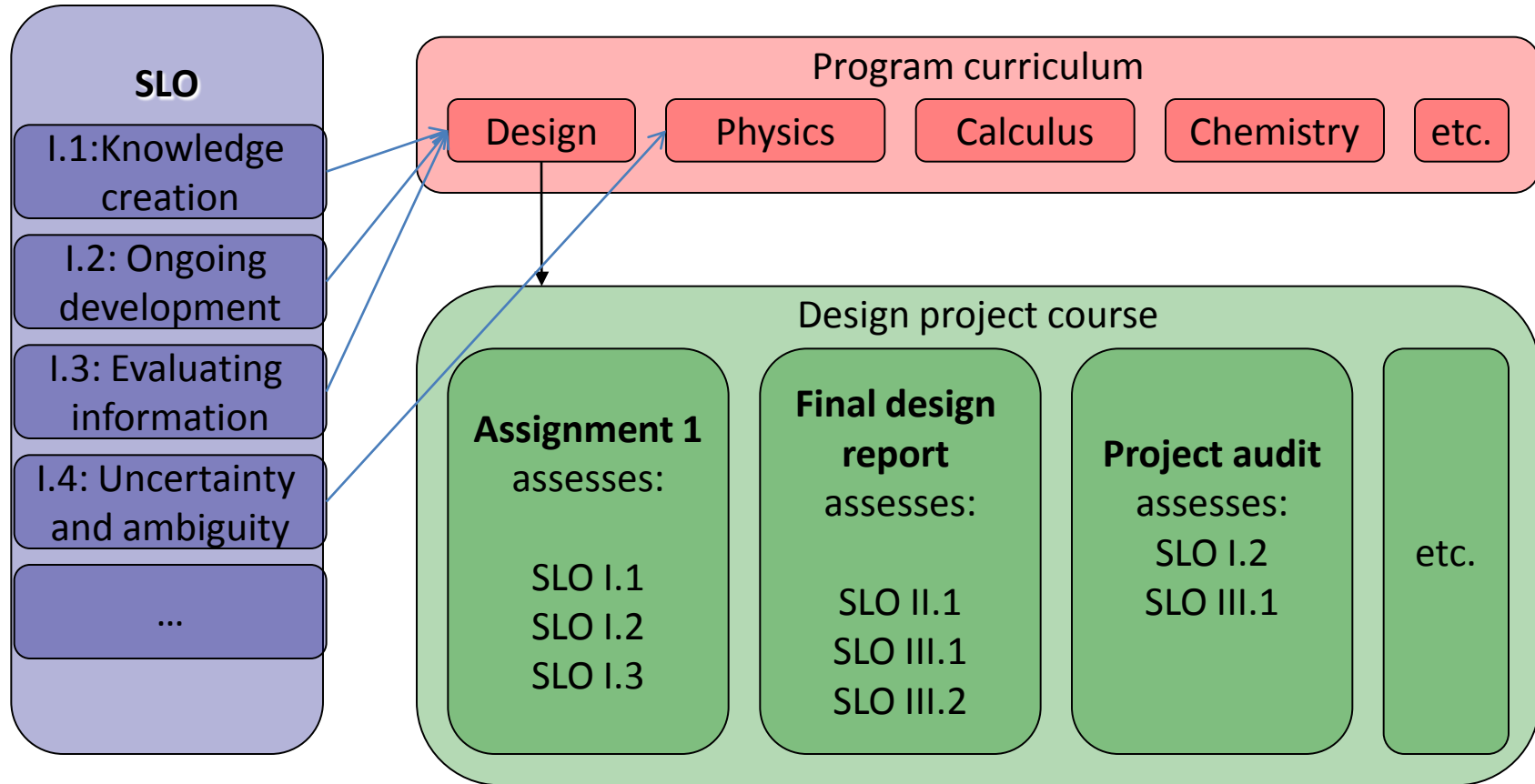
ASSESSMENT AND EVALUATION

LEARNING OUTCOMES MUST BE ASSESSABLE AND MANAGEABLE

In order to serve a purpose for improving programs, outcomes must be:

- mapped to the program's curriculum
- assessable with limited resources in small and large classes
- provide information to guide improvements

LEARNING OUTCOME MAPPING



EXAMPLE: MAPPING TO SLO TO COURSES

Course	Number	I.1	I.2	I.3	I.4	I.5	II.1	II.2	II.3	III.1	III.2	III.3	III.4
		Knowledge creation	Ongoing development	Evaluation information	Literacy	Numeracy	New approaches	Synthesizes ideas	Logic in evaluating views	Reading	Writing	Oral	Graphical
APSC	150	I	I		I	I	I		I	U	I		I
MATH	100	E	U	I				U		I			I
MATH	101	E	U	I				U		I			I
MATH	152	E	I	E		E							I
PHYS	153	E	E	E	I	I	E	U	U	U	U	I	U
PHYS	170	E	E	U									
APSC	201	U	E	U									
MATH	253	E	E	I									
MATH	256	E	E	U	I	I							
MECH	220	E	I	U	U	E	U	I	I	I	I		I
MECH	221	E	E	E	I	E	U	U	I	I	I		I
MECH	222	E	E	E	U	E	U	U	I	I	I	I	I
MECH	223	E	E	E	E	E	E	U	U	E	I	E	I

I = Introduce concepts important to developing outcome
U = Utilize concepts important to developing outcome
E = Evaluates outcome

Adapted from UBC mapping by P. Ostafichuck

MANAGING ASSESSMENT

- Helpful to integrate course grading and program-wide assessment: promotes alignment between objectives, instructional methods, and assessment
 - Set tests, exams, quizzes, etc. such that specific questions are linked to specific SLOs
 - Keep scores for each question, or by each rubric dimension
 - Student portfolios
- Example: First year 650-student project-based course

EXEMPLAR (PART E OF DELIVERABLE)

Program: Bachelor's degree in engineering

Course: First year project-based engineering design course

Deliverable: Design proposal Report

Purpose

In this assignment each student team describes their design problem, presents possible approaches, and proposes how they will proceed....

Learning outcomes

By completing this assignment you should demonstrate the following course learning outcomes:

-

Instructions given to students

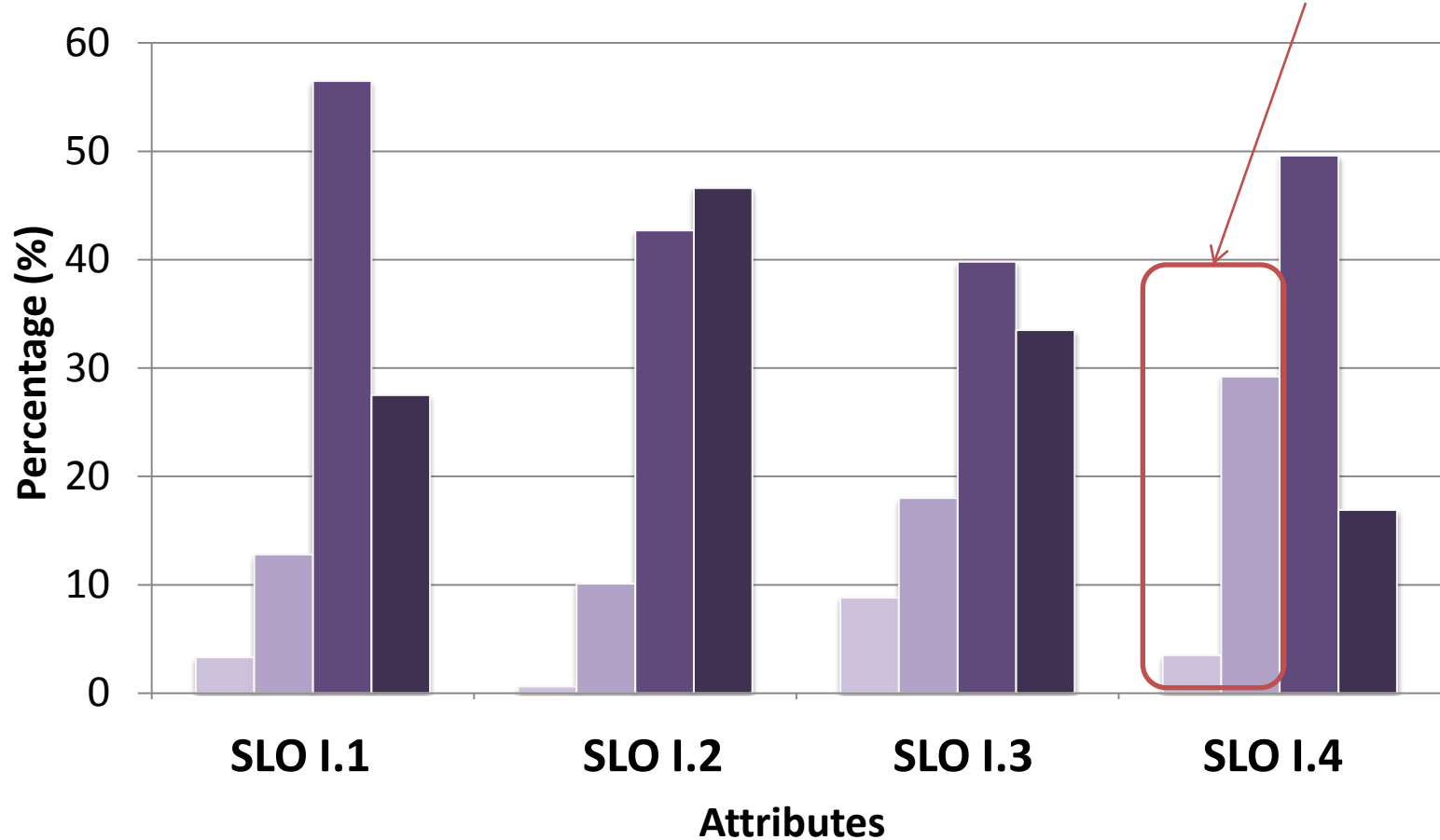
As a team describe your solution to your design problem using the template described below. **Ensure you review the grading rubric at the end of this document.**

	0-3 (not demonstrated)	4 (marginal)	5-6 (meets expectations)	7-8 (outstanding)	Mark
Problem definition	No definition, or not useful for determining project plan.	Repeats project description as presented by client or course	Accurately identifies the presented problem; constraints and requirements identified	Thoroughly identifies and describes the presented problem incorporating broader factors and implications for stakeholders	/8
Information summary <i>(SLO I.2)</i>	Erroneous conclusions drawn; inappropriate quality or quantity of background information.	Sources summarized with minor misconceptions.	Summarizes and paraphrases appropriate sources accurately with appropriate citations	Multiple authoritative, objective, reliable sources used; cited and formatted properly	/8
Conceptual design solutions <i>(SLO II.2)</i>	No description of potential design solutions	Some critical considerations missed in generating potential design solutions	Produces a variety of potential design solutions suited to meet project objectives	Applies creative approaches to identify and develop alternative concepts	/8
Decision making <i>(SLO IV.2)</i>	No comparison/analysis of potential design solutions	Contrasts potential design solutions without analysis	Evaluates the degree to which design concept options meet project objectives	Uses technical knowledge, mathematical models, appropriate design tools and client/user feedback to select best solution	/8
Project Plan	Plan does not refer or map out a timeline for the project	Plan has a general outline of milestones with some reference to duration	Plan maps out project with clear scope, milestones and delegation appropriate to project stage.	Detailed layout (e.g. Gantt chart) with clear plan including consideration for how tasks depend on others and plans for readjustment	/8

USING THE DATA

STUDENT PERFORMANCE ON SLO

30% “marginal” or below



■ 1 - Not Demonstrated ■ 2 - Marginal ■ 3 - Meets Expectations ■ 4 - Outstanding

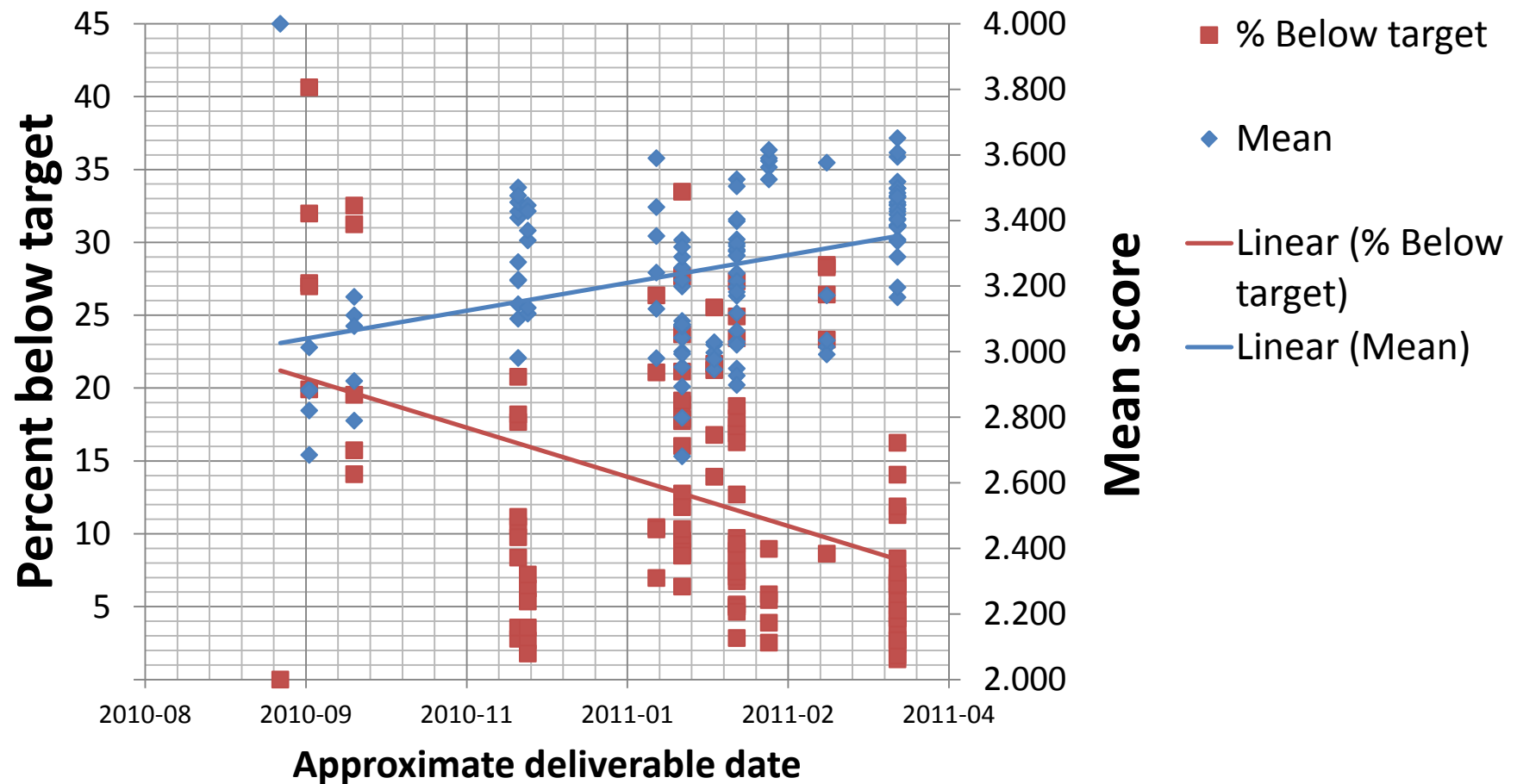
SLO I.1 Uses information effectively, ethically, and legally

SLO I.2 Identifies a specific learning need or knowledge gap.

SLO I.3 Identifies appropriate technical literature and other information sources to meet a need

SLO I.4 Critically evaluates the procured information for authority, currency, and objectivity.

DEMONSTRATING LEARNING



PROGRAM IMPROVEMENTS FOLLOWING EVALUATION OF DATA

Example: “As a result of evaluating program-wide outcomes, we are making the following changes for next year:

- Grader calibration: variation between graders was larger than desirable. As a result greater effort will go into grader training and calibration
- Problem analysis: greater focus will be placed on making an effective argument, and comparing the outcome of a solution to the originally defined problem definition.
- Design: the focus on safety and risk assessment is going to be expanded in the coming year, including focus on Occupational Health and Safety.
- Lifelong learning: additional emphasis is being placed on evaluating information and making an effective argument”



DISCUSSION AND QUESTIONS

FOR MORE INFORMATION PLEASE CONTACT
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REFERENCES

- 1) Ministry of Training, Colleges and Universities, 2011. *Ontario Quality Assurance Framework*, <http://www.tcu.gov.on.ca/pepg/programs/oqf/>
- 2) Institute for Evidence-Based Change, 2011 *Writing and Evaluating Student Learning Outcomes Ontario Tuning Process Workshop*, November 17th.
- 3) Lokhoff, Jenneke, et al. , eds. 2010 *A Tuning Guide to Formulating Degree Programme Profiles. Bilbao, Groningen and the Hague*.
- 4) Ministry of Training Colleges and Universities, 2009. *Ontario Qualifications Framework*, <http://www.tcu.gov.on.ca/eng/general/postsec/oqf.pdf>