Lawrence Technological University

Assessment Report

2011-2012 Academic Year

University Assessment Committee

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Executive Summary of 2011-2012 Assessment Report

Assessment of student educational outcomes at Lawrence Technological University is the responsibility of the University Assessment Committee (UAC). The function of the UAC is to advise the Director of Assessment, to plan and carry out assessment of student learning in the academic programs of the University, and to disseminate results of assessment activities to the University and the general public. Committee membership typically accounts for the equivalent of three academic hours of service to the University.

The UAC is chaired by the Director of Assessment (who is a faculty member appointed by the Provost), one member from each academic department, and the Provost (*ex officio*), the Associate Provost and the Coordinator of Institutional Research and Assessment (as non-voting members).

The UAC meets regularly during the academic year (usually 90-minute bi-weekly meetings) to discuss assessment methodology best practices in each program. These meeting help to ensure the vitality of assessment within individual programs. The UAC meets for annual semester planning retreats. The UAC meets with all the University full time faculty, department chairs, program directors and College Deans during the annual University Assessment Day.

All UAC meeting minutes and associated assessment materials are stored on the university learning management system.

Similar to the previous year, the 2011-2012 University Assessment Committee (UAC) spent a significant amount of effort on policies and procedures based on the new University Educational Goal and supporting Undergraduate and Graduate Learning Outcomes. In addition, the committee adopted a Mission Statement (section 1.a) that describes the function of the committee. The UAC initiated the process of establishing a new assessment cycle for the Undergraduate Educational Outcomes (attached) and evaluating appropriate assessment tools. The consensus of the committee is that the Discipline Specific Knowledge group and Professional Ethics outcome should be assessed at the program level, the Critical Thinking outcome group by appropriate programs in the College of Arts and Sciences on behalf of the University, and the Leadership and Teamwork outcomes using the methods already in place. Specifically, UAC subcommittees were formed to discuss the assessment of sustainability, professional ethics, graphical communication, and reading. The findings of those subcommittees are going to be presented at the 2012 Assessment Day. There was also significant discussion about assessment of graduate outcomes with a majority of student learning assessment going to occur at the graduate program level. Since the university wide Graduate Learning Outcomes are new, a final plan for formal assessment and reporting mechanisms across all graduate degree granting programs was debated this year and will be in place for 2012- 2013.

This report contains the 2011 Assessment Day presentations (which close-the-loop on the previous year assessment activities), and annual reports from programs for the 2011-2012 academic year. Each program report describes assessment and loop closing activities for the academic year, and assessment plans for the next academic year.

Assessment Committee Mission Statement

April 11, 2012 – Voted on by UAC

The University Faculty Handbook describes the role of the University Assessment Committee in section 6.2.8.

> *6.2.8. Assessment Committee*
>
> *The Assessment Committee coordinates policy and procedures related to both college and University assessment programs. The committee's principal responsibility is to promote improvements in learning through implementation of the University's plan for academic assessment.*
>
> *The committee is advisory to the Deans' Council, and its members and chairperson are appointed by the Provost.*

In order to clarify and to codify this institutional role, the University Assessment Committee adopts the following mission statement.

> The University Assessment Committee's functions are:
>
> - to advise the Director of Assessment and the Office of the Provost on matters related to the assessment of student learning;
> - to devise, to coordinate and to execute the University's assessment plans for its undergraduate and graduate learning outcomes;
> - to supervise and to coordinate assessment activities within departments in order to ensure that all academic programs are comparably assessed and continuously improve as a result of assessment;
> - to plan and to execute University Assessment Day activities;
> - to review and to revise periodically the University Educational Goals and Outcomes;
> - to facilitate communication about assessment initiatives and issues among departments, and between departments and the Office of the Provost.
>
> The University Assessment Committee's mission can be modified by the committee to ensure continuous improvement and ownership of assessment processes by faculty and administrators.

Assessment Committee Membership Rules

Membership Composition

The Assessment Committee is made up of the following individuals:

The Director of Assessment (Chair, faculty representative)
One faculty representative from each academic department.
The Provost, *ex officio* and non-voting
The Associate Provost, *ex officio* and non-voting
The Director of Institutional Research and Academic Planning, *ex officio* and non-voting
The Director of eLearning Services, *ex officio* and non-voting
One representative from any other academic program as the Dean of the appropriate College and/or Provost direct.

Chairperson

The Chairperson of the Assessment Committee is the University's Director of Assessment. He/she is a faculty member appointed by the Provost for a three year term. The term can be extended if mutually agreed upon by the Chair and the Provost.

Committee Members

(1) Each department, and each other program designated by the Provost, names its own representative.
(2) Each department or unit representative serves for a term of three years. In the event of a vacancy during a term, the department or unit will name a representative to serve the unexpired part of the regular term.
(3) Continuous membership as a department or unit representative is limited to two regular terms plus up to two semesters' service in an unexpired term before the first regular term. A member who becomes ineligible because of this limit remains ineligible for three years unless the Provost decides that the department or unit lacks sufficient faculty for a normal rotation.
(4) Renewed terms start in August of each year.
(5) Members will serve 3 years in staggered terms.

The Chairperson will publish a schedule of expirations of terms in force at the time of adoption of these by-laws.

Rules of Order

(1) A two-thirds majority vote of the voting members of the Assessment Committee is required to change any of the membership rules once this proposal is approved.
(2) Robert's Rules of Order will be followed in other details that may not have been mentioned in the membership rules.

UAC Membership 2011-2012 Academic Year

Chair and Director of Assessment	Donald Carpenter
College of Architecture and Design	
Architecture	Ashraf Ragheb
Art and Design	Keith Nagara
College of Arts and Sciences	
Humanities, Social Sciences, and Communication	Jason Barrett
Mathematics and Computer Science	Chris Cartwright
Natural Sciences	Nicole Villeneuve
College of Engineering	
Biomedical Engineering	Yawen Li
Civil Engineering	John Tocco
Electrical and Computer Engineering	Philip Olivier
Engineering Technology	Sabah Abro
Mechanical Engineering	Andrew Gerhart
College of Management	
DBA, DMIT, MBA, MSIS, MSOM, BSIT	Srikant Raghavan
Ex-Officio Members	
Associate Provost	Alan McCord
Coordinator, Institutional Research and Assessment	Mary Thomas
eLearning Services	Richard Bush

UAC Membership 2011-2012 Service and Rotation

Member		Years Served	Year Started	Year Ends
Chair and Director of Assessment	Donald Carpenter	3	2009-2010	2011-2012
College of Architecture and Design				
Architecture	Ashraf Ragheb	3	2009-2010	2011-2012
Art and Design	Keith Nagara	3	2009-2010	2011-2012
College of Arts and Sciences				
HSSC	Jason Barrett	4	2008-2009	2012-2013
Mathematics and Computer Science	Chris Cartwright	2	2010-2011	2012-2013
Natural Sciences	Nicole Villeneuve	4	2008-2009	2010-2011
College of Engineering				
Biomedical Engineering	Yawen Li	2	2010-2011	2012-2013
Civil Engineering	John Tocco	4	2008-2009	2010-2011
Electrical and Computer Engineering	Philip Olivier	2	2010-2011	2012-2013
Engineering Technology	Sabah Abro	2	2010-2011	2012-2013
Mechanical Engineering	Andrew Gerhart	1	2011-2012	2013-2014
College of Management				
BSBA, BSIT, MBA, MSIT	Srikant Raghavan	1	2011-2012	2013-2014

University Educational Goal

The University mission is to develop leaders through innovative and agile programs embracing theory and practice.

The University vision is to be a preeminent university producing leaders with an entrepreneurial spirit and global view.

The University provides a student-centered comprehensive educational experience with technologically focused professional programs.

The University's undergraduate and graduate learning outcomes foster students' intellectual development into knowledgeable professionals, critical thinkers, and ethical leaders.

Undergraduate Learning Outcomes

Discipline-Specific Knowledge

KNOWLEDGE IN DISCIPLINE

"LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems."

TECHNOLOGY

"LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines."

SUSTAINABILITY

"LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities."

Critical Thinking

COMMUNICATION

"LTU graduates will demonstrate professional standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation."

MATHEMATICS

"LTU graduates will demonstrate their mastery of mathematics to solve real-world problems by isolating relevant factors, constructing abstract models, communicating precisely and reasoning logically."

READING

"LTU graduates will demonstrate proficiency in reading and interpreting complex, intellectually challenging texts and evaluating their analytical architecture from an independent point of view."

SCIENTIFIC ANALYSIS

"LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields."

Leadership & Ethics

LEADERSHIP

"LTU graduates will demonstrate civic, team, and global leadership skills by identifying a personal leadership philosophy, exhibiting entrepreneurial skills, and becoming agents of positive change."

TEAMWORK

"LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions."

PROFESSIONAL ETHICS

"LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions."

Graduate Learning Outcomes

Discipline-Specific Knowledge	Critical Thinking	Leadership & Ethics
"LTU graduates will apply and, in accordance with their course of study, develop advanced knowledge within their discipline."	"LTU graduates will evaluate scholarly literature and, in accordance with their course of study, contribute to the literature."	"LTU graduates will develop a broad perspective on professional issues, such as lifelong learning, sustainability, leadership, and ethics."
"LTU graduates will analyze and interpret information and implement decisions using the latest techniques and technologies."	"LTU graduates will communicate effectively using written, oral, graphical, and digital formats."	

2011-2012 Undergraduate Assessment Plan

(Working Draft, 1/1/11) For first assessment cycle, 2011-2012 – to be reviewed at the end of the cycle

University Undergraduate Learning Outcomes	Assessment Strategy	Responsible Academic Unit	Class Level of Assessment	Administration Timeline	Loop-Closing Timeline
DISCIPLINE-SPECIFIC KNOWLEDGE					
KNOWLEDGE IN DISCIPLINE "LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems."	1. To be developed and implemented by Programs	1. All Programs	1. To be determined by Programs	1. Annual	1. Annual
TECHNOLOGY "LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines."	1. To be developed and implemented by Programs	1. All Programs	1. To be determined by Programs	1. Annual	1. Annual
SUSTAINABILITY "LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities."					

University Undergraduate Learning Outcomes	Assessment Strategy	Responsible Academic Unit	Class Level of Assessment	Administration Timeline	Loop-Closing Timeline
CRITICAL THINKING					
COMMUNICATION "LTU graduates will demonstrate professional standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation."	1) Written: a) HSSC Core Curriculum writing assessment b) WPE audit 2) Oral: UAC oral presentation assessment 3) Graphical: Not yet determined	1) HSSC 2) Univ. Assessment Committee 3) Not yet determined	1) a) 1st & 2nd year Core courses b) prereq to SSC/LLT 3000-4000 level courses 2) 4th year capstone projects 3) Not yet determined	1) Annual 2) Every 3 years (sp 13; sp 16) 3) Not yet determined	1) Every 3 years (f 11; f 14; etc.) 2) Every 3years (f 13; f16) 3) TBD
MATHEMATICS "LTU graduates will demonstrate their mastery of mathematics to solve real-world problems by isolating relevant factors, constructing abstract models, communicating precisely, and reasoning logically."	1) Common final exams in Math courses required for the Major: Calc2, Math Analysis 2, Geometry in Art, Technical Calc 2) Calc 2 PBL Assignments (for real-world problems)	1) Math/CS Dept. 2) Math/CS Dept.	1) 1st and 2nd year core courses 2) 2nd year courses	1) Semester 2) Semester	1) Every 2 years (f11, etc.) 2) Every 2 years (f1, etc.)
READING "LTU graduates will demonstrate proficiency in reading and interpreting complex, intellectually challenging texts and evaluating their analytical architecture from an independent point of view."	Core Curriculum Diagnostic Exam	HSSC	1st & 2nd year Core courses	Annual /ongoing	Every 3 years (f15)

University Undergraduate Learning Outcomes	Assessment Strategy	Responsible Academic Unit	Class Level of Assessment	Administration Timeline	Loop-Closing Timeline
SCIENTIFIC ANALYSIS "LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields."	1. Direct assessment of student exams, assignments and/or projects (all physics courses).	1. Natural Sciences	1. All	Semester	Annual
LEADERSHIP & ETHICS					
LEADERSHIP "LTU graduates will demonstrate civic, team, and global leadership skills by identifying a personal leadership philosophy, exhibiting entrepreneurial skills, and becoming agents of positive change."	1. Leadership Survey 2. Portfolio Evaluation 3. Impact Report	1. Leadership Program Office and Leadership Assessment Team 2. Leadership Program Office and LCIC 3. Leadership Program Office and LCIC	1. All 2. 4th Year 3. All	1. Semester 2. Semester 3. Semester	1. Every Odd Year (F11, F13, etc.) 2. Every Even Year (F12, F14, etc.) 3. Every Even Year (same)
TEAMWORK "LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions."	1. Teamwork survey	1. University Assessment Committee for Administration (Programs for Corrective Actions)	1. All	1. Every Four Years (2010; 2014; etc.)	1. Every Four Years (2011; 2015, etc.
PROFESSIONAL ETHICS "LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions."					

Assessment Day 2011
Friday, September 16, 2011
Lear Auditorium – T429
AGENDA

Continental Breakfast		8:30 – 9:00
Welcome	*Maria Vaz, Provost*	9:00 – 9:05
Introduction	*Maria Vaz, Provost* *Donald Carpenter, Director of Assessment*	9:05 – 9:15
Overview of University Assessment	*Donald Carpenter, Director of Assessment* *Alan McCord, Associate Provost*	9:15 – 9:30
Assessment Updates	*Critical Thinking: Donald Carpenter, Mary Thomas* *Mathematics: Christopher Cartwright* *NSSE and Leadership: Andrew Gerhart, John Tocco*	9:30 – 10:30
	Break	10:30 – 10:45
Undergraduate Educational Outcomes	*Jason Barrett*	10:45 – 11:30
Graduate Educational Outcomes	*John Tocco*	11:30 – 11:45
Setting the Stage for the Afternoon Sessions	*Donald Carpenter*	11:44 – 12:00
Lunch - Cafeteria		12:00 – 1:00
Departmental Closing the Loop Sessions		1:00 – 3:00
Departmental Meetings		3:00 – 4:00
Adjournment		

Lawrence Technological University

ASSESSMENT DAY 2011

September 16, 2011

Where

UTLC - T429

&

Cafeteria

Sponsored by

University Assessment Committee

Closing the Loop: Meaningful Assessment Leads to Meaningful Action

September 16, 2011
8:30 a.m. – 4:00 p.m.

Continuous improvement for academic programs is achieved in a three-step process, commonly referred to as "Closing the Loop:" *Assessment* is the gathering of data and *evaluation* is the analyzing of the data. These two steps lead to *implementation* of an action plan. All too often, however, programs gather great amounts of data without ever taking the time to reflect on the meaning of the information, or to implement an action plan to improve the program.

Assessment Day 2011 will focus on completing loop closing activities through the creation of a specific action plan based on the new university educational outcomes. The event begins in T429 with a series of updates and presentations followed by lunch. The afternoon session includes departmental meetings that focus on loop closing activities and a "Closing the Loop" reporting session in T429.

Agenda

I. Assessment Presentations
When: 8:30 am – 12:00 pm
Where: T429 Lear Auditorium
Continental breakfast provided

II. Lunch in Cafeteria
12:00 pm – 1:00 pm

III. Department Breakout Sessions
When: 1:00 pm – 3:00 pm Where:
To Be Announced

IV. Reporting Session
When: 3:00 pm – 4:00 pm
Where: T429 Lear Auditorium

No RSVP Required for Full-Time LTU Faculty

Closing the Loop: Meaningful Assessment Leads to Meaningful Action

Assessment Day 2011

September 16, 2011

Agenda

- **Assessment Presentations**
  - 9:00 am – 12:00 pm
- **Lunch in Cafeteria**
  - 12:00 pm – 1:00 pm
- **Department Breakout Sessions**
  - 1:00 pm – 3:00 pm
  - Where: Various Locations – Department Representative
- **Reporting Session**
  - 3:00 pm – 4:00 pm
  - Where: T429 Lear Auditorium

2

AM Schedule of Events

- **9:00 – 9:15 Welcome & Introductions**
  Maria Vaz, Provost & Donald Carpenter, Director of Assessment
- **9:15 – 9:30 Overview of University Assessment**
  Donald Carpenter & Alan McCord
- **9:30 – 10:30 Assessment Updates**
  Critical Thinking – Donald Carpenter & Mary Thomas
  Mathematics – Christopher Cartwright
  NSSE and Leadership – Andrew Gerhart & John Tocco
- **10:30 – 10:45 Break**
- **10:45 – 11:30 Undergraduate Educational Outcomes**
  Jason Barrett
- **11:30 – 11:45 Graduate Educational Outcomes**
  John Tocco
- **11:45 – 12:00 Closing the Loop**
  Donald Carpenter

Assessment Committee

- ***College of Arts and Science***
  - Christopher Cartwright
  - Nicole Villeneuve
  - Jason Barrett
- ***College of Engineering***
  - John Tocco
  - Philip Olivier
  - Sabah Abro
  - Andrew Gerhart
- ***College of Management***
  - Srikant Raghavan
- ***College of Architecture & Design***
  - Ashraf Ragheb
  - Keith Nagara
- ***Ex-Officio Members***
  - Alan McCord, Associate Provost
  - Mary Thomas, Institutional Research and Academic Planning
  - Richard Bush, eLearning Services

Overview of University Assessment

- Five Educational Goal Groups for the University (Seventeen Objectives)
  - Group I: Application of Advanced Knowledge
  - Group II: Fundamental Cognitive Skills and Abilities
  - Group III: Leadership
  - Group IV: Teamwork
  - Group V: Character Education

- Discipline - Specific Knowledge
- Critical Thinking
- Leadership & Ethics

2010 – 2011

- Common Assessment Plans and Reports
- Department Closing the Loop and Action Plans
- NCA-HLC in October of 2011
- Critical Thinking (administering ACT-CAAP)
- Investigated Assessment Strategies for Fundamental Cognitive Skills
- Assessment Character Education
- Revised Univ. Educational Goals (Undergraduate and Graduate Goals)

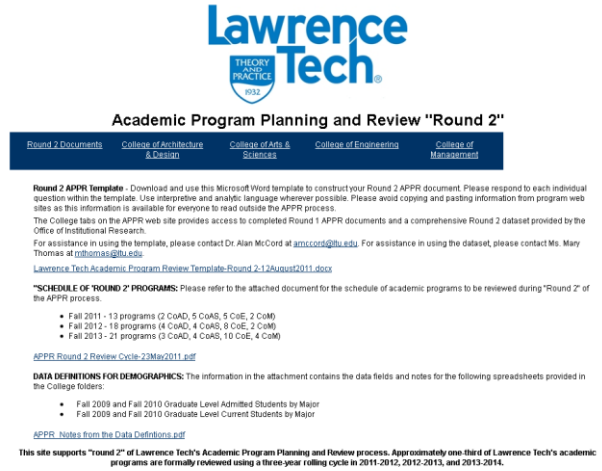
APPR Update

Academic Program Planning & Review

- Established in 2009 to support 2010 HLC visit
- Round 1 reviews completed in Spring 2011
- Round 2 now underway
  - **Fall 2011 / Fall 2012 / Fall 2013 reviews**
  - **Documents due at end of Fall semester**
  - **Summary presentations at Provost's Office visits**
  - **Follow-up conversations in Spring semester**
- All information available on appr.ltu.edu

APPR 2 – Fall 2011 Programs

COAD	Master of Interior Design
CAS	Bachelor of Science in Humanities Bachelor of Science in Mathematics Bachelor of Science in Physics (multiple programs) Master of Science Education Master of Technical and Professional Communication
COE	Bachelor of Science in Computer Engineering Bachelor of Science in Construction Management Bachelor of Science in Electrical Engineering Master of Engineering Manufacturing Systems Master of Science in Automotive Engineering
COM	Bachelor of Science in Business Management Bachelor of Science in Information Technology



Academic Program Planning and Review "Round 2"

Round 2 Documents | College of Architecture & Design | College of Arts & Sciences | College of Engineering | College of Management

Round 2 APPR Template - Download and use this Microsoft Word template to construct your Round 2 APPR document. Please respond to each individual question within the template. Use interpretive and analytic language wherever possible. Please avoid copying and pasting information from program web sites as this information is available for everyone to read outside the APPR process.

The College tabs on the APPR web site provides access to completed Round 1 APPR documents and a comprehensive Round 2 dataset provided by the Office of Institutional Research.

For assistance in using the template, please contact Dr. Alan McCord at amccord@ltu.edu. For assistance in using the dataset, please contact Ms. Mary Thomas at mthomas@ltu.edu.

Lawrence Tech Academic Program Review Template-Round 2-12August2011.docx

"SCHEDULE OF 'ROUND 2' PROGRAMS: Please refer to the attached document for the schedule of academic programs to be reviewed during "Round 2" of the APPR process.

- Fall 2011 - 13 programs (2 CoAD, 5 CoAS, 5 CoE, 2 CoM)
- Fall 2012 - 18 programs (4 CoAD, 4 CoAS, 8 CoE, 2 CoM)
- Fall 2013 - 21 programs (3 CoAD, 4 CoAS, 10 CoE, 4 CoM)

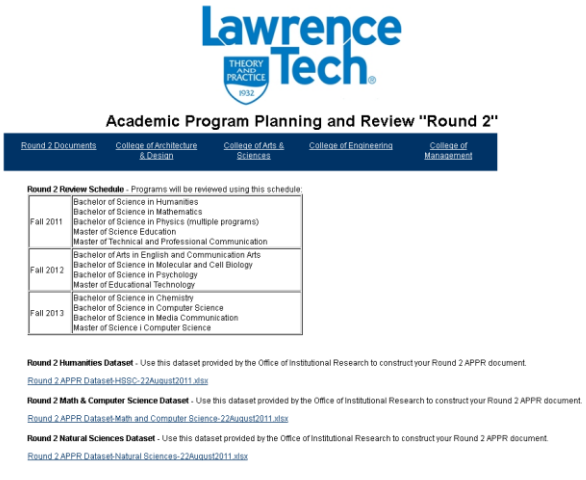
APPR Round 2 Review Cycle-23May2011.pdf

DATA DEFINITIONS FOR DEMOGRAPHICS: The information in the attachment contains the data fields and notes for the following spreadsheets provided in the College folders:

- Fall 2009 and Fall 2010 Graduate Level Admitted Students by Major
- Fall 2009 and Fall 2010 Graduate Level Current Students by Major

APPR_Notes from the Data Definitions.pdf

This site supports "round 2" of Lawrence Tech's Academic Program Planning and Review process. Approximately one-third of Lawrence Tech's academic programs are formally reviewed using a three-year rolling cycle in 2011-2012, 2012-2013, and 2013-2014.



Academic Program Planning and Review "Round 2"

Round 2 Documents | College of Architecture & Design | College of Arts & Sciences | College of Engineering | College of Management

Round 2 Review Schedule - Programs will be reviewed using this schedule:

Fall 2011	Bachelor of Science in Humanities Bachelor of Science in Mathematics Bachelor of Science in Physics (multiple programs) Master of Science Education Master of Technical and Professional Communication
Fall 2012	Bachelor of Arts in English and Communication Arts Bachelor of Science in Molecular and Cell Biology Bachelor of Science in Psychology Master of Educational Technology
Fall 2013	Bachelor of Science in Chemistry Bachelor of Science in Computer Science Bachelor of Science in Media Communication Master of Science i Computer Science

Round 2 Humanities Dataset - Use this dataset provided by the Office of Institutional Research to construct your Round 2 APPR document.

Round 2 APPR Dataset-HSSC-22August2011.xlsx

Round 2 Math & Computer Science Dataset - Use this dataset provided by the Office of Institutional Research to construct your Round 2 APPR document.

Round 2 APPR Dataset-Math and Computer Science-22August2011.xlsx

Round 2 Natural Sciences Dataset - Use this dataset provided by the Office of Institutional Research to construct your Round 2 APPR document.

Round 2 APPR Dataset-Natural Sciences-22August2011.xlsx

Excel Dataset Tabs

- D1.1 – Admitted Undergrad Students
- D1.2 – Admitted Graduate Students
- D1.3 – Undergrad Demographics
- D1.4 – Graduate Demographics
- D2.1 – Headcounts
- D2.2 – Credit Hours Taken
- D4.1 – Number of Graduates
- D4.2 – Undergrad Time to Completion
- D4.3 – Graduate Time to Completion
- D5.1 – Freshman/Sophomore Retention
- D5.2 – Graduate First Year/Second Year Retention
- E1 – Number of Faculty (full-time and adjuncts)
- E2 – Credit Hours Taught (by College and Department)

For More Information

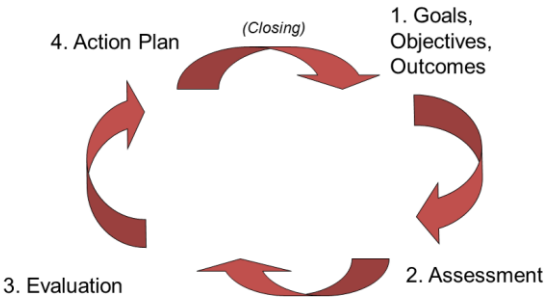
- About the process
  - Al McCord amccord@ltu.edu or 2411
- About the datasets
  - Al McCord amccord@ltu.edu or 2411

  or
  - Mary Thomas mthomas@ltu.edu or 2406

Assessment Updates

Closing the Loop

The Assessment Loop



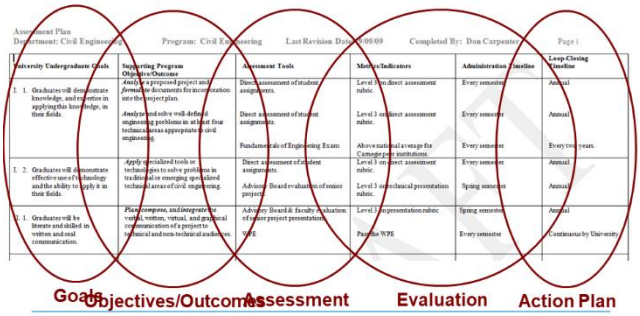
Action Plan

- Defining the Action Plan
- Implementation of the Action Plan
  - Who is responsible? Who will support?
  - What expertise will action plan take?
  - What funding (if any) is needed?
  - How will we get what we need?
- Timeline for Implementing the Plan

Closing the loop: Back to Step #1

- What do the findings tell us now?
- Did our "action plan" improve student learning?
- What's the next step?
- What have we learned about our assessment process? What can be improved?

Assessment Planning Matrix



Assessment Plan
Department: Civil Engineering Program: Civil Engineering Last Revision Date: 10/05/09 Completed By: Don Carpenter Page 1

University Undergraduate Goals	Supporting Program Objective/Outcome	Assessment Tools	Metrics/Indicators	Administration Timeline	Loop-Closing Timeline
1. 1. Graduates will demonstrate knowledge, and expertise in applying this knowledge, in their fields.	*Analyze* a proposed project and *formulate* documents for incorporation into the project plan.	Direct assessment of student assignments.	Level 3 on direct assessment rubric.	Every semester	Annual
	Analyze and solve well-defined engineering problems in at least four technical areas appropriate to civil engineering.	Direct assessment of student assignments.	Level 3 on direct assessment rubric.	Every semester	Annual
		Fundamentals of Engineering Exam	Above national average for Carnegie peer institutions	Every semester	Every two years.
1. 2. Graduates will demonstrate effective use of technology and the ability to apply it in their fields.	*Apply* specialized tools or technologies to solve problems in traditional or emerging specialized technical areas of civil engineering.	Direct assessment of student assignments.	Level 3 on direct assessment rubric.	Every semester	Annual
		Advisory Board evaluation of senior projects.	Level 3 on technical presentation rubric.	Spring semester	Annual
1. 3. Graduates will be literate and skilled in written and oral communication.	*Plan, compose,* and *integrate* in verbal, written, virtual, and graphical communication of a project to technical and non-technical audiences.	Advisory Board & faculty evaluation of senior project presentation.	Level 3 on presentation rubric	Spring semester	Annual
		NCEE	Pass the WPE	Every semester	Continuous by University

Goals Objectives/Outcomes Assessment Evaluation Action Plan

Lawrence Tech

Program Name
Closing the Loop—2010/2011

Questions to address:

- Objective: What Program Objective/Outcome are you considering?
- Assessment: What assessment tool(s) was (or will be) applied, by whom, and when?
- Evaluation: What results were (or will be) analyzed?
- Actions: What actions did you take based on these results? AND/OR What actions will you take based on these results?
- Responsibility: Who is responsible for implementing the plan or tracking the results?

Lawrence Tech

Program Name
Closing the Loop—2010/2011

- Objective:
- Assessment:
- Evaluation:
- Action:
- Responsibility:

Lawrence Tech

Program Name
Closing the Loop—2009/2010

Questions to address:

- Objective: What Program Objective/Outcome are you considering?
- Assessment: What assessment tool(s) was applied, by whom, and when?
- Evaluation: What results were analyzed and what did they tell you?
- Actions: What actions did you take based on these results? AND/OR What actions will you take based on these results?
- Responsibility: Who is responsible for implementing the plan or tracking the results?

Lawrence Tech

Example = Civil Engineering
Closing the Loop—2009/2010

- Objective: Communication = Plan, compose and integrate the verbal, written, virtual and graphical communication of a project to technical and non-technical audiences.
- Assessment: A grading rubric was specifically designed for the capstone poster session and completed by the faculty and the advisory board (professionals) separately.

Lawrence Tech

Example = Civil Engineering
Closing the Loop—2009/2010

- Evaluation: Amount of content on posters was inconsistent between teams, graphics were poor in some cases, and it was unclear to the students and evaluators whether additional project components on display should be a part of the evaluation.
- Actions: Need to clarify expectations of the poster session and have a poster design tutorial and/or workshop in 2011.
- Responsibility: Luis Mata, Senior Design Project Coordinator

Lawrence Tech

Now What?

- Lunch
- Program Breakouts
  - Program Objectives/Outcomes
  - Sustainability or Professional Ethics
- 3pm – 4pm there will be an information session (5 minutes per department)
- Questions?
  - Donald Carpenter (dcarpente@ltu.edu)
  - Alan McCord (amccord@ltu.edu)
  - UAC Representative

Lawrence Tech

LTU Assessment Day
September 16, 2011

Critical Thinking Assessment

Donald Carpenter & Mary Thomas

Purpose

- University Educational Goals and Assessment Strategies:
  - II.5 Graduates will demonstrate creativity and critical thinking, as well as analytical and problem solving skills consistent with the technological focus of the University.
- Five-Year Assessment Cycle
  - Fall 2006-07 Creativity and Critical Thinking

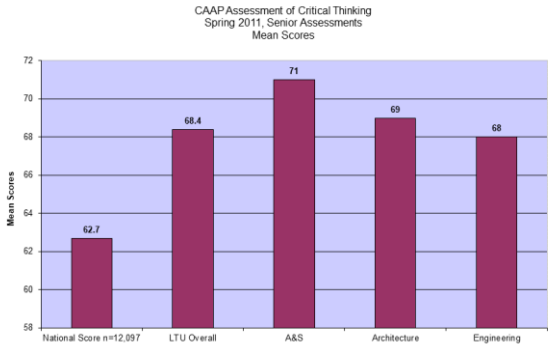
ACT – CAAP Critical Thinking Test

- 32-item, 40-minute test, Multiple Choice
- Measures students' skills in clarifying, analyzing, evaluating, and extending arguments based on reading comprehension.
  - Four passages that are representative of the kinds of issues commonly encountered in a postsecondary curriculum.
  - Presents a series of sub-arguments in support of a more general conclusion or conclusions.
- Presented in a variety of formats, including case studies, debates, dialogues, overlapping positions, statistical arguments, experimental results, or editorials.
- **Certificate of Merit if Above National Norms**

Method

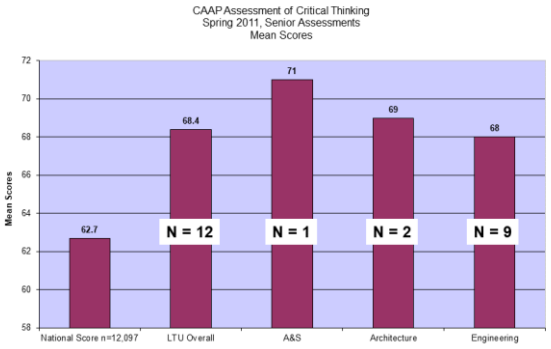
- Goal - assess undergrad students in all colleges
- 2007 Sample size: 210 Seniors
  - Attempted to recruit 50 students from each college for statistical significance – voluntary and up to discretion of colleges for recruitment
  - 144 completed and 84 Certificates Awared
- 100 Freshmen Discovery Days – September 2007
- Longitudinal Investigation!
- 2011 - 51 were still enrolled!
  - Recruitment Email – Two Survey Administrations
  - Graduation Fee Waiver ($100) or $30 Gift Card

Results by College - 2011



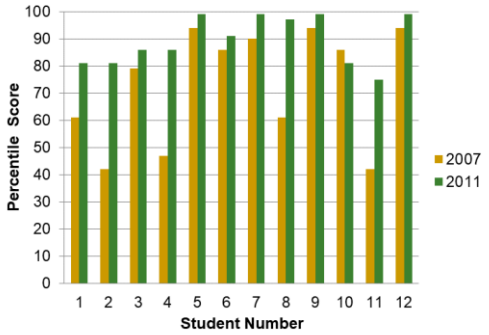
100% of LTU Students Received Certificates!

Results by College - 2011



100% of LTU Students Received Certificates!

Student Comparison



Questions?

Mathematics/Computer Science Assessment Presentation

Assessment Day 2011

Assessment of LTU undergraduate mathematics educational goal

Christopher Cartwright
Assessment Coordinator, Math/CS

Timeline of mathematics assessment

- 2004 to 2008
  - Iterations of Calculus 2 common final (day sections)
- Fall 2009 to present
  - Mature versions of Calc 2 common final (day sections)
- Fall 2011
  - Math Analysis 2 common final under development
  - Geometry in Art common "final" under development
  - Technical Calculus common final under development

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LTU Educational Goals (applicable Fall 2009 to Spring 2011)

- Goal Group II – Fundamental Cognitive Skills and Abilities
  - .....
  - II.4 Graduates will demonstrate competence in mathematics and in the use of the scientific method and laboratory technique
  - .....

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Geometry in Art Common Questions on three one-hour exams – spring 2011 and spring 2012

- Tilings and rigid motions (3 questions)
- Symmetry and classification (6 questions)
- Polyhedra (3 questions)
- Golden ratio and rectangle (2 questions)
- Fibonacci numbers and ratios (2 questions)
- One-point perspective (2 questions)

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MA2 Common Final (to be implemented 2012)

- Derivatives (4 questions)
- Applications of Derivatives (5 questions)
- Integrals (4 questions)
- Applications of integrals (2 questions)
- Limits (2 questions)

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Calculus 2 Common Final 2009 to present

- Limits (2 questions)
- Derivatives (4 questions)
- Integrals (8 questions)
- Series convergence (4 questions)
- Taylor series (2 questions)

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Calculus 2 common final statistics

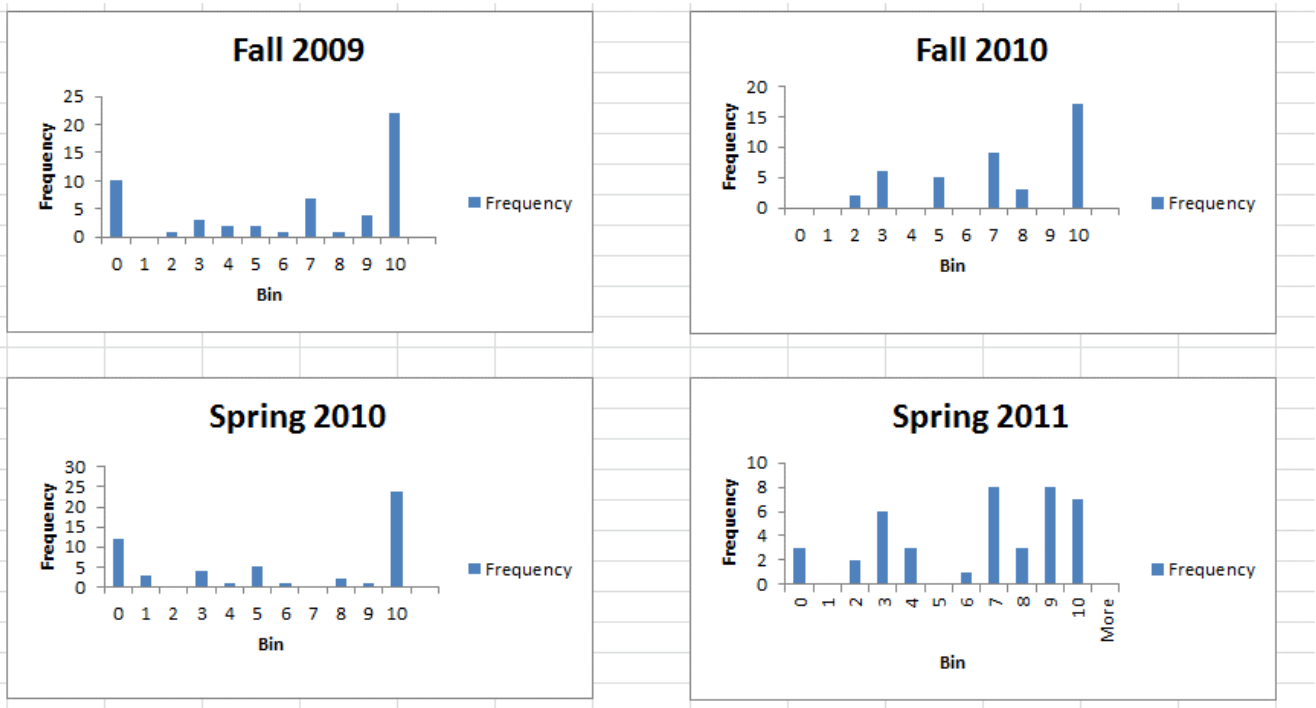
- Number of students
  - Fall 2009 53
  - Spring 2010 43
  - Fall 2010 42
  - Spring 2011 41

Calculus 2 common final results - partial snapshot of data collected

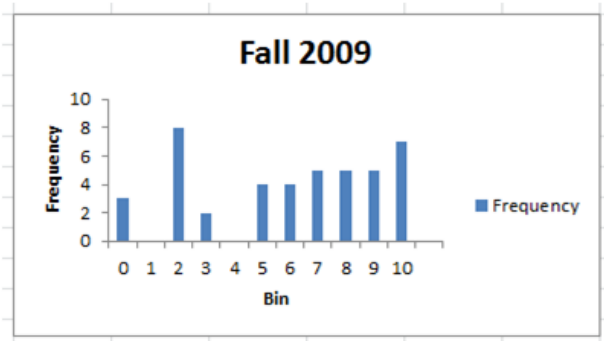
Fall 2009 MCS1414 Calculus 2 Instructor
Summary of scores on the common final exam

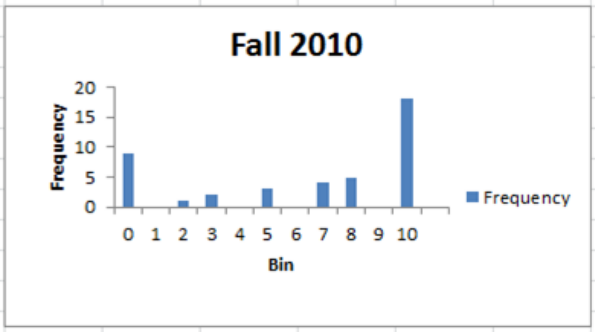
	Limits		Differentiation			Integration				
Problem	1a	1b	2a	2b	2c	3a	3b	3c	3d	3e
# pts	10	10	10	10	10	5	5	10	10	10
Name										
XXX	4	1	0	4	1	0	0	0	0	0
123	10	1	7	8	0	3	5	7	10	0
Ave.	8.25	3.95	8	7.1	5.8	3.65	4.35	8.05	6.95	3.85
Ave. %	0.825	0.395	0.8	0.71	0.58	0.73	0.87	0.805	0.695	0.385

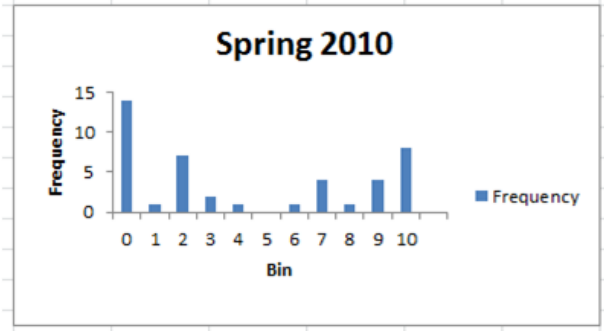
Calc 2 Trig Substitution results

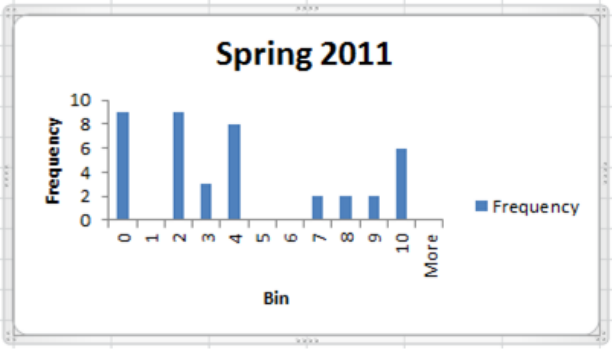


Calc 2 Trig subs plus complete the square results

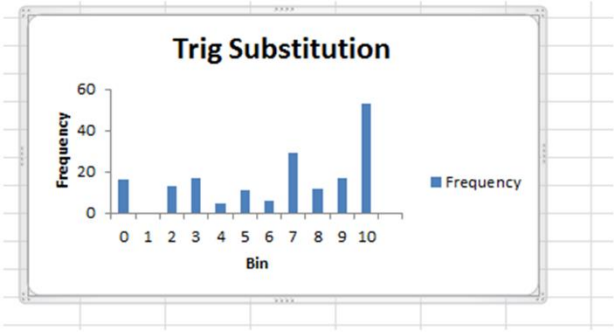




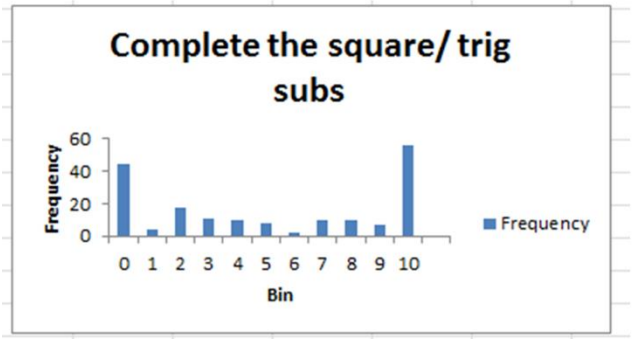




Calc 2 combined results
Fall 2009 to Spring 2011



Calc 2 combined results
Fall 2009 to Spring 2011



Possible metrics to measure competence in mathematics

- Competence in all five areas of Calc 2
  - At least 75% of all Calc 2 students are competent in ALL areas of Calc 2
- Competence in each area/subarea may use different criteria
  - At least 75% of Calc 2 students score 7 or better on Trig Substitution
    - only 62% in '09 to '11= NOT Competent in Trig Subs
  - At least 50% of Calc 2 students score 3 or better on Trig subs plus complete the square
    - 64% in '09 to '11 = Competent in Complete the square

Next steps: Calculus 2 assessment

- Beginning Fall 2011
  - Daytime and evening sections (=ALL sections)
  - Same number/type of problems each semester
  - Creation of a grading rubric (likely need a few iterations to standardize)

Next steps: MA2 assessment

- Beginning Fall 2011
  - Create a common final (likely need a few iterations)
  - Create a grading rubric (likely need a few iterations)
- Spring 2012
  - First implementation of common final
    - Daytime and evening sections

Next steps: Geom. In Art assessment

- Fall 2011
  - Identify common problems on the three hour exams
  - Create a grading rubric for these common problems
  - Analyze student performance on common problems from Spring 2011
- Spring 2012
  - Continue assessing common problems

Next steps: Technical Calc assessment

- Most semesters, there is only one section
- Fall 2011
  - Work on standardizing final from semester to semester (same number/type of questions)
  - Create a rubric for grading common final
- Spring 2012
  - Implementation of common final

Assessment Day 2011
Character Education

Goal Group V

- V. 1. Value of contributing to community and society
- V. 2. Opportunity to develop personal values as the foundation for integrity and ethics

Assessment Day 2011
Character Education

'07-08
- Identify where professional ethics was covered in the curriculum – no way to standardize ethics curriculum across professional programs.
- Institutional self-evaluation of importance of character education through a series of faculty focus groups and the Character Education Quality Standards (CEQS was never implemented).
- Evaluation of possible student surveys to assess ethical/moral development (none was administered).

'08-09
- '08-09: NSSE results come back, contain questions related to character/ethics – create possibility for a different approach.

'09-10
- '09-10: Character subcommittee re-formed…

Assessment Day 2011
Character Education

2009-2010 Charge to Subcommittee

Provide recommendations to Assessment Committee as to what measures might be necessary to assess Goal Group V including possible existing tools.

Assessment Day 2011
Character Education

National Survey of Student Engagement (NSSE)

V. 1. Relevant Questions
- Participated in a community-based project (e.g., service learning) as part of a regular course.
- Have you participated in community service or volunteer work or plan to before you graduate?
- To what extent has your experience at LTU contributed to your knowledge, skills, and personal development in contributing to the welfare of your community?

V. 2. Relevant Question
- To what extent has your experience at LTU contributed to your knowledge, skills, and personal development in developing a personal code of values and ethics?

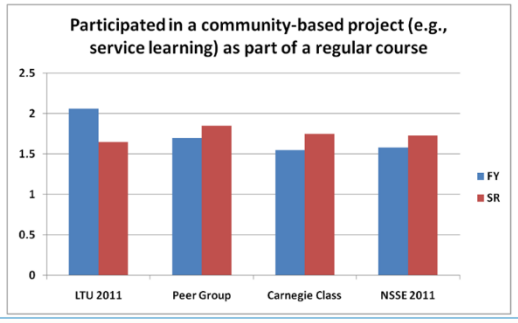
Assessment Day 2011
Character Education

Lawrence Tech Leadership Self-Perception Assessment Instrument

V. 1. Relevant Question
- I make time to participate in service/volunteer activities.

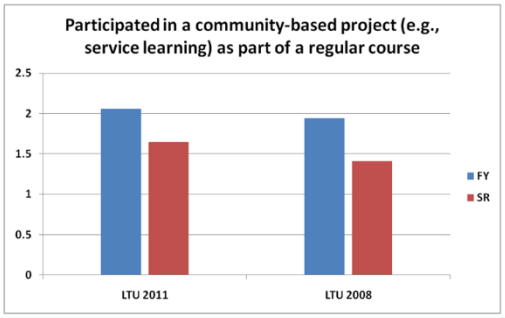
V. 2. Relevant Questions
- My decisions and actions align with my personal values
- I think and behave ethically when I'm in a leadership position.

Assessment Day 2011
Character Education V.1



(1=never, 4=very often)

Assessment Day 2011
Character Education V.1



(1=never, 4=very often)

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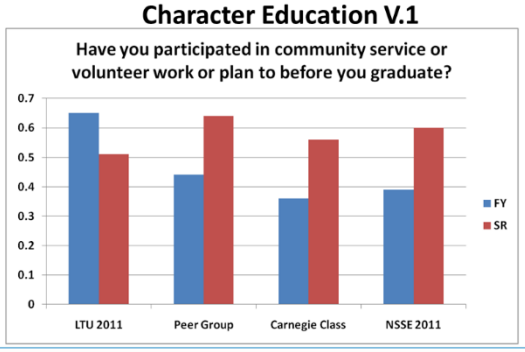
Assessment Day 2011
Character Education V.1



(proportion responding "Done")

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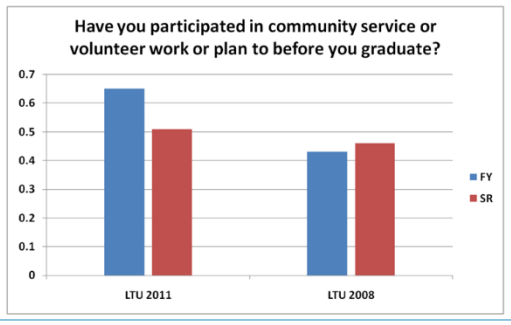
Assessment Day 2011
Character Education V.1



(proportion responding "Done")

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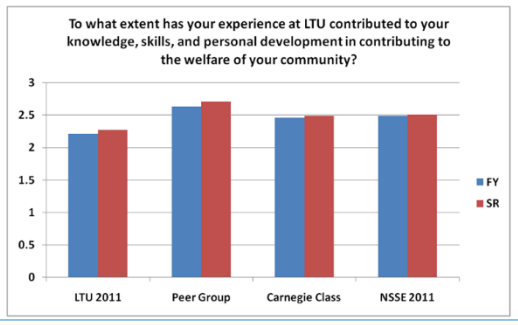
Assessment Day 2011
Character Education V.1



(1=very little, 4=very much)

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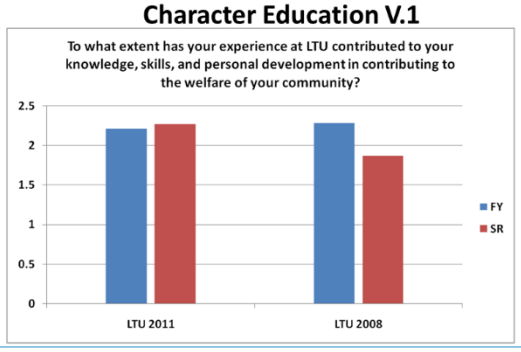
Assessment Day 2011
Character Education V.1



(1=very little, 4=very much)

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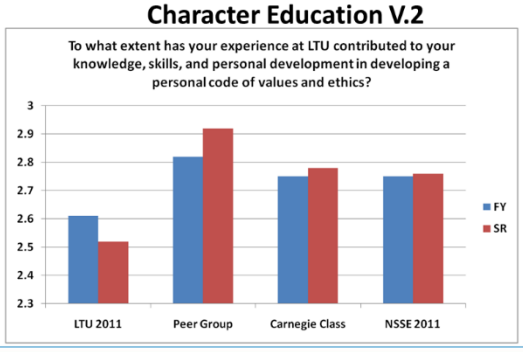
Assessment Day 2011
Character Education V.2



(1=very little, 4=very much)

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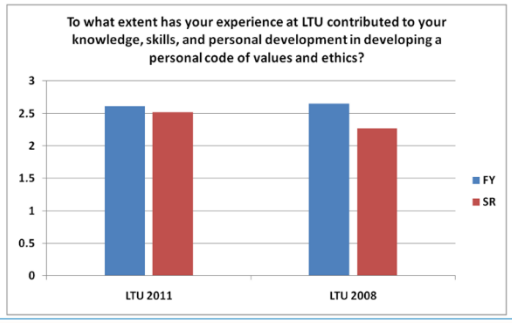
Assessment Day 2011

Character Education V.2



(1=very little, 4=very much)

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Assessment Day 2011

Character Education

Q9 and Q14: 1 = Almost Never, 5 = Almost Always
Q22: 1 = Strongly Disagree, 5 = Strongly Agree

	Mean		Standard deviation	
	pre	post	pre	post
9. I make time to participate in service/volunteer activities. [V.1]	3.33	3.61	0.94	1.03
22. My decisions and actions align with my personal values. [V.2]	2.69	3.29	0.79	0.84
14. I think and behave ethically when I'm in a leadership position. [V.2]	3.86	4.02	0.80	0.72

Differences between pre and post means are statistically significant at $p < 0.05$.
N=126

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Assessment Day 2011

Character Education → Leadership & Ethics

LEADERSHIP
"LTU graduates will demonstrate civic, team, and global leadership skills by identifying a personal leadership philosophy, exhibiting entrepreneurial skills, and becoming agents of positive change."

PROFESSIONAL ETHICS
"LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions."

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Assessment Day 2011

Graduate Educational Outcomes Subcommittee

Charge to Subcommittee

1) Determine whether common University graduate outcomes were desirable and practical;

2) If Yes to #1, develop a draft of common graduate educational outcomes.

Path to the Present

- Full committee charge to subcommittee
- Subcommittee review of all program graduate outcomes
- Subcommittee creates the initial draft of University graduate educational outcomes
- Initial draft forwarded to graduate directors for review and comment
- Subcommittee revises outcomes based on feedback
- 2nd draft reviewed and revised by full committee

Proposed Path to the Future—Process for Adoption of Outcomes

- Through Department representatives, submit to faculty for review and comments
- Full committee review of faculty comments and proposed revisions
- Submit to Deans' Council for approval
- Final review by full committee
- Publish Graduate Educational Outcomes

Draft Graduate Educational Outcomes

Lawrence Tech, in accordance with its motto *Theory and Practice*, offers graduate programs where students enhance and expand their academic and professional skills by:

- Demonstrating the ability to apply advanced knowledge within their discipline;
- Applying modern techniques, methods and technologies to interpret, analyze and utilize information within their discipline;
- Critically analyzing their discipline's body of literature and, in accordance with their course of study, contributing to that literature;
- Demonstrating the ability to communicate in professional settings utilizing oral, written and graphical methods; and
- Developing a broad perspective on professional issues, such as lifelong learning, sustainability, leadership and ethics.

Annual Assessment Reports 2011-2012

College of Architecture and Design

BS in Architecture

1. Assessment Plan

The following yearly plan (see Table 1 below) was conceived during Fall 2010: This draft includes reports on the BS. Arch (Daniel Faoro, Interim Chair) and M.Arch program (Dean Ralph Nelson) assessment activities. The Assessment activities in Fall 2010 and Spring 2011 were continuations of prior the Graduate Assessment sub-committees, *Writing, handicapped access (ADA) and Ethics summarized below*.

The Art and Design Chair appointment just made in July 2011, (Amy Deines), Interior Architecture (B.S. Int. Arch.) will report their assessment work in the Art and Design Department report.

As a major assessment activity, at least one assessment goal will be assessed every semester. Assessment goals will be aligned with the NAAB 37 Student Performance Criteria. Our recent Assessment Plan outline prepared by Ash Rageb indicates the correlation between the university educational goals and the NAAB criteria required for the Architecture Degree Accreditation (see Table 1). The Committee will continue to coordinate a yearly schedule as to which goals and which core courses are to be assessed every semester for the next few years in preparation for the next NAAB Accreditation visit. Every selected goal (i.e., performance criterion) will include outcomes, objectives, and assessment implementation strategies.

The Architecture Assessment Committee will continue to work in collaboration with the COAD Curriculum Committee concerning the review of the current curriculum during the academic year 2010-2011).

2. Action Plan (Loop-Closing)

a. Report on 2010-2011 Academic Year

During the close-the-loop meeting for the 2010-2011 academic year, the Architecture Department (Department) reviewed the following outcomes:

Objective: Students will be literate and skilled in writing in the Design Projects/HDE classes (Univ. Goal II-1)

Assessment: Surveys, sample student work, rubrics developed from last year's assessment day. A pool of writing samples was drawn from the following courses:
ARC 4173 Frank Lloyd Wright and His Historical Context (Fall 2010)
ARC 4183 20th Century Architecture (Spring 2011)
The writing samples evaluated came from term paper assignments. The sample consisted of nine papers from the Frank Lloyd Wright class and thirteen papers from the 20th Century class. No student took both classes so there was no overlap in writers.
Evaluation: The samples were evaluated for structure, grammar, syntax, and other mechanical issues, using the LTU College of Arts and Sciences lists of "Banned Errors" and "Minor Writing Errors" as guidelines. They were also examined for structural components like a thesis sentence and an introduction-body-conclusion form. Each sample was assigned a letter grade for purposes of the course, and an alternative grade of "*Acceptable*" or "*Unacceptable*" for purposes of assessment. All papers were graded by the same instructor using the same guidelines to ensure consistency. For purposes of assessment, it was determined that twenty-one of the papers (95 percent) were "*Acceptable*" and only one (5 percent) was "*Unacceptable*."
Actions: We propose to run the test again, once. We think that it may be more successful if the assessment be aimed specifically at competition studios in which writing is already required.

This may make it easier for the faculty to respond. We also then recommend that English Composition 2 be added to the curriculum of the undergraduates in place of Technical and Professional Communications to address the known fact that our students do not write well.

Responsibility: The chair and the dean of CoAD need to direct this effort. Further assessment, of writing in the curriculum, should be undertaken by English composition faculty who are fully qualified to teach writing.

Objective: Students will have experience that promote a high level of professionalism and demonstrate expertise in showing ADA and accessibility requirements in upper design studios (Univ. Goal II-1 and III-1)

Assessment: The latest NAAB Review cited ADS-5 with a lack of handicap and HVAC Indications on the plans, etc. shown in the Project Books. Review sample of student design projects, Review syllabi in ALL design studio sequence (Are instructors addressing it? Are students doing it?); Include NAAB accessibility criteria/objectives within the syllabi.

Evaluation: Lack of proper/complete documentation for ADA graphics and accessibility. Provision for handicap access and HVAC is one of the many NAAB Criteria associated with ADS-5, the undergraduate design capstone course.

Actions: Need to clarify ADA requirements/standards for each arch. design studio level; Students' evidence of incorporating ADA standards for accessible design (ADA 2010), Assess results of rubrics for individual projects/studio for completeness and consistency (by faculty and/or individual external jurors). The coordinator has addressed the need to update the ADA code provisions and shared a documentation standard covering ADA standards for parking areas, rest rooms, and ramp requirements.

Responsibility: Dept. Chair and/or Coordinators

Ethics Undergraduate Assessment

The Ethics Assessment Committee has been developing the standard Defined Issues Test (D.I.T) based exams with expert consultants for the freshman and junior levels classes in Summer 2011 and Fall 2011.

Objective: a. Students will have opportunity to develop personal values as foundation of integrity and professional ethics (Univ. Goal V-2) b. Students will be exposed to professional ethics topic in architecture *(based on 2008 NAAB accreditation report)*

Assessment: Direct Assessment using Defined Issues Test [D.I.T.] was administered based on accepted references in professional and academic circles, In junior year IDS3 Studio classes, Freshman VisCom.1 classes, and the Graduate Level Studios.

Evaluation: The exams are scored based on feedback from faculty familier with these instruments and results are to be tabulated and evaluated for student performance.

Actions: In phase I tests were administered in Fall 2011 and the results tabulated in Spring 2012. Faculty to make recommend curricular change based on test results. In Fall 2012 and Spring

2013 the phase II will be completed, and in Fall 2014 or NAAB accreditation will take place and their comments will provide an indirect assessment.

Responsibility: Ethics sub-committee, and Graduate Faculty.

Architecture Graduate Level Ethics Assessment.

Objective: Graduates will have had experiences that promote a high level of professionalism and integrity, responsible decision making, confidence in approaching opportunities, and pride in their abilities. Graduates will have had opportunities to develop personal values as the foundation of integrity and professional ethics . (University Goals III.I and V.2). NAAB Criteria, C.8, C.9,C5,C6.

Assessment: Martin Schwartz based on discussions with Dean Nelson, Professor Schwartz prepared a memo, **Outline of Essential Issues in Professional Ethics** that forms the basis of our new work in this area. During the meeting, the adjunct instructors were asked to enhance and extend ethics subject area coursework and to save samples of student work for assessment and review.

Evaluation: Adjunct Professor Matthew Bohde reworked the teaching of ethics in the foundation practice course, ARC 5913 Professional Practice 1 (PP 1. The students address ethics in the midterm exam and in a new written assignment: **Our Ethical Responsibility to Society.** We expect to collect samples of student responses to the new assignment and to ask Professor Bohde to evaluate the results of the initial use of the assignment and readings.

Responsibility: The Assistant Dean and the graduate faculty has agreed to revise the teaching of professional practice and management in the coming year so that two pro practice and management courses are required of all M.Arch students.

Actions: We plan to eliminate one class, which we consider redundant and to rework a practice management course, which will become the second of the two required courses. We expect to incorporate ethics materials into the required second class.

Teamwork and Learning Styles Study

Objective: Graduates will have had defined roles in teamwork experiences in which both process and progress are monitored –. Graduates will have had team experiences in which they focus on a common goal, take responsibility for their own contributions as well as for the team's product, and evaluate one another's contribution to the team. Graduates will have had team experiences in which they practice making decisions, reaching consensus, and resolving conflicts. University Goal IV-1,2,3, NAAB Goal C1,C6.

Assessment: A research study was initiated in the summer of 2010 looking at the relationship between team member interaction, cognitive thinking style and design processes. The study involved the engagement of 84 graduate architectural design students engaged in a design-based "master class" with a leading professional. The study organized the students into teams based on cognitive thinking style preferences. This was done in order to create heterogeneous composition due to the following presupposition: personality-based instruments have low probability of predicting individual success but personality-based instruments may have a predictive quality for how team members interact with each other.

Evaluation : Each of the 12 teams of six to seven individuals had representatives of each of the four gradients of thinking style follow Basadur's Simplex model. Gender, ethnicity, cultural background where not factored into the team selection. The study set up a team structure in which no member was identified as

a 'leader' or 'coordinator'. Success was judged based on clear criteria of success. Each of the individuals quadrant where involved in a workshop providing instruction and tools on how to apply their thinking style patterns to the design process.

Actions: The results of the pilot study are being analyzed and will be applied in a second study during the summer of 2012.

Responsibility: Philip Plowright, Matt Cole, Consultants and Masters Class Faculty.

b. Plan for 2011-2012 Academic Year. In 2010-2011 The College of Architecture, Art and Design focused on *Sustainability* as a new educational goal. The Architecture Department had significant representation (Prof.'s, Orlowski and Means) on the " Sustainability in Education Task Force (SETF)" which was convened in 2008-2009 and consisted of representatives of numerous academic departments on the Lawrence Tech campus. The sections below represent reports from 2011 Assessment Day.

1. Our topic for the LTU Assessment Day sessions on 09-2011; Educational Goal was Sustainability.

Our summary table see below (Table 1: Assessment Plan for the Department of Architecture.) has been revised to indicate loop closing activity for only work currently in progress. The inclusion of the new sustainability university goal needs to be included as well in the table. The department has been encouraging the development of rubrics for augmenting direct in-class assessment methods.
The Department broke down in the afternoon sessions into four sub-groups to develop educational objectives and assessment plans based on sustainability related to their fields. The initial effort was to identify the sustainability criteria as related our architecture degree accreditation criteria (NAAB).
Ability was defined as "to design projects that optimize, conserve, or reuse natural and built resources, provide healthful environment for occupants/users, and reduce the environmental impacts of building construction and operation on future generations through means such as carbon-neutral design, bioclimatic design, and energy efficiency." *Developed from NAAB and NCARB definitions.*

Definition of *Ability*? Proficiency in using specific information to accomplish a task, correcting selecting the appropriate information, and accurately applying it to the solution of a specific problem, while also distinguishing the effects of its implementation.

1a. Urban Design Sub group report. Joonsub Kim, Ph.D, Anirban Adhya, Ph.D, Constance Bodurow, MCP, AICP.

Objective: Ability to design projects based on holistic knowledge of multiple dimensions of sustainability (social-economic-environmental) across multiple scales of architecture-site-community-city-region

Assessment: A grading rubric can be specifically developed for certain studios such as (Junior-year integrated design studios, especially Detroit Studio and Capstone studio-Advanced Design 5) incorporating specific sustainability measurement criteria such as, Evaluation criteria and ratings from the LEED ND. Comparative evaluation of ecological footprints of the constituents in the design study area (before and after)

Evaluation: Students designs will be analyzed in terms of exceeding/meeting/ underachieving the abovementioned evaluation criteria
Actions:

Responsibility:

1b. Architecture Technical subgroup report, Janice Means, PE, LEED AP, Ashraf Rageb, Ph.D Daniel Faoro, RA, M.Arch/UD developed two objectives (below). However, we developed assessment tools for only #1.

Objective: Students will demonstrate ability to exceed codes and standards for sustainability criteria e.g. energy conservation, selecting and integrating materials and systems, Indoor Environmental Quality IEQ. Students will also demonstrate an ability to use Building Information Modeling BIM and other computer tools in an interoperable manner for design, construction and simulation to support sustainable outcomes.

Assessment Tools: Students complete design and construction documented projects entered in local, national, and international competitions.

Evaluation: External body evaluates students' project entries to evaluate sustainable criteria.

Action: Based on feedback from jurors and evaluation of successful winners, we adjust program curricular content to address shortcomings.

Responsibility: Technical and design faculty that support sustainable educational outcomes .

1c. Architecture History sub group summary. Dale Gyure, Ph.D.

*Objective***:** CoAD graduates will demonstrate an awareness of how architects and designers have incorporated sustainable techniques and/or materials throughout the history of world architecture**.**

Assessment Tools: Assessment: Examinations in History of the Designed Environment I and II courses. *Evaluation*: Exams will be evaluated to determine if students scored 70% or higher on questions pertaining to sustainable issues.

Action: Emphasis will be placed on explaining aspects of sustainable design whenever possible during lectures; extra readings may be assigned if applicable.

R*esponsibility*: History of the Designed Environment I and II instructors.

1d. Architecture Design sub group. Ed Orlowski, M.Arch, RA, LEED Tom Nashlen, B.Arch/RA, Gretchen Maricak, RA, MFA, Jim Stevens. M.Arch.

Objective. Goal: Students completing the core architectural design studio sequence will demonstrate an understanding of, and an ability to implement, design solutions reflecting the current imperatives of sustainable design as outlined by the CoAD curriculum committee.

Method: It is proposed that each of the core architectural design studios identify one issue of sustainable design pertinent to the larger educational goals of that studio (i.e.: IDS1, site orientation; IDS2, daylighting; IDS3 & 4, sustainable urbanism; and AD5, systems integration).

Assessment Instrument: Each of the established learning sub-objectives will be measured against criteria derived from and comparable to those found in established industry measurement tools such as LEED, the Living Building Challenge, Green Globes, and the SEED Network.

Additional Department tasks for 2012.

The Assessment plan (Table 1 below) for Architecture has been revised and requires revisions to update the NAAB criteria to the NAAB 2012 Criteria and match them to the existing University Goals and new undergraduate and graduate educational goals.

Table 1: Assessment Plan for BS in Architecture.

University Undergraduate Goals	Supporting Program Objective/Outcome	Assessment Tools	Metrics/Indicators	Administration Timeline	Loop-Closing Timeline
I. 1. Graduates will demonstrate knowledge, and expertise in applying this knowledge, in their fields.	Most of the prog objectives below	Class Assignments, examinations, design project work, documentation, class participation	Mean results for tests Internal & external jury for projects	Every semester	2011/12
I. 2. Graduates will demonstrate effective use of technology and the ability to apply it in their fields.	Obj. 2, 3, 4, 5, 23, 26	Class Assignments, examinations, design project work, documentation, class participation, cap-stone projects	Mean results for tests Internal & external jury for projects	Every semester	2011/2012
II. 1. Graduates will be literate and skilled in written and oral communication.	Obj 1 & 3	Writing assignments Technical papers COM 3000	Writing Proficiency Exam	Every semester	2013/14
II. 2. Graduates will be aware of the diverse basis of our culture and will demonstrate both breadth and depth in the arts and the humanities.	Obj. 8, 9, 10, 12, 13	Class Assignments, examinations, design project work, documentation, class participation, cap-stone projects	Mean results for tests Internal & external jury for projects	Every semester	NA
II. 3. Graduates will be aware of the foundations and development of American society.	Obj. 8, 31, 32	Class Assignments, examinations, design project work, class participation, cap-stone projects	CoAD core curriculum courses	Every semester	NA
II. 4. Graduates will demonstrate competence in mathematics and in the use of the scientific method and laboratory technique.	Obj. 2, 3, 4, 5, 18, 19	Class Assignments, examinations, design project work, class participation, cap-stone projects Group projects in research	Mean results for tests Internal & external jury for projects	Every semester	NA

II. 5. Graduates will demonstrate creativity and critical thinking, as well as analytical and problem solving skills consistent with the technological focus of the University.	Obj. 18, 19, 20, 21, 22, 23, 26	Class Assignments, examinations, design project work, class participation, cap-stone projects Group projects in research	Mean results for tests Internal & external jury for projects	Every semester	NA
III. 1. Graduates will have had experiences that promote a high level of professionalism and integrity, responsible decision making, confidence in approaching opportunities, and pride in their abilities.	Obj. 29, 30, 31, 32	Cap-stone and senior level projects Field projects and case studies Group projects in research	Internal & external jury for projects	Every semester	2011/12
III. 2. Graduates will have had experiences that promote the understanding of themselves and others, sensitivity to other cultures in the context of globalization, and interpersonal skills.	Obj. 12, 13	Class Assignments, examinations, design project work, class participation	Internal & external jury for group projects.	Every semester	NA
III. 3. Graduates will have had experiences that promote the ability to analyze unfamiliar situations, assess risk, and formulate plans of action.	Obj. 2, 31, 32, 34	Cap-stone and senior level projects Field projects and case studies Group projects in research	Internal & external jury for group projects Peer evaluation for group projects	Every semester	NA
III. 4. Graduates will have been made aware of the import-ance of lifelong learning.	Obj. 31, 32	Cap-stone and senior level projects Field projects and case studies	Students & Alumni surveys	Every semester	NA
III. 5. Graduates will have had experiences that promote a global and societal perspective.	8, 9, 10, 11, 32	CoAD core curriculum courses	Students & Alumni surveys	Every semester	NA

IV.1. Graduates will have had defined roles in teamwork experiences in which both process and progress are monitored.	Obj. 7, 32	Group assignments Group projects in design Group projects in research	Internal & external jury for group projects Peer evaluation for group projects	Every semester	2013/14
IV.2. Graduates will have had team experiences in which they focus on a common goal, take responsibility for their own contributions as well as for the team's product, and evaluate one another's contribution to the team.	Obj. 7, 30	Group assignments Group projects in design Group projects in research	Internal & external jury for group projects Peer evaluation for group projects	Every semester	2013/14
IV.3. Graduates will have had team experiences in which they practice making decisions, reaching consensus, and resolving conflicts.	Obj. 7, 31, 33	Group assignments Group projects in design Group projects in research	Internal & external jury for group projects Peer evaluation for group projects	Every semester	2013/14
V. 1. Graduates will have had opportunities to learn the value of contributing to their community and to society.	Obj. 29, 31, 33	Field projects and case studies	- Voluntary programs participation e.g. Habitat for Humanity - Alumni Surveys	Every semester if there is a chance by the organization	NA
V. 2. Graduates will have had opportunities to develop personal values as the foundation of integrity and professional ethics.	Obj. 29, 32, 34	Cap-stone and senior level projects Field projects and case studies Group projects in design Group projects in research	Student & alumni surveys		2012/13

Program Objectives and Performance Criteria 2009 (NAAB Criteria 2012)

1. Speaking and writing skills (Communication skills A1)
2. Critical thinking skills (Design thinking A2)
3. Graphics skills (Visual Communication A3)
4. Research skills (Technical Documentation A4)
5. Formal ordering systems (Ordering Skills- A8)
6. Fundamental design skills (no change A6)
7. Collaboration skills (Same now C1)
8. Western traditions (*no clear counterpart 2012*)
9. Non-western traditions (Historical Traditions/Global Culture A9)
10. National and regional traditions *(no clear counterpart in 2012)*
11. Use of precedents (Use of Precedents A7)
12. Human behavior (Human Behavior C2)
13. Human diversity (Cultural Diversity A10)
14. Bldg design accessibility (Accessibility B2)
15. Sustainable design (Sustainability B3)
16. Design programming preparation (Pre-Design B1)
17. Site conditions (B4 Site Design)
18. Structural systems (same, now B9)
19. Environmental systems (same now B8)
20. Life safety (same now B5)
21. Bldg envelope systems (same now B10)
22. Bldg service systems (same now B12)
23. Bldg systems integration (*no clear counterpart 2012*)
24. Bldg materials and assemblies (same now B.12)
25. Construction cost control (Financial Considerations B7)
26. Technical documentation (*no clear counterpart 2012*)
27. Client role in architecture (same now C3)
28. Comprehensive design (same now B6)
29. Architect's administrative role (Project Management C4)
30. Architectural practice (Practice Management C5)
31. Professional development (*No clear counterpart 2012*)
32. Leadership (same now C.6)
33. Legal responsibilities (Same now C.7)
34. Ethics and professional judgment (same now C.8)

Unmatched 2012 criteria (Client Role in Architecture C3) Community and Social Responsibility (C9) (Applied Research A11)

Master of Architecture

1. Assessment Plan

The educational outcomes of the Master of Architecture (M.Arch) degree program are listed below. They have been adapted from National Architecture Accrediting Board (NAAB) criteria for U.S. architecture school seeking accreditation. Obtaining MArch degree from an accredited school is essential part for architects licensing process in any state.

MArch program outcomes support the university graduate learning outcomes as described in Table 1. Please refer to column two in Table 1 to see the inter-relationship between university graduate learning outcomes and the MArch program outcomes as required by NAAB.

Program assessment is conducted using the following:

1. Direct assessment of courses: Direct assessment of student learning is performed in specific selected courses that satisfy NAAB requirements. Please note that MArch program has no concentrations. Most courses are offered at least once a year.

2. In case a student elects to have a thesis: The chairs of the thesis committee provides their evaluations outlining the quality of the thesis project. Students who elect to have thesis option, albeit few in numbers in the MArch program, are still required to take most of the regular classes and are captured through the regular assessment process of those classes.

The results of the assessment of the program outcomes are presented to the department faculty during the first graduate faculty meeting of the fall semester. Any actions that need to be taken to improve the graduate curriculum are handled by the Graduate Director on an annual basis.

2. Action Plan (Loop-Closing)

a. Report on 2011-2012 Academic Year

This section is not applicable as the assessment plan is still being implemented for the first time during the 2012-2013 academic year. However, assessment of sustainability as one of the university educational goal has been discussed in the break-out session (in 2011 assessment day) and an assessment plan was put in place without loop-closing action in place yet.

b. Report on Plan for 2012-2013 Academic Year

Since the assessment plan is still being implemented, there are few documents and procedures that need to be further developed during the current academic year to match NAAB new 2009 format. These are:

- Course objectives, outcomes for the courses selected for direct assessment.
- Rubric for thesis evaluation for students who elect thesis option.

MArch program is a continuum from the B.S Arch degree offered by College of Architecture and Design at LTU. All classes included in this report represent the upper level classes (5000, 6000) of the degree correlated to both university outcomes and NAAB criteria summarized in the footnotes below Table1. The rest of NAAB criteria

will be found in the lower portion of the degree (classes from 1000 level to 4000 level) in the B.S. Arch degree undergraduate report.

Table 1: Assessment Plan for MArch Program

University Graduate Learning Outcomes	Supporting NAAB Outcomes*	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
DISCIPLINE-SPECIFIC KNOWLEDGE					
"LTU graduates will apply and, in accordance with their course of study, develop advanced knowledge within their discipline."	A2, A5, A11 B3	ARC 5814, ARC 5824: Advanced Design Studio 1 & 2	80% students will reach B or better on 1 final design studio project	ARC 5814: Fall ARC 5824: Spring	Every 2 yrs
"LTU graduates will analyze and interpret information and implement decisions using the latest techniques and technologies"	A6, C1	ARC 5804: Critical Practice Studio	Projects are evaluated by 'external professionals'80% of students will reach B or better	Summer	Every year
CRITICAL THINKING					
"LTU graduates will evaluate scholarly literature and, in accordance with their course of study, contribute to the literature."	C8	ARC 5643: Design Theory	80% of students will reach B or better in at least 1 paper submitted per semester	Every semester	Every 3 yrs
"LTU graduates will communicate effectively using written, oral, graphical, and digital formats."	A1, A3	ARC 6833: Practice Portfolio	80% of students will reach B or better in their portfolios.	Summer	Every 2 yrs
LEADERSHIP & ETHICS					

"LTU graduates will develop a broad perspective on professional issues, such as lifelong learning, sustainability, leadership, and ethics."	B3 C5, C6, C7, C8	ARC 5913: Professional Practice	90% of students receive B or better overall + B or better in tests administered throughout the class	Every semester	Every 3 yrs

* NAAB 2009 Outcomes:

Realm A: Critical Thinking and Representation:

A.1. Communication Skills: *Ability to* read, write, speak and listen effectively.

A.2. Design Thinking Skills: *Ability to* raise clear and precise questions, use abstract ideas to interpret information, consider diverse points of view, reach well-reasoned conclusions, and test alternative outcomes against relevant criteria and standards.

A.3. Visual Communication Skills: *Ability to* use appropriate representational media, such as traditional graphic and digital technology skills, to convey essential formal elements at each stage of the programming and design process.

A.5. Investigative Skills: *Ability to* gather, assess, record, apply, and comparatively evaluate relevant information within architectural coursework and design processes.

A.6. Fundamental Design Skills: *Ability to* effectively use basic architectural and environmental principles in design.

A.11. Applied Research: *Understanding* the role of applied research in determining function, form, and systems and their impact on human conditions and behavior.

Realm B: Integrated Building Practices, Technical Skills and Knowledge:

B. 3. Sustainability: *Ability* to design projects that optimize, conserve, or reuse natural and built resources, provide healthful environments for occupants/users, and reduce the environmental impacts of building construction and operations on future generations through means such as carbon-neutral design, bioclimatic design, and energy efficiency.

Realm C: Leadership and Practice:

C. 1. Collaboration: *Ability* to work in collaboration with others and in multidisciplinary teams to successfully complete design projects.

C. 5. Practice Management: *Understanding* of the basic principles of architectural practice management such as financial management and business planning, time management, risk management, mediation and arbitration, and recognizing trends that affect practice.

C. 6. Leadership: *Understanding* of the techniques and skills architects use to work collaboratively in the building design and construction process and on environmental, social, and aesthetic issues in their communities.

C. 7. Legal Responsibilities: *Understanding* of the architect's responsibility to the public and the client as determined by registration law, building codes and regulations, professional service contracts, zoning and subdivision ordinances, environmental regulation, and historic preservation and accessibility laws.

C. 8. Ethics and Professional Judgment: *Understanding* of the ethical issues involved in the formation of professional judgment regarding social, political and cultural issues in architectural design and practice.

Bachelor in Graphic Design

1. **Assessment Plan**

See table 1

2. **Action Plan (Loop-Closing)**

   a. **Report on the 2011-2012 Academic Year**

Based on the close-the-loop meeting for the 2011-2012 academic year, the Department recognized a weakness in the following outcomes:

Objective: Make students aware of the processes involved in creating design with an emphasis on working with the hand and integrating in to digital processes.
Assessment: Direct assessment of student projects during the Capstone Graphic Design Thesis Final Show at Studio Couture in April 2012. Outside professional critics from a related industry, faculty members and students evaluated the work and presentations.
Evaluation: Results were analyzed through exit interviews.

Issue: A lack of hands on processes.

Actions: In the following academic year, students will be exposed to process-based working methods, required to create with the hand and then integrating it into their design methodology and product. Emphasizing creating their own assets.
Responsibility: Peter Beaugard (Steven Rost)

Objective: Have students create work with a depth of content, avoiding one to one relationships. To have students extrapolate information from their research to go beyond the expected in their designs.
Assessment: Direct assessment of student projects during the Capstone Graphic Design Thesis Final Show at Studio Couture in April 2012. Outside professional critics from a related industry, faculty members and students evaluated the work and presentations.
Evaluation: Results were analyzed through exit interviews.

Issue: Lack of depth in content.

Actions: In the following academic year, students will be required to show the evidence of their research corellation in design through process books.
Responsibility: Peter Beaugard (Steven Rost)

Objective: Critical Thinking

Assessment: Direct assessment of student projects during the Capstone Graphic Design Thesis Final Show at Studio Couture in April 2012. Outside professional critics from a related industry, faculty members and students evaluated the work and presentations.
Evaluation: Results were analyzed through exit interviews.

Issue: Lack of critical thinking.

Actions: In the following academic year, students will be required to bridge content of their work with seminar and core curriculum material (history and critical theory) and discussion. *Responsibility*: Peter Beaugard (Steven Rost)

   b. **Report on Plan for 2012-2013 Academic Year**

Courses Assessed

Capstone Graphic Design Thesis Capstone
Graphic Design Seminar

-Update and enhance our evaluation forms to reflect our new objectives.

-Administer assessment tools for industry reviews.

-Students establish their learning goals and test them against the existing curriculum.

Table 1: Assessment Plan for Graphic Design

LTU Undergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop Closing Timeline
"LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems."		Industry assessment of student project execution.		Annual	Every three years
"LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines."		Industry assessment of student project execution.		Annual	Every three years
"LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities."		Industry assessment of student project execution.		Annual	Every three years
"LTU graduates will demonstrate professional standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation."		Industry assessment of student project execution.		Annual	Every three years

LTU Undergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop Closing Timeline
"LTU graduates will demonstrate their mastery of mathematics to solve real-world problems by isolating relevant factors, constructing abstract models, communicating precisely and reasoning logically."	N/A	N/A	N/A	N/A	N/A
"LTU graduates will demonstrate proficiency in reading and interpreting complex, intellectually challenging texts and evaluating their analytical architecture from an independent point of view."		Industry assessment of student project execution.		Annual	Every three years
"LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields."	N/A	N/A	N/A	N/A	N/A
"LTU graduates will demonstrate civic, team, and global leadership skills by identifying a personal leadership philosophy, exhibiting entrepreneurial skills, and becoming agents of positive change."		Industry assessment of student project execution.		Annual	Every three years

LTU Undergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop Closing Timeline
"LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions."		Industry assessment of student project execution.		Annual	Every three years
"LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions."		Industry assessment of student project execution.		Annual	Every three years

Bachelor in Interior Architecture

1. **Assessment Plan**

See table 1

2. **Action Plan (Loop-Closing)**
    a. **Report on the 2011-2012 Academic Year**

Based on the close-the-loop meeting for the 2011-2012 academic year, the Department recognized a weaknesses in the following outcomes:

Objective: Emphasize graphic representation of flow and spatial relationships integrating furniture, art, and decorative elements.
Assessment: Direct assessment and evaluation of student projects during final presentations 2012 by outside professional critics from a related industry, faculty members and piers.
Evaluation: Results were analyzed through exit interviews.
Issue: Lack of inclusion art objects and decorative elements.
Actions: In the following academic year, students will be exposed to more comprehensive understanding of the impact and importance of art and decorative objects within an interior environment.
Responsibility: Karen Swanson (Steve Rost)

Objective: Incorporate the use and understanding of the metric system into project standards.
Assessment: Direct assessment and evaluation of student projects during final presentations 2012 by outside professional critics from a related industry, faculty members and piers.
Evaluation: Results were analyzed through exit interviews.
Issue: Lack of use and incorporation of the metric system.
Actions: In the following academic year, students will be required to show the evidence of use and understanding of the metric system within their work.
Responsibility: Karen Swanson (Steve Rost)

Objective: Students will incorporate their knowledge of building systems into their project presentations in order to convey a clear understanding of how building systems, codes, and standards impact the interior environment.
Assessment: Direct assessment and evaluation of student projects during final presentations 2012 by outside professional critics from a related industry, faculty members and piers.
Evaluation: Results were analyzed through exit interviews.
Issue: Lack of integration of technical elements, HVAC systems, communications, security systems, fire suppression, and building code standards within their studio projects.
Actions: In the following academic year, students will be exposed to building systems information as they directly relate to their design studio projects with successive course content escalating in complexity.
Responsibility: Karen Swanson (Steve Rost)

    b. **Report on Plan for 2012-2013 Academic Year**

Courses Assessed

Interior Architecture 1
Interior Architecture 3+

-Update and enhance our evaluation forms to reflect our new objectives.
-Administer assessment tools for industry reviews.
-Students establish their learning goals and test them against the existing curriculum.

Table 1: Assessment Plan for Interior Architecture

LTU Undergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop Closing Timeline
"LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems."	CIDA Standards: ALL	Class Assignments; Examinations; Design Projects; Documentation; Class Participation	Mean Results for Examinations; Internal and External Critique and Evaluation	Each Semester	Annual
"LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines."	CIDA Standards: 12, 13	Class Assignments; Examinations; Design Projects; Documentation; Class Participation	Mean Results for Examinations; Internal and External Critique and Evaluation	Each Semester	Annual
"LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities."	CIDA Standards: 3, 12, 13	Class Assignments; Design Projects incorporating Research and Documentation; Class Participation	Mean Results for Examinations; Internal and External Critique and Evaluation	Each Semester	Annual
"LTU graduates will demonstrate professional standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation."	CIDA Standards: 6, 7	Writing Assignments; Design Projects incorporating a Written and Graphic Analysis with Oral Presentations; Documentation; Class Participation	Mean Results for Exams; Internal and External Critique and Evaluation	Each Semester	Annual

LTU Undergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop Closing Timeline
"LTU graduates will demonstrate their mastery of mathematics to solve real-world problems by isolating relevant factors, constructing abstract models, communicating precisely and reasoning logically."	CIDA Standards: 9, 12,	Class Assignments; Design Projects incorporating Mathematics of Proportion as it relates to Space and Form with physical models and Process Documentation; Class Participation 13	Mean Results for Exams; Internal and External Critique and Evaluation	Each Semester	Annual
"LTU graduates will demonstrate proficiency in reading and interpreting complex, intellectually challenging texts and evaluating their analytical architecture from an independent point of view."	CIDA Standards: 2	Class Assignments; Examinations; Reading Assignments w/ Follow-up discussion; Documentation; Class Participation	Papers; Peer Evaluation for Group Discussions and Participation	Each Semester	Annual
"LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields."	NA				
"LTU graduates will demonstrate civic, team, and global leadership skills by identifying a personal leadership philosophy, exhibiting entrepreneurial skills, and becoming agents of positive change."	CIDA Standards: 2, 6, 7	Class Assignments; Design Projects; Documentation; Class Participation	Internal and External Critique and Evaluation; Peer Evaluation for Group Projects	Each Semester	Annual

LTU Undergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop Closing Timeline
"LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions."	CIDA Standards: 5	Class Assignments; Group Design Projects; Documentation; Class Participation; Cap-stone Projects	Internal and External Critique and Evaluation; Peer Evaluation for Group Projects	Each Semester	Annual
"LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions."	CIDA Standards: 2, 7	Class Assignments; Design Projects; Documentation; Class Participation; Cap-stone Projects	Internal and External Critique and Evaluation; Peer Evaluation for Group Projects	Each Semester	Annual

BS in Transportation Design

1. **Assessment Plan**
   See Table 1 on following page.

2. **Action Plan (Loop-Closing)**
   a. **Report on 2011-2012 Academic Year**

Program Objective: Showcase projects using industry tools (CAD and other programs) and integration of technology into the concept proposal.
Goal: Maintain high level of student achievement (Concept Communication on ECEO-f Evaluation Form to have a minimum rating of 8 on a 1-10 scale) Assessment: Industry evaluation of student project execution and presentation (Creativity and Proposal Defense).
Evaluation: Student performance meets goals (minimum rating of 8 on a scale of 10) Actions: No specific action required; continue to monitor assessment data and develop rubic
Responsibility: Keith Nagara

Program Objective: Leadership Portfolio – Students will demonstrate knowledge and expertise in applying this knowledge, in their professional fields
Goal: Achieve high percentage for student placement in profession (Advanced Studies on ECEO-h Evaluation Form to have a minimum rating of 8 on a 1-10 scale) Assessment: Industry evaluation of student project and interviews
Evaluation: Analyze the projects based on the portfolio rubrics (minimum rating of 8)
Actions: Implement feedback from students and industry for future portfolio deliverables.

- Develop portfolio tutorials and workshops
- Create higher standards (more selective) of industry projects to be course integrated

Responsibility: Keith Nagara

b. Report on Plan for 2012-2013 Academic Year

- Update and enhance rubric for LDR Portfolio
- Administer assessment tools for industry reviews
- Focus on discipline specific knowledge (Sustainability) and Leadership to showcase in LDR Portfolio.
- Re-assess program learning goals in regard to revisions in the university's undergraduate learning goals.
- Develop a global perspective based on cultural integration into transportation design.

Table 1: Assessment Plan for Transportation Design

LTU Undergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop Closing Timeline
"LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems."	ECEO-a, b, c, d, e, f, g, h, j, k	Industry assessment of student project execution utilizing the ECEO Evaluation Form	ECEO Evaluation Form meeting Employment Consideration	Annual	Tri-Annual 2013-2014
"LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines."	ECEO-a, b, e, f, g, h	Industry assessment of student project execution utilizing the ECEO Evaluation Form	ECEO Evaluation Form meeting Employment Consideration	Annual	Tri-Annual 2013-2014
"LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities."	ECEO-a, b, d, e, h	Industry assessment of student project execution utilizing the ECEO Evaluation Form	ECEO Evaluation Form meeting Employment Consideration	Annual	Tri-Annual 2013-2014
"LTU graduates will demonstrate professional standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation."	ECEO-a, b, c, d, e, f, h, j, k	Industry assessment of student project execution utilizing the ECEO Evaluation Form	ECEO Evaluation Form meeting Employment Consideration	Annual	Tri-Annual 2013-2014

LTU Undergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop Closing Timeline
"LTU graduates will demonstrate their mastery of mathematics to solve real-world problems by isolating relevant factors, constructing abstract models, communicating precisely and reasoning logically."	ECEO-a, e	Industry assessment of student project execution utilizing the ECEO Evaluation Form	ECEO Evaluation Form meeting Employment Consideration	Annual	Tri-Annual 2013-2014
"LTU graduates will demonstrate proficiency in reading and interpreting complex, intellectually challenging texts and evaluating their analytical architecture from an independent point of view."	ECEO-d, e, h	Industry assessment of student project execution utilizing the ECEO Evaluation Form	ECEO Evaluation Form meeting Employment Consideration	Annual	Tri-Annual 2013-2014
"LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields."	ECEO-b, e	Industry assessment of student project execution utilizing the ECEO Evaluation Form	ECEO Evaluation Form meeting Employment Consideration	Annual	Tri-Annual 2013-2014
"LTU graduates will demonstrate civic, team, and global leadership skills by identifying a personal leadership philosophy, exhibiting entrepreneurial skills, and becoming agents of positive change."	ECEO-d, j, k	Industry assessment of student project execution utilizing the ECEO Evaluation Form	ECEO Evaluation Form meeting Employment Consideration	Annual	Tri-Annual 2013-2014

LTU Undergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop Closing Timeline
"LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions."	ECEO-d, e, j, k	Industry assessment of student project execution utilizing the ECEO Evaluation Form	ECEO Evaluation Form meeting Employment Consideration	Annual	Tri-Annual 2013-2014
"LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions."	ECEO-a, d, j	Industry assessment of student project execution utilizing the ECEO Evaluation Form	ECEO Evaluation Form meeting Employment Consideration	Annual	Tri-Annual 2013-2014

NASAD Essential Competencies, Experiences, and Opportunities (ECEO):

ECEO-a: A foundational understanding of how products work; how products can be made to work better for people; what makes a product useful, usable, and desirable; how products are manufactured; and how ideas can be presented using state-of-the-art tools."

ECEO-b: Knowledge of computer-aided drafting (CAD), computer-aided industrial design (CAID), and appropriate two-dimensional and three-dimensional graphic software."

ECEO-c: Understanding of the history of industrial design."

ECEO-d: Functional knowledge of basic business and professional practice."

ECEO-e: The ability to investigate and synthesize the needs of marketing, sales, engineering, manufacturing, servicing, and ecological responsibility and to reconcile these needs with those of the user in terms of satisfaction, value, aesthetics, and safety. To do this, industrial designers must be able to define problems, variables and requirements; conceptualize and evaluate alternative; and test and refine solutions."

ECEO-f: The ability to communicate concepts and requirements to other designers and colleagues who work with them; to clients and employers; and to prospective clients and employers. This needs to communicate draws upon verbal and written forms, two-dimensional and three-dimensional media, and levels of detailing ranging from sketch or abstract to detailed and specific."

ECEO-g: Studies related to end-user psychology, human factors and user interface."

ECEO-h: Opportunities for advanced undergraduate study in areas which intensify skills and concepts already developed, and which broaden knowledge of the profession of industrial design. Studies might be drawn from such areas as engineering, business, the practice and history of visual art and design, and technology, or interdisciplinary programs related to industrial design."

ECEO-i: Easy access to computer facilities; woodworking, metalworking, and plastics laboratories; libraries with relevant industrial design materials; and appropriate other work facilities related to the major."

ECEO-j: Opportunities for internships, collaborative programs, and other field experiences with industry groups." ECEO-k: Participation in multidisciplinary team projects."

College of Arts and Sciences

BA in English and Communication Arts

1. **Assessment Plan : B.A. in English and Communication Arts**
   (see Table 1: Assessment Matrix below.)

2. Action Plan for BA in English and Communication Arts

a. Report on 2011-2012 Academic Year

Program Objective: Students can perform in an exceptional manner in the two internships required in the degree.

Assessment: Internship evaluations Evaluation: Student performance meets goals Issue: None
Actions: No specific action required; continue to monitor assessment data Responsibility: Melinda Phillips

Program Learning Objective: Graduates can identify the distinguishing cultural, historical and social attributes of literary periods and gauge the influence of these attributes on the works at hand.

Assessment: Editor at Gale Publishing reviewed twenty papers by English majors at the Junior-Senior level.
Evaluation: Student performance meets goals. Issue: None
Actions: No specific action required; continue to monitor assessment data Responsibility: Melinda Phillips

Program Learning Objective: Students can write compelling works in more than one of the following genres: poems, short stories, creative non-fiction, novels, screenplays, theatrical drama, television scripts, radio scripts, electronic media, game narrative.

Assessment: Professional writer not affiliated with LTU will score portfolios Evaluation: Rubric
Issue: None
Actions: Rubric will be developed fall 2012 Responsibility: Melinda Phillips and English faculty

Program Learning Objective: Students can write and edit technical documents.

Assessment: Technical Writing rubric administered in COM6553 Spring 2012 Evaluation: Grade received in Technical Editing
Issue: Need to involve graduate students in assessing undergraduate English major performance in a cross-listed graduate course.
Actions: Phillips will work with instructor to develop rubric for English majors to be scored by graduate students in the course, Spring 2013.
Responsibility: Melinda Phillips and Communications faculty

Program Learning Objective: Students achieve university-level competency in academic and professional prose styles.

Assessment:Editor at Gale Publishing reviewed twenty papers by English majors at the Junior-Senior level.
Evaluation: Student performance meets goals. Issue: None

Actions: No specific action required; continue to monitor assessment data Responsibility: Melinda Phillips

Program Learning Objective: Students can deliver effective oral presentations.

Assessment: Direct assessment of student assignments in Speech Evaluation:
Student performance meets goals
Issue: None.
Actions: Student graded rubric (outsiders evaluating their peers), will also be collected Fall 2012.
Responsibility: Melinda Phillips and Communications faculty

Program Learning Objective: Students can identify the distinguishing cultural, historical and social attributes of literary periods and gauge the influence of these attributes on the works at hand.

Assessment: Editor at Gale Publishing reviewed twenty papers by English majors at the Junior-Senior level.
Evaluation: Student performance meets goals. Issue: None.
Actions: No specific action required; continue to monitor assessment data Responsibility: Melinda Phillips

b. Report on Plan for 2012-2013 Academic Year

1) English APPR/second round HUM APPR.
2) Develop a Creative Writing Portfolio Rubric with creative writing faculty, score Portfolios Spring 2013 (Advisory Board recommended outside reviewer)
3) Work with Technical editing instructor to develop rubric for UG English/HUM majors to be scored by graduate students.
4) Standardize Assessment Procedures for the next Director. Continue to involve industry representatives in the assessment process.

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Table 1: Assessment Plan for B.A. English and Communication Arts

LTU Uudergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems."	Students can perform in an exceptional manner in the two internships required in the degree.	Internship reports by on-site supervisors	Satisfactory interviews with supervisors.	Spring 2012	Yearly
	Students can identify the distinguishing cultural, historical and social attributes of literary periods and gauge the influence of these attributes on the works at hand.	Papers in Jr.Sr. electives reviewed by industry rep.	Report from Gale Publishing rep.	Fall 2012	Yearly
	Students can write compelling works in more than one of the following genres: poems, short stories, creative non-fiction, novels, screenplays, theatrical drama, television scripts, radio scripts, electronic media, game narrative.	Creative writing portfolio	Rubric scored by outside writer.	Spring 2013	Yearly
"LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines."	Students can write and edit technical documents.	Grade in Tech Editing; Rubric scored by graduate students cross-listed in the course	Grade of B and above.	Spring 2012	Yearly
"LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities."					

LTU Uudergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate professional standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation."	Students can deliver effective oral presentations. Students achieve university-level competency in academic and professional prose styles.	Rubric scored by outsider (peer) observing Speech class. Report from Gale Publishing Representative	Grade of B and above. Grade of B and above.		
"LTU graduates will demonstrate their mastery of mathematics to solve real-world problems by isolating relevant factors, constructing abstract models, communicating precisely and reasoning logically."					
"LTU graduates will demonstrate proficiency in reading and interpreting complex, intellectually challenging texts and evaluating their analytical architecture from an independent point of view."	Students can identify the distinguishing cultural, historical and social attributes of literary periods and gauge the influence of these attributes on the works at hand.	Papers in Jr.Sr. electives reviewed by industry rep	Report from Gale Publishing Rep.	Fall 2012	Yearly
"LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields."					
"LTU graduates will demonstrate civic, team, and global leadership skills by identifying a personal leadership philosophy, exhibiting entrepreneurial skills, and becoming agents of positive change."					

LTU Uudergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions."					
"LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions."					

BS in Humanities

1. Assessment Plan: B.S. Humanities (see Table 1: Assessment Matrix below.)

2. Action Plan (Loop-Closing) for B.S. in Humanities

a. Report on 2011-2012 Academic Year

Program Learning Objective: Students can evaluate problems from an interdisciplinary perspective.
Assessment: Scoring of senior theses by outside reviewer Evaluation:
assessment will be conducted spring 2013 Issue: need to create senior thesis
rubric with HUM faculty Action :
Responsibility: Melinda Phillips and HUM faculty

Program Learning Onjective: Students can conduct original research. Students can effectively incorporate secondary texts into primary analyses.
Assessment: Scoring of senior theses by outside reviewer Evaluation:
assessment will be conducted spring 2013 Issue: need to create senior thesis
rubric with HUM faculty Action:
Responsibility: Melinda Phillips and HUM faculty

Program Learning Objective: Students have expertise in using research databases in History, Philosophy, Literature, Social Sciences
Assessment: Scoring of senior theses by outside reviewer Evaluation:
assessment will be conducted spring 2013 Issue: need to create senior thesis
rubric with HUM faculty Action:
Responsibility: Melinda Phillips and HUM faculty

Program Learning Objective: Students can evaluate conflicting viewpoints.
Assessment: Scoring of senior theses by outside reviewer Evaluation:
assessment will be conducted Spring 2013 Issue: need to create senior thesis
rubric with HUM faculty Action:
Responsibility: Melinda Phillips and HUM faculty

Program Learning Objective: Students can analyze with ease challenging literary, philosophical, and historical texts.
Assessment: Scoring of papers in Jr. Sr. Electives by outside reviewer Evaluation: assessment will be conducted fall 2013
Issue:
Action:
Responsibility: Melinda Phillips

Program Learning Objective: Students can demonstrate creativity in at least one literary genre.
Assessment: scoring of Creative Writing Portfolio by outside reviewer Evaluation: assessment will be conducted fall 2013
Issue: Rubric for Creative Writing portfolios needs to be developed Action:
Responsibility: Melinda Phillips and English faculty

Program Learning Objective: Students can effectively defend their views in writing and orally.

Assessment: Scoring of senior theses by outside reviewer, scoring of public presentation by peer reviewer.

Evaluation: assessment will be conducted spring 2013

Issue: need to create senior thesis rubric with HUM faculty, Senior thesis oral presentation rubric with COM faculty.

Action Responsibility: Melinda Phillips and SSC/COM/LLT (HUM) faculty

b. Report on Plan for 2012-2013 Academic Year

1. Complete 2nd round HUM APPR
2. Develop rubrics for Senior Theses
3. Develop rubric for Senior Thesis oral presentation
4. Develop rubric for Creative Writing portfolio
5. Standardize assessment procedures for next HUM Chair

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Table 1: Assessment Plan for B.S. in Humanities

LTU Uudergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems."	Students can analyze with ease challenging literary, philosophical, and historical texts.	Papers from Jr. Sr. Electives scored by outside reader	Grade of B or above	Fall 2013	Yearly
	Students can evaluate problems from an interdisciplinary perspective.	Senior Thesis scored by outsider	Grade of B or above	Spring 2013	Yearly
	Students can demonstrate creativity in at least one literary genre.	Portfolio scored by outsider	Grade of B or above	Spring 2013	Yearly
"LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines."	Students have expertise in using research databases in History, Philosophy, Literature, Social Sciences	Senior Thesis scored by outsider	Grade of B or above	Spring 2013	Yearly
"LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities."					

LTU Uudergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate professional standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation."	Students can conduct original research. Students can effectively incorporate secondary texts into primary analyses. Students can effectively defend their views in writing and orally.	Senior thesis scored by outsider Public presentation/ oral presentation rubric scored by peer reviewer	Grade of B or above	Spring 2013	Yearly
"LTU graduates will demonstrate their mastery of mathematics to solve real-world problems by isolating relevant factors, constructing abstract models, communicating precisely and reasoning logically."	Students can analyze with ease challenging literary, philosophical, and historical texts.	Papers from Jr. Sr. Electives scored by outside reader	Grade of B or above	Fall 2013	Yearly
"LTU graduates will demonstrate proficiency in reading and interpreting complex, intellectually challenging texts and evaluating their analytical architecture from an independent point of view."					
"LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields."					
"LTU graduates will demonstrate civic, team, and global leadership skills by identifying a personal leadership philosophy, exhibiting entrepreneurial skills, and becoming agents of positive change."					

LTU Uudergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions."					
"LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions."					

BS in Media Communication

1. **Assessment Plan : B.S. in Media Communication**
   (see Table 1: Assessment Matrix below.)

2. **Action Plan for B.S. in Media Communications**
   a. **Report on 2011-2012 Academic Year**

Program Objective: Graduates will have an in-depth understanding of the scope and purpose of the media industry.

Assessment: Direct assessment of student assignments in MKT 3013: Principles of Marketing, MCO 3633: Social Media, MCO 4073: Emerging Web Techniques, MCO 1003: Media, Communication and Society
Evaluation: None in 2011-12 Issue: None
Actions: Collecting assignments; loop-closing scheduled for summer 2014 Responsibility: Jody Gaber

Program Learning Objective: Graduates will understand the standards of professional practices within the media industry.

Assessment: Direct assessment of student assignments in MKT 3013: Principles of Marketing, MCO 3633: Social Media, MCO 4073: Emerging Web Techniques, MCO 1003: Media, Communication and Society
Evaluation: None in 2011-12 Issue: None
Actions: Collecting assignments; loop-closing scheduled for summer 2014 Responsibility: Jody Gaber

Program Learning Objective: Graduates will have an industry-standard skill set in production, post-production and new media.

Assessment: Direct assessment of students video projects in MCO 2003: Intro to Video Production, MCO 3303: Video Editing, MCO 4073: Advance Field Production
Evaluation: None in 2011-12 Issue: None
Actions: Collecting assignments; loop-closing scheduled for summer 2013 Responsibility: Jody Gaber

Program Learning Objective: Graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities.

Assessment: Direct assessment of portfolios from LDR 3001 and LDR 4001 Evaluation: None in 2011-12
Issue: None
Actions: Collecting assignments; loop-closing scheduled for summer 2013 Responsibility: Jody Gaber

Program Learning Objective: Graduates will possess industry-standard professional skills in writing, presentations, and interpersonal communication.

Assessment: Direct assessment of student assignments in MCO2543: Writing for Electronic and Print Media, MCO3713: Advanced Writing for Media, and COM2113: Speech

Evaluation: None in 2011-12 Issue: None
Actions: Collecting assignments; loop-closing scheduled for summer 2015 Responsibility: Jody Gaber

Program Learning Objective: Graduates will understand the impact of their professional decisions on the public and broader global societies.

Assessment: SSC3723: Ethics - direct assessment of assignments ; MCO 1003: Media, Communication & Society-Direct assessment of assignments Evaluation: None in 2011-12 Issue: None
Actions: Collecting assignments; loop-closing scheduled for summer 2015 Responsibility: Jody Gaber

b. Report on Plan for 2012-2013 Academic Year

1) Develop rubrics: a) production, b) post-production, c) new media, d) sustainability.
2) Work with adjuncts to standardize assessment of student assignments across sections and courses.
3) Loop-closing on technology and sustainability outcomes.
4) Prepare for APPR review: Fall 2013.

Table 1: Assessment Plan for MEDIA COMMUNICATION

LTU Undergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Admin Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems."	Graduates will have an in-depth understanding of the scope and purpose of the media industry.	Direct assessment of student assignments in MKT 3013: Principles of Marketing, MCO 3633: Social Media, MCO 4073: Emerging Web Techniques, MCO 1003: Media, Communication and Society	Score 3 on professional practices rubric	Annual	3-yr cycle beginning summer 2014
	Graduates will understand the standards of professional practices within the media industry.		Score 3 on professional practices rubric	Annual	3-yr cycle beginning summer 2014
"LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines."	Graduates will have an industry-standard skill set in production, post-production and new media.	Direct assessment of students video projects in MCO 2003: Intro to Video Production, MCO 3303: Video Editing, MCO 4073: Advance Field Production	Score 3 on production, post-production and new media rubrics	Annual	3-yr cycle beginning summer 2013
"LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities."	Graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities.	Direct assessment of leadership portfolios from LDR 3001 and LDR 4001	Score 3 on sustainability rubric	Annual	3-yr cycle beginning summer 2013
"LTU graduates will demonstrate professional standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation."	Graduates will possess industry-standard professional skills in writing, presentations, and interpersonal communication.	HSSC writing assessment		Annual	3-yr cycle beginning summer 2015
		WPE	Pass WPE	Every semester	
		UAC oral presentation assessment		3-yr cycle	
		Direct assessment of student assignments in MCO2543: Writing for Electronic and Print Media, MCO3713: Advanced Writing for Media, and COM2113: Speech	Score 3 on writing / presentation rubrics	Annual	

LTU Undergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Admin Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate their mastery of mathematics to solve real-world problems by isolating relevant factors, constructing abstract models, communicating precisely and reasoning logically."					
"LTU graduates will demonstrate proficiency in reading and interpreting complex, intellectually challenging texts and evaluating their analytical architecture from an independent point of view."					
"LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields."					
"LTU graduates will demonstrate civic, team, and global leadership skills by identifying a personal leadership philosophy, exhibiting entrepreneurial skills, and becoming agents of positive change."					
"LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions."					
"LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions."	Graduates will understand the impact of their professional decisions on the public and broader global societies.	SSC3723: Ethics - direct assessment of assignments	C or better in SSC3723	Annual	3-yr cycle beginning summer 2015
		MCO 1003: Media, Communication & Society- Direct assessment of assignments	75% or better on Media Ethics exam	Annual	

MS in Technical and Professional Communciation

1. MSTPC Assessment Plan

See Table 1 below.

2. Action Plan (Loop-Closing) for MSTPC

a. Report on 2011-12 Academic Year

Learning Objective 1: Use verbal, visual, analytical, and computer skills to create and enhance communication in professional environments

Assessment: Exit survey
Evaluation: No "loop closing" in 2011-12 Issue: No issues identified.
Actions: Surveys administered and data collected in 2011-2012; loop-closing scheduled for summer 2013
Responsibility: Corinne Stavish, program director

Learning Objective 2: Design, produce, and evaluate the various types of technical and professional communication required by diverse audiences

Assessment: Research rubric applied to Semester Project in COM6453
Evaluation: No "loop closing" in 2011-12 Issue: No issues identified.
Actions: Rubric developed in 2011-12, will be applied in 2012-13 and loop- closing scheduled for summer 2014
Responsibility: Corinne Stavish, program director

Learning Objective 3: Apply major rhetorical theories of technical and professional discourse to a variety of communication environments

Assessment: Final Project in COM6443, Rhetoric of Technical Communication
Evaluation: No "loop closing" in 2011-12 Issue: No issues identified.
Actions: Projects being collected in every section of COM6443; Loop-closing scheduled for summer 2014
Responsibility: Corinne Stavish, program director

Learning Objective 4: Gain insight into the current research methodologies applicable to the fields of technical and professional communication

Assessment: Written Communication Rubric applied to COM7203 Practicum Project
Evaluation: No "loop closing" in 2011-12 Issue: No issues identified.
Actions: Rubric developed in 2011-12, will be applied in 2012-13 and loop- closing scheduled for summer 2013
Responsibility: Corinne Stavish, program director

Learning Objective 5: Master presentation techniques that are adaptable to multiple audiences

Assessment: Oral Communication Rubric applied to COM6553 Semester project
Evaluation: No "loop closing" in 2011-12 Issue: No issues identified.

Actions: Rubric developed in 2011-12, will be applied in 2012-13, 2013-14 and loop-closing scheduled for summer 2013
Responsibility: Corinne Stavish, program director

Learning Objective 6: Apply emerging electronic technologies and other media to the creation of various publications and presentations
Assessment: Exit Survey
Evaluation: No "loop closing" in 2011-12 Issue: No issues identified.
Actions: Surveys administered and data collected in 2011-12, 2012-13; loop- closing scheduled for summer 2014
Responsibility: Corinne Stavish, program director

b. Report on Plan for 2012-2103 Academic Year

1. Administer exit survey
2. Collect assignments in identified courses and score with appropriate rubric
3. Curriculum review with program faculty to adapt teaching methods to new rubrics
4. Loop closing on learning goals 1, 2, and 4.

Table 1: Assessment Plan for M.S. in Technical and Professional Communication

LTU Graduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
LTU graduates will apply and, in accordance with their course of study, develop advanced knowledge within their discipline.	Design, produce, and evaluate the various types of technical and professional communication required by diverse audiences.	Exit Survey	4 or better average on the Exit Survey	Ongoing—every graduate completes Exit Survey	Bi-annual, beginning Summer 2013
LTU graduates will analyze and interpret information and implement decisions using the latest techniques and technologies.	Gain insight into the current research methodologies applicable to the fields of technical and professional communication	Research Rubric applied to Semester Project in COM6453	2 or better average on the Research Rubric	Every time COM6453, Research Methods, is offered (varies)	Bi-annual, beginning Summer 2014
LTU graduates will evaluate scholarly literature and, in accordance with their course of study, contribute to the literature.	Apply major rhetorical theories of technical and professional discourse to a variety of communication environments	Final Project in COM6443, Rhetoric of Technical Communication	B or better on Final Project	Every time COM6443, Rhetoric of Technical Communication is offered (varies)	Bi-annual, beginning Summer 2014
LTU graduates will communicate effectively using written, oral, graphical, and digital formats.	Use verbal, visual, analytical, and digital skills to create and enhance communication in professional environments.	Written Communication Rubric applied to COM7203 Practicum Project	2 or better average on the Written Rubric	Every time COM7203, Technical Communication Practicum is offered	Annual, beginning Summer 2013
	Master presentation techniques that are adaptable to multiple audiences	Oral Communication Rubric applied to COM6553 Semester project	2 or better average on the Oral Communication Rubric	Every time COM6553, Advanced Interpersonal Communication is offered (Fall of even years)	Bi-annual, beginning Summer 2013
LTU graduates will develop a broad perspective on professional issues, such as lifelong learning, sustainability, leadership, and ethics.	Use verbal, visual, analytical, and digital skills to create and enhance communication in professional environments	Exit Survey	4 or better average on the Exit Survey	Ongoing—every graduate completes Exit Survey	Bi-annual, beginning Summer 2014

BS in Psychology

1. **Assessment Plan: B.S. Psychology (see Table 1: Assessment Matrix below.)**

2. **Action Plan for B.S. in Psychology**

   a. **Report on 2011-2012 Academic Year**

Program Learning Objective #1: Graduates will demonstrate knowledge and understanding that represents breadth and depth in four content areas of psychology: learning and cognition, biological basis of behavior, developmental changes in behavior, and major history and systems of psychology.

Assessment: Psychology comprehensive multiple choice examination.
Evaluation: Student performance meets goals that at least 67% of program graduates will score at a C level (i.e., 2 out of the 3 program graduates for 2011-2012 scored >70%).
Issue: None
Action: Administer the exam to 2012-2013 program graduates. Responsibility: Matthew Cole

Program Learning Objective #2: Students will demonstrate competence and ability to use appropriate software to produce understandable reports and posters in APA style, including use of statistical analysis software, office dissemination software, and library and internet research databases.

Assessment: Global rating by psychology faculty of major term paper and laboratory assignments in three psychology core curriculum lecture-laboratory courses: PSY 3213-3221, Cognitive Psychology; PSY 3413-3421, Sensation & Perception; PSY 4213-4221, Behavioral Neuroscience
Evaluation: Assessment will be conducted 2013-2014 by new psychology faculty. Issue: Use global scoring rubric (3 point scale with 2 = Exceeds Expectations; 1 = Meets Expectations; 0 = Fails to Meet Expectations).
Action: Evaluate student work during 2013-2014 academic year. Responsibility: At least two Psychology faculty.

Program Learning Objective #3: Students will demonstrate ability to communicate clearly, skillfully, and sensitively with others in a variety of formats (written, oral, graphic presentations) and settings where students might function after graduation.

Assessment: Global rating by psychology faculty and internship supervisors of monitored group discussions, demonstrations that require interviewing and discussion skills, and reports on internship experience in psychology core curriculum lecture- laboratory courses, concentration-specific psychology electives, and internships.
Evaluation: Assessment will be conducted 2013-2014 by new psychology faculty. Issue: Use global scoring rubric (3 point scale with 2 = Exceeds Expectations; 1 = Meets Expectations; 0 = Fails to Meet Expectations).
Action: Evaluate student work during 2013-2014 academic year.Responsibility: At least two Psychology faculty.

Program Learning Objective #4: Students will demonstrate the ability to interact effectively and sensitively with people of diverse abilities backgrounds and cultural perspectives, and explain how individual differences influence beliefs, values, and interaction with others and vice versa.

Assessment: Global rating by internship supervisors.
Evaluation: Mean supervisor rating of 5 student internships was 1.46 (3 point scale with 2 = Exceeds Expectations; 1 = Meets Expectations; 0 = Fails to Meet Expectations).
Issue: Exit interview not conducted.

Action: Conduct exit interview of three program graduates. Responsibility: Internship supervisors; Matthew Cole.

Program Learning Objective #5: Students will demonstrate the ability to develop appropriate and testable hypotheses that include reasonable controls, and ability to follow the APA ethics code in the treatment of human and nonhuman participants in the design, data collection, interpretation, and dissemination of psychological research.

Assessment: Global rating by psychology faculty of major term paper and laboratory assignments in three psychology core curriculum lecture-laboratory courses: PSY 3213-3221, Cognitive Psychology; PSY 3413-3421, Sensation & Perception; PSY 4213-4221, Behavioral Neuroscience
Evaluation: Assessment will be conducted 2013-2014 by new psychology faculty. Issue: Use global scoring rubric (3 point scale with 2 = Exceeds Expectations; 1 = Meets Expectations; 0 = Fails to Meet Expectations).
Action: Evaluate student work during 2013-2014 academic year. Responsibility: At least two Psychology faculty.

Program Learning Objective #6: Students will demonstrate effective use of critical thinking and reasoning to recognize, develop, defend, and criticize arguments and other persuasive appeals.

Assessment: Scoring of major term paper and public presentation in PSY 3113, Research Methods for the Behavioral Sciences.
Evaluation: Psychology majors (n = 7) scored at least 80% on their major term paper-presentation.
Issue: None.
Action: Evaluate students in 2013-2014. Responsibility: Matthew Cole

Program Learning Objective #7: Students will demonstrate the ability to apply knowledge of psychology and psychological principles when formulating career choices, identifying the types of academic experience that will facilitate entry into the workforce, graduate studies, or both, and reflect on personal experiences to promote personal development.

Assessment: Global rating by internship supervisors; exit interview of graduates. Evaluation: Mean supervisor rating of 5 student internships was 1.46 (3 point scale with 2 = Exceeds Expectations; 1 = Meets Expectations; 0 = Fails to Meet Expectations).
Issue: Exit interview not conducted.
Action: Conduct exit interview of three program graduates.
Responsibility: Matthew Cole

b. Report on Plan for 2012-2013 Academic Year

6. Orient new faculty to psychology assessment plan.
7. Administer exit interview.
8. Use global scoring rubric by two or more psychology faculty to evaluate Program Learning Objectives 2, 3, and 5 in 2013-2014.
9. Begin preparation of second psychology program APPR.

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Table 1: Assessment Plan for B.S. in Psychology

LTU Uudergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems."	Objective #1: Graduates will demonstrate knowledge and understanding in four content areas.	Psychology comprehensive multiple choice exam.	67% of graduates will score C or above/Criterion met.	Spring 2012.	Yearly
	Objective #7: Students will apply knowledge of psychology when formulating career choices, entering the workforce, attending graduate studies, and reflecting on personal experiences to promote personal development.	Global rating by internship supervisors (3 point scale with 2 = Exceeds expectations, 1 = Meets expectations, 0 = Fails to meet expectations). Exit interview of graduates.	Mean score of 1 or above on global rating/Criterion met. Appropriate themes on exit interview.	Fall 2011 and Spring 2012. Fall 2012.	Yearly Yearly
"LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines."	Objective #2: Students will demonstrate competence using office and statistical software, and library and internet research databases, to produce APA style reports and posters.	Global rating by psychology faculty in psy core (3 point scale with 2 = Exceeds expectations, 1 = Meets expectations, 0 = Fails to meet expectations).	Mean score of 1 or above on global rating.	Each semester in which course occurs 2013-2014.	Yearly
"LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities."					

LTU Uudergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate professional standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation."	Objective #3: Students will demonstrate ability to communicate with others in a variety of formats and settings before and after graduation.	Global rating by internship supervisors and psy faculty in psy core (3 point scale with 2 = Exceeds expectations, 1 = Meets expectations, 0 = Fails to meet expectations).	Mean score of 1 or above on global rating.	Each semester in which course occurs 2013-2014.	Yearly
	Objective #2: Students will demonstrate competence using office and statistical software, and library and internet research databases, to produce APA style reports and posters.	Global rating by psy faculty in psy core (3 point scale with 2 = Exceeds expectations, 1 = Meets expectations, 0 = Fails to meet expectations).	Mean score of 1 or above on global rating.	Each semester in which course occurs 2013-2014.	Yearly
"LTU graduates will demonstrate their mastery of mathematics to solve real-world problems by isolating relevant factors, constructing abstract models, communicating precisely and reasoning logically."					
"LTU graduates will demonstrate proficiency in reading and interpreting complex, intellectually challenging texts and evaluating their analytical architecture from an independent point of view."					

LTU Uudergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate critical thinking and apply analytical and problem- solving skills in scientific fields."	Objective #6: Students will demonstrate effective use of critical thinking and reasoning to recognize, develop, defend, and criticize arguments and other persuasive appeals.	Major term paper and public presentation in Research Methods.	Score of 80% or above/ n = 7 psy majors met criterion.	Fall 2011.	Yearly
"LTU graduates will demonstrate civic, team, and global leadership skills by identifying a personal leadership philosophy, exhibiting entrepreneurial skills, and becoming agents of positive change."	Objective #4: Students will demonstrate the ability to interact effectively and sensitively with people of diverse abilities backgrounds and cultural perspectives, and explain how individual differences influence beliefs, values, and interaction with others and vice versa.	Global rating by internship supervisors (3 point scale with 2 = Exceeds expectations, 1 = Meets expectations, 0 = Fails to meet expectations).	Mean score of 1 or above on global rating/Criterion met.	Fall 2011 and Spring 2012.	Yearly
"LTU graduates will demonstrate civic, team, and global leadership skills by identifying a personal leadership philosophy, exhibiting entrepreneurial skills, and becoming agents of positive change."					
"LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions."					

LTU Uudergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions."	Objective #5: Students will demonstrate the ability to develop appropriate and testable hypotheses that include reasonable controls, and ability to follow the APA ethics code in the treatment of human and nonhuman participants in the design, data collection, interpretation, and dissemination of psychological research.	Global rating by psy faculty in psy core (3 point scale with 2 = Exceeds expectations, 1 = Meets expectations, 0 = Fails to meet expectations).	Mean score of 1 or above on global rating.	Each semester in which course occurs 2013-2014.	Yearly

BS in Mathematics

1. Assessment Plan : BS in Mathematics

See Table 1 below

2. Action Plan (Loop-Closing)

a. Report on 2011-2012 Academic Year

#1: Apply knowledge

Assessment:	Exams in Calculus 1 (Calc 1), Calculus 2 (Calc 2), Calculus 3 (Calc 3) and Probability and Statistics (Prob/Stat).
Evaluation:	This objective is being met in Prob/Stat and Calc 2. More data is required to determine if the objective is being met in Calc 3. The objective is not being met in Calc 1.
Actions:	Passing requirements need to be raised in Calc 1. Data needs to be collected from all sections of a course in a given semester.
Responsibility:	Data collection=Dr. Bindschadler, Calc 1 =Prof. Merscher

#2: Problem solving

Assessment:	Exams in Calc 1, Calc 2, Calc 3 and Prob/Stat. PBL projects in Calc2 and Calc 3.
Evaluation:	This objective is being met in Prob/Stat. Students and teachers need more experience in the Calc 2 PBL projects. There was not enough data from the Calc 3 PBL projects to determine if the objective is being met. This objective is not being met at the Calc 1 level (only high-achieving students were successful at the more difficult problems).
Actions:	More difficult problems need to be included in all Calc 1 Final Exams. More data needs to be collected on PBL problems.
Responsibility:	Calc 1= Prof. Merscher, PBL=Dr. Zhu

#3: Design and implement a mathematical model

Assessment:	Exams in Calc 1, Calc 2, Calc 3 and Prob/Stat
Evaluation:	There was not enough data collected to determine if this objective was being met in Calc 2, Calc 3, and Prob/Stat. Poor performance in related rates problems suggests that this objective is not being met in Calc 1.
Actions:	Performance in related rates (Calc 1) needs to improve. More data needs to be collected regarding this objective.
Responsibility:	Calc 1=Dr. Cartwright, Math models=Dr. Nelson

#4: Teamwork

Assessment:	PBL projects in Calc 2 and Calc 3.
Evaluation:	This objective is being accomplished via PBL projects in Calc 2 and Calc **2.** There was no evidence collected from Prob/Stat or Calc 1 for work done in teams. Students work in teams in the Calc 1 and Calc 2 workshops, but data was not collected from the workshops. The assessment plan states that this objective is to be accomplished via an exit interview, which was not done. PBL projects and workshop reports may be a better way to measure the attainment of this objective.
Actions:	Data needs to be collected from all courses that include workshops and PBL

projects.
Responsibility: Dr. Zhu

#5: Communication
Assessment: Written and oral communication evidence from WPE and Senior Project.
Evaluation: Data was not collected from the WPE or Senior Projects. This learning objective was not assessed in this academic year.
Actions: Collect data from WPE and Senior Projects related to oral and written communication skills each year. Written reports assigned in classes graded by rubrics may also be used to assess this objective. Oral presentations may be graded by a rubric either live or in recorded formats.
Responsibility: WPE=Dr. Cartwright, Sr. Project =Dr. Shamir, Written papers= Dr. Cartwright, Oral presentations=Dr. Shamir

#6: Global society
Assessment: Alumni survey
Evaluation: The Alumni survey is given every two years, most recently in Fall 2010. No data was collected this academic year.
Actions: The Alumni survey will be given in Fall 2012. Responsibility: Alumni survey=Dr. Bindschadler and M. Wiseman

#7: Lifelong learning
Assessment: Alumni survey
Evaluation: The Alumni survey is given every two years, most recently in Fall 2010. No data was collected this academic year.
Actions: The Alumni survey will be given in Fall 2012.
Responsibility: Alumni survey=Dr. Bindschadler

#8: Technology
Assessment: Exams in Calc 1, Calc 2, Calc 3, and Prob/Stat
Evaluation: This objective is being met in Prob/Stat. There was not enough data to determine if this objective is being met in Calc 2 or Calc 3. This objective is not being met in Calc 1.
Actions: The performance level on the applied problems in Calc 1 needs to improve. More data needs to be collected regarding the use of technology in math courses.
Responsibility: Dr. Lowry

#9: Secure employment Assessment:
Alumni survey
Evaluation: The Alumni survey is given every two years, most recently in Fall 2010. No data was collected this academic year.
Actions: The Alumni survey will be given in Fall 2012.
Responsibility: Alumni survey=M. Wiseman

b. Report on Plan for 2012-2013 Academic Year Fall 2012

- Perform Alumni Survey.
- Continue three year cycle of assessment of Math courses. Each faculty member will choose 2 sections to assess each semester.
- PBL projects and Calculus workshops will be used to assess goal #4.
- Develop rubrics for direct assessments (assignments, exams), written and oral communication, and for the Alumni survey.

Spring 2013

- Continue three year cycle of assessment of Math courses. Each faculty member will choose 2 sections to assess each semester.
- Data will be archived from Senior Projects and the WPE to assess goals #3 and 5
- The Math/CS dept. will have a closing the loop assessment retreat in May 2013 to evaluate the data collected and develop an action plan for 2013-2014
- Develop more quantitative measures to assess learning objectives.

Table 1: Assessment Plan for BS in Mathematics

LTU Uudergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems."	*Apply* knowledge of mathematics appropriate to a problem. (1)	Direct assessment of student exams	Level 3 on exam rubric	Annual	Annual
	Analyze a problem, and *identify* and *define* the mathematical techniques appropriate to its solution. (2)	Direct assessment of student assignments	Level 3 on assignment rubric	Annual	Annual
	Use current and established techniques, skills, and tools necessary for applying mathematics. (8)	Direct assessment of student assignments	Level 3 on assignment rubric	Annual	Annual
"LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines."	Design, implement, and evaluate a mathematical model that satisfies specified requirements (3)	Direct assessment of student assignments	Level 3 on assignment rubric	Annual	Annual
"LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities."	Recognize the need for and engage in life-long learning, continuing professional development and adapt to changes in the field. (7)	Alumni survey	Level 3 on survey rubric	Annual (two years after graduation)	Annual

LTU Uudergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate professional standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation."	*Communicate* mathematical ideas and models effectively to a range of audiences both orally and in written form. (5)	Direct assessment of student projects WPE	Level 3 on oral and written presentation rubrics Pass WPE	Annual	Annual
"LTU graduates will demonstrate their mastery of mathematics to solve real-world problems by isolating relevant factors, constructing abstract models, communicating precisely and reasoning logically."	Analyze a problem, and identify and define the mathematical techniques appropriate to its solution. (2)	Direct assessment of student assignments	Level 3 on assignment rubric	Annual	Annual
"LTU graduates will demonstrate proficiency in reading and interpreting complex, intellectually challenging texts and evaluating their analytical architecture from an independent point of view."					
"LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields."	Analyze a problem, and identify and define the mathematical techniques appropriate to its solution. (2)	Direct assessment of student assignments	Level 3 on assignment rubric	Annual	Annual
"LTU graduates will demonstrate civic, team, and global leadership skills by identifying a personal leadership philosophy, exhibiting entrepreneurial skills, and becoming agents of positive change."	Analyze the local and global impact of models on individuals, organizations, and society. (6)	Alumni survey	Level 3 on survey rubric	Annual (two years after graduation)	Annual

LTU Uudergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions."	*Function* effectively on teams to accomplish a common goal, including performing leadership tasks. (4)	Exit interview	Affirmative answers from 80% of interviewees.	Annual	Annual
"LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions."	Secure employment and/or attend graduate school in mathematics or any field based on mathematics, drawing on their experiences, both within and outside the major to become responsible citizens and effective professionals. (9).	Alumni survey	Level 3 on survey rubric	Annual (two years after graduation)	Annual

BS in Computer Science

1. Assessment Plan : BS in Computer Science

See Table 1 below

2..Action Plan (Loop-Closing)

a. Report on 2011-2012 Academic Year

<u>#1: Apply knowledge</u>

Assessment:	Exams in Computer Architecture and Assembly (CAA), projects and homework in Operating Systems (OS), and assignments in Computer Science 2 (CS2), Computer Science 1 (CS1), and Artificial Intelligence (AI).
Evaluation:	CA covered the necessary material, there were some projects in OS, CS2 was accomplishing the goal in terms of C++ knowledge but Discrete Math (DM) skills are weak, AI was as at an appropriate level, and CS1 needs more rigorous math.
Actions:	No changes needed in CA and AI. Possibly more projects in OS. Improve DM for CS2. More mathematics rigor in pre-req courses for CS1.
Responsibility:	OS=Dr. Azar, DM= Dr. Bindschadler, Math rigor=Dr. Azar

<u>#2: Problem solving</u>

Assessment:	Exams in Computer Architecture and Assembly (CAA), projects and homework in Operating Systems (OS), and assignments in Computer Science 2 (CS2), Computer Science 1 (CS1), and Artificial Intelligence (AI).
Evaluation:	Problem solving skills were excellent in CS2. Problem solving was above average in OS. Problem solving was average in CS1 and AI. More data is required to assess the problem solving skills in CAA and DM.
Actions:	DM will be re-assessed in Fall 2012. More problem solving will be introduced in OS. Real-world projects should be implemented in CS1 and AI.
Responsibility:	DM=Dr. Bindschadler, CS1=Dr. Azar, OS=Dr. Azar, AI=Dr. Azar

<u>#3: Design and implement a computer-based system</u>

Assessment:	Exams in Computer Architecture and Assembly (CAA), projects and homework in Operating Systems (OS), and assignments in Computer

Science 2 (CS2), Computer Science 1 (CS1), and Artificial Intelligence (AI).

Evaluation: Computer system design and implementation was above average for CS2, And average for CS1 and AI. CAA is very theoretical and there was not implementation in this course, and there was not enough data collected on this objective from OS.
Actions: More projects are needed in CS2, CS1, and AI.
Responsibility: Dr. Azar

#4: Teamwork
Assessment: Team projects in OS.
Evaluation: There was only one team project in OS. There were no teams used in CS2 and CAA. There was not enough data to determine the use of teams in CS1 and AI.
Actions: More team projects will be introduced in OS. Team projects will be introduced in CS1, CS2, CAA, and AI where appropriate.
Responsibility: Dr. Bindschadler

#5: Communication
Assessment: Written and oral communication evidence from WPE and Senior Project.
Evaluation: Data was not collected from the WPE or Senior Projects. This learning objective was not assessed in this academic year.
Actions: Collect data from WPE and Senior Projects related to oral and written communication skills each year.
Responsibility: WPE=Dr. Cartwright, Sr. Project =Dr. Shamir

#6: Global society
Assessment: Alumni survey
Evaluation: The Alumni survey is given every two years, most recently in Fall 2010. No data was collected this academic year.
Actions: The Alumni survey will be given in Fall 2012.
Responsibility: Alumni survey=M. Wiseman and Dr. Azar

#7: Lifelong learning
Assessment: Alumni survey
Evaluation: The Alumni survey is given every two years, most recently in Fall 2010. No data was collected this academic year.
Actions: The Alumni survey will be given in Fall 2012.
Responsibility: Alumni survey=Dr. Azar

#8: Technology
Assessment: Exams in Computer Architecture and Assembly (CAA), projects and homework in Operating Systems (OS), and assignments in Computer

	Science 2 (CS2), Computer Science 1 (CS1), and Artificial Intelligence (AI).
Evaluation:	The real world deadlock examples in AI use excellent current technology. Technology in CS1, CS2, and AI is above average. It was unclear if IDEs are used in CS1, GUIs were not used in some sections of CS2, and AI did not include real world applications. CAA is more theoretical but assembler programming is included.
Actions:	Make sure IDE tools are used in CS1. Make sure all sections of CS2 use GUIs. Include real world applications in AI.
Responsibility:	CS1=Dr. Azar, CS2=Dr. Wang, AI=Dr. Chung

#9: Secure employment Assessment:

	Alumni survey
Evaluation:	The Alumni survey is given every two years, most recently in Fall 2010. No data was collected this academic year.
Actions:	The Alumni survey will be given in Fall 2012.
Responsibility:	Alumni survey=M. Wiseman

#10: Complete understanding of a programming language

Assessment:	Exams in Computer Architecture and Assembly (CAA), projects and homework in Operating Systems (OS), and assignments in Computer Science 2 (CS2), Computer Science 1 (CS1), and Artificial Intelligence (AI).
Evaluation:	The programming in CS1 and CS2 was excellent. The programming in OS and AI was above average, and the assignments in CAA covered the necessary programming. More debugging could benefit CS1. The STL library and multidimensional vectors and arrays are underutilized in CS2. More Unix/Linux could be incorporated in OS. AI primarily used only existing tools.
Actions:	More debugging in CS1. Use STL library in all sections of CS2. Increase the use of multi-dim Vectors and arrays in CS2. Incorporate more Unix/Linux in OS. Have students develop new tools in AI.
Responsibility:	CS1, CS2=Dr. Wang, OS, AI=Dr. Azar

b. Report on Plan for 2012-2013 Academic Year Fall 2012

- Perform Alumni Survey.
- Continue three year cycle of assessment of CS courses. Each faculty member will choose 2 sections to assess each semester.
- An exit interview will be developed by CS faculty to assess goal #4.
- Develop rubrics for direct assessments (assignments, exams), written and oral communication, and for the Alumni survey.

Spring 2013

- Continue three year cycle of assessment of CS courses. Each faculty member will choose 2 sections to assess each semester.
- Data will be archived from Senior Projects and the WPE to assess goals #3 and 5
- The Math/CS dept. will have a closing the loop assessment retreat in May 2013 to evaluate the data collected and develop an action plan for 2013-2014
- Develop more quantitative measures to assess learning objectives.

Table 1: Assessment Plan for BS in Computer Science

LTU Uudergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems."	1. Apply knowledge of computing and mathematics appropriate to the discipline.	Direct assessment of standard questions on student final exams.	Level 3 on direct assessment rubric	Annual	Annual
	10. Display a complete understanding of a computer language (syntax, semantics and terminology), develop and debug complex code.	Direct assessment of student assignments	Level 3 on direct assessment rubric	Annual	Annual
	8. Apply current techniques, skills, and tools necessary for computing practice.	Direct assessment of student work according to the master course	Level 3 on direct assessment rubric	Annual	Annual
"LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines."	3. Design, implement, and evaluate a computer-based system, process, component, or program to meet its specified requirements.	Direct assessment of Senior Project written reports	Level 3 on direct assessment rubric	Annual	Annual
"LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities."	7. Recognize the need for and engage in continuing professional development [and learn new technologies] and adapt to changes in the field.	Alumni survey	Level 3 on survey rubric	Annual (two years after graduation)	Annual

LTU Uudergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate professional standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation."	5. Plan, create and integrate oral and written communication of [mathematical and algorithmic ideas] effectively to audiences having a range of technical understanding.	a) Direct assessment of Senior Project oral and written reports b) WPE	a) Level 3 on oral and written rubrics b) Pass WPE	Annual	Annual
"LTU graduates will demonstrate their mastery of mathematics to solve real-world problems by isolating relevant factors, constructing abstract models, communicating precisely and reasoning logically."	2. Analyze a problem, and identify and define the computing requirements appropriate to its solution.	Direct assessment of standard questions on student final exams.	Level 3 on direct assessment rubric	Annual	Annual
"LTU graduates will demonstrate proficiency in reading and interpreting complex, intellectually challenging texts and evaluating their analytical architecture from an independent point of view."	Plan, create and integrate oral and written communication of [mathematical and algorithmic ideas] effectively to audiences having a range of technical understanding.	c) Direct assessment of Senior Project oral and written reports d) WPE	c) Level 3 on oral and written rubrics d) Pass WPE	Annual	Annual

LTU Uudergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields."	2. Analyze a problem, and identify and define the computing requirements appropriate to its solution.	Direct assessment of standard questions on student final exams.	Level 3 on direct assessment rubric	Annual	Annual
"LTU graduates will demonstrate civic, team, and global leadership skills by identifying a personal leadership philosophy, exhibiting entrepreneurial skills, and becoming agents of positive change."	6) Analyze the local and global impact of computing on individuals, organizations, and society.	Alumni survey	Level 3 on survey rubric	Annual (two years after graduation)	Annual
"LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions."	4) Function effectively on teams to accomplish a common goal.	Exit interview	Affirmative answers from 80% of interviewees.	Annual	Annual
"LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions."	9) Secure employment and/or attend graduate school in their field, drawing on their experiences, both within and outside the major to become responsible citizens and effective professionals	Alumni survey	Level 3 on survey rubric	Annual (two years after graduation)	Annual

BS in Mathematics and Computer Science

1. Assessment Plan : BS in Mathematics and Computer Science

See Table 1 below

2. Action Plan (Loop-Closing)

a. Report on 2011-2012 Academic Year

#1: Apply knowledge

Assessment:	Exams in Computer Architecture and Assembly (CAA), projects and homework in Operating Systems (OS), and assignments in Computer Science 2 (CS2), and Computer Science 1 (CS1). Exams in Calculus 1 (Calc 1), Calculus 2 (Calc 2), Calculus 3 (Calc 3) and Probability and Statistics (Prob/Stat).
Evaluation:	CA covered the necessary material, there were some projects in OS, CS2 was accomplishing the goal in terms of C++ knowledge but Discrete Math (DM) skills are weak, and CS1 needs more rigorous math. This objective is being met in Prob/Stat and Calc 2. More data is required to determine if the objective is being met in Calc 3. The objective is not being met in Calc 1.
Actions:	No changes needed in CA. Possibly more projects in OS. Improve DM for CS2. More mathematics rigor in pre-req courses for CS1. Passing requirements need to be raised in Calc 1. Data needs to be collected from all sections of a course in a given semester.
Responsibility:	OS=Dr. Cartwright, DM=Dr. Bindschadler, Math rigor=Dr. Cartwright Calc 1 =Prof. Merscher

#2: Problem solving

Assessment:	Exams in Computer Architecture and Assembly (CAA), projects and homework in Operating Systems (OS), and assignments in Computer Science 2 (CS2), and Computer Science 1 (CS1). Exams in Calc 1, Calc 2, Calc 3 and Prob/Stat. PBL projects in Calc2 and Calc 3.
Evaluation:	Problem solving skills were excellent in CS2. Problem solving was above average in OS. Problem solving was average in CS1. More data is required to assess the problem solving skills in CAA and DM. This objective is being met in Prob/Stat. Students and teachers need more experience in the

	Calc 2 PBL projects. There was not enough data from the Calc 3 PBL projects to determine if the objective is being met. This objective is not being met at the Calc 1 level (only high-achieving students were successful at the more difficult problems).
Actions:	DM will be re-assessed in Fall 2012. More problem solving will be introduced in OS. Real-world projects should be implemented in CS1. More difficult problems need to be included in all Calc 1 Final Exams. More data needs to be collected on PBL problems.
Responsibility:	DM=Dr. Bindschadler, CS1=Dr. Nelson, OS=Dr. Catrwright, Calc 1=Prof. Merscher, PBL= Zhu

<u>#3: Design and implement a computer-based system and mathematical model</u>

Assessment:	Exams in Computer Architecture and Assembly (CAA), projects and homework in Operating Systems (OS), and assignments in Computer Science 2 (CS2), and Computer Science 1 (CS1). Exams in Calc 1, Calc 2, Calc 3 and Prob/Stat.
Evaluation:	Computer system design and implementation was above average for CS2, And average for CS1. CAA is very theoretical and there was not implementation in this course, and there was not enough data collected on this objective from OS. There was not enough data collected to determine if this objective was being met in Calc 2, Calc 3, and Prob/Stat. Poor performance in related rates problems suggests that this objective is not being met in Calc 1.
Actions:	More projects are needed in CS2, and CS1. Performance in related rates (Calc 1) needs to improve. More data needs to be collected regarding this objective.
Responsibility:	CS1, CS2, Calc 1=Dr. Cartwright, Math models=Dr. Nelson

<u>#4: Teamwork</u>

Assessment:	Team projects in OS. PBL projects in Calc 2 and Calc 3.
Evaluation:	There was only one team project in OS. There were no teams used in CS2 and CAA. There was not enough data to determine the use of teams in CS1. This objective is being accomplished via PBL projects in Calc 2 and Calc 3. There was no evidence collected from Prob/Stat or Calc 1 for work done in teams. Students work in teams in the Calc 1 and Calc 2 workshops, but data was not collected from the workshops. More team projects will be introduced in OS. Team projects will be introduced in CS1, CS2, and CAA where appropriate. The assessment plan states that this objective is to be accomplished via an exit interview, which was not done. PBL projects and workshop reports may be a better way to measure the attainment of this objective.
Actions:	Data needs to be collected from all courses that include workshops and PBL projects.
Responsibility:	OS, CS1, CS2, CAA=Dr. Bindschadler, PBL=Dr. Zhu

#5: Communication

Assessment:	Written and oral communication evidence from WPE and Senior Project.
Evaluation:	Data was not collected from the WPE or Senior Projects. This learning objective was not assessed in this academic year.
Actions:	Collect data from WPE and Senior Projects related to oral and written communication skills each year. Written reports assigned in classes graded by rubrics may also be used to assess this objective. Oral presentations may be graded by a rubric either live or in recorded formats.
Responsibility:	WPE=Dr. Cartwright, Sr. Project =Dr. Shamir, Written papers= Dr. Cartwright, Oral presentations=Dr. Shamir

#6: Global society

Assessment:	Alumni survey
Evaluation:	The Alumni survey is given every two years, most recently in Fall 2010. No data was collected this academic year.
Actions:	The Alumni survey will be given in Fall 2012.
Responsibility:	Alumni survey=Dr. Bindschadler and M. Wiseman

#7: Lifelong learning

Assessment:	Alumni survey
Evaluation:	The Alumni survey is given every two years, most recently in Fall 2010. No data was collected this academic year.
Actions:	The Alumni survey will be given in Fall 2012.
Responsibility:	Alumni survey=Dr. Bindschadler

#8: Technology

Assessment:	Exams in Computer Architecture and Assembly (CAA), projects and homework in Operating Systems (OS), and assignments in Computer Science 2 (CS2), and Computer Science 1 (CS1). Exams in Calc 1, Calc 2, Calc 3, and Prob/Stat.
Evaluation:	Technology in CS1, CS2, and AI is above average. It was unclear if IDEs are used in CS1, GUIs were not used in some sections of CS2, and AI did not include real world applications. CAA is more theoretical but assembler programming is included. This objective is being met in Prob/Stat. There was not enough data to determine if this objective is being met in Calc 2 or Calc 3. This objective is not being met in Calc 1.
Actions:	Make sure IDE tools are used in CS1. Make sure all sections of CS2 use GUIs. The performance level on the applied problems in Calc 1 needs to improve. More data needs to be collected regarding the use of technology in math courses.
Responsibility:	CS1, CS2=Dr. Cartwright, technology=Dr. Lowry

#9: Secure employment

Assessment:	Alumni survey

Evaluation:	The Alumni survey is given every two years, most recently in Fall 2010. No data was collected this academic year.
Actions:	The Alumni survey will be given in Fall 2012.
Responsibility:	Alumni survey=M. Wiseman

<u>#10: Complete understanding of a programming language</u>

Assessment:	Exams in Computer Architecture and Assembly (CAA), projects and homework in Operating Systems (OS), and assignments in Computer Science 2 (CS2), and Computer Science 1 (CS1).
Evaluation:	The programming in CS1 and CS2 was excellent. The programming in OS and AI was above average, and the assignments in CAA covered the necessary programming. More debugging could benefit CS1. The STL library and multidimensional vectors and arrays are underutilized in CS2. More Unix/Linux could be incorporated in OS.
Actions:	More debugging in CS1. Use STL library in all sections of CS2. Increase the use of multi-dim Vectors and arrays in CS2. Incorporate more Unix/Linux in OS.
Responsibility:	Dr. Cartwright

b..Report on Plan for 2012-2013 Academic Year Fall 2012

- Perform Alumni Survey.
- Continue three year cycle of assessment of Math/CS courses. Each faculty member will choose 2 sections to assess each semester.
- An exit interview will be developed by CS faculty to assess goal #4. Also PBL projects and workshops may be used to assess goal #4.
- Develop rubrics for direct assessments (assignments, exams), written and oral communication, and for the Alumni survey.

Spring 2013

- Continue three year cycle of assessment of Math/CS courses. Each faculty member will choose 2 sections to assess each semester.
- Data will be archived from Senior Projects and the WPE to assess goals #3 and 5
- The Math/CS dept. will have a closing the loop assessment retreat in May 2013 to evaluate the data collected and develop an action plan for 2013-2014
- Develop more quantitative measures to assess learning objectives

Table 1: Assessment Plan for Mathematics and Computer Science

LTU Uudergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems."	*Apply* knowledge of computing and mathematics appropriate to a problem. *(1)*	Direct assessment of standard questions on student final exams.	Level 3 on direct assessment rubric	Annual	Annual
	Display a complete understanding of a computer language ((syntax, semantics and terminology), *develop* and *debug* complex code. *(10)*	Direct assessment of student assignments	Level 3 on direct assessment rubric	Annual	Annual
	Apply current and established techniques, skills, and tools necessary for applying mathematics and computing practice. *(8)*	Direct assessment of student work	Level 3 on direct assessment rubric	Annual	Annual
"LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines."	*Design*, *implement*, and *evaluate* a mathematical model, computer-based system, process, component, or program to meet its specified requirements *(3)*	Direct assessment of Senior Project written reports	Level 3 on direct assessment rubric	Annual	Annual
"LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities."	*Recognize* the need for and an ability to engage in continuing professional development [and learn new technologies] and adapt to changes in the field. *(7)*	Alumni survey	Level 3 on survey rubric	Annual (two years after graduation)	Annual

LTU Uudergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate professional standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation."	*Plan, create and integrate* oral and written communication of [mathematical and algorithmic ideas] effectively to audiences having a range of technical understanding. *(5)*	Direct assessment of Senior Project oral and written reports WPE	Level 3 on oral and written rubrics Pass WPE	Annual	Annual
"LTU graduates will demonstrate their mastery of mathematics to solve real-world problems by isolating relevant factors, constructing abstract models, communicating precisely and reasoning logically."	*Analyze* a problem, and *identify* and *define* the computing requirements and mathematical techniques appropriate to its solution. *(2)*	Direct assessment of standard questions on student final exams.	Level 3 on direct assessment rubric	Annual	Annual
"LTU graduates will demonstrate proficiency in reading and interpreting complex, intellectually challenging texts and evaluating their analytical architecture from an independent point of view."					
"LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields."	*Analyze* a problem, and *identify* and *define* the computing requirements and mathematical techniques appropriate to its solution. *(2)*	Direct assessment of standard questions on student final exams.	Level 3 on direct assessment rubric	Annual	Annual
"LTU graduates will demonstrate civic, team, and global leadership skills by identifying a personal leadership philosophy, exhibiting entrepreneurial skills, and becoming agents of positive change."	*Analyze* the local and global impact of computing and models on individuals, organizations, and society. *(6)*	Alumni survey	Level 3 on survey rubric	Annual (two years after graduation)	Annual

LTU Uudergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions."	Function effectively on teams to accomplish a common goal, including performing leadership tasks (4)	Exit interview	Affirmative answers from 80% of interviewees.	Annual	Annual
"LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions."	*Secure* employment and/or *attend* graduate school in their field, drawing on their experiences, both within and outside the major to become responsible citizens and effective professionals. *(9)*	Alumni survey	Level 3 on survey rubric	Annual (two years after graduation)	Annual

BS in Chemical Biology

1. **Assessment Plan – Chemical Biology**
   See Table 1.

2. **Action Plan (Loop-Closing) for Chemical Biology Program**

   a. **Report on 2011-2012 Academic Year**

University Goal: "LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems."

Objective: Evaluate knowledge and expertise gained in their field by meeting outcomes on national field exam.
Assessment: ETS National Exam
Evaluation: 60% of graduates score at or above national mean. (4 year running average)
Issue: More Data needed.
Actions: Evaluation completed and running average not met. More data needed for new program.
Responsibility: Tony Sky -Chairperson of the Natural Science Department with assistance from NS faculty.

Evaluation: Alignment of curriculum with exit exam questions; identification of weak points.
Issue: Need more data.
Actions: No action taken at this time. Assessment due in 2012-13.
Responsibility: Tony Sky – Chairperson of the Natural Sciences Department with assistance from NS faculty

University Goal : "LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines."

Assessment: Direct assessment of student assignments with rubric.
Course objectives in BIO 2323, BIO 2201, CHM 3411 and BIO 4813.
Evaluation: The designation of qualified/not qualified will be given. 80% will receive a "qualified" designation.
Issue: Data not received.
Actions: Goal not met. No further action taken at this time.
Responsibility: Instructors of BIO 2323, BIO 2201, CHM 3411 and BIO 4813.

Assessment: Direct assessment of student assignments with rubric.
Course objectives in BIO 2323, BIO 2201, CHM 3411 and BIO 4813.
Evaluation: 80% "confident" and "very confident" overall of their mastery of the course objectives.
Issue: None.
Actions: Goal met at 88%. No further action taken at this time.
Responsibility: Instructors of BIO 2323, BIO 2201, CHM 3411 and BIO 4813.

University Goal : "LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities."

Assessment: PBL problem with poster or paper with rubric and peer review in PSC 3001. Evaluation: 80% "satisfactory" or "superior" performance.
Issue: No data available. This is a new departmental goal.
Actions: Implementation in Spring 2013. No further action taken at this time.
Responsibility: Instructor of PSC 3001.

University Goal "LTU graduates will demonstrate professional standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation."

Objective: Evaluation of written work including papers and laboratory reports. Assessment: Direct assessment of student assignments with a rubric.
Evaluation: 80% "satisfactory" or "superior" performance based on rubrics. Issue: None
Actions: Goal met at 100%. No further action taken at this time. Responsibility:
Instructor of BIO 2323, BIO 1221, 1231, 4811 and CHM 3403

Objective: Laboratory reports will be evaluated using rubric, including standards for organization, language, and visual communication (tables/graphs).
Assessment: Direct assessment of student assignments with a rubric.
Evaluation: 80% "satisfactory" or "superior" performance based on rubrics. Issue: None
Actions: Goal met at 100%. No further action taken at this time. Responsibility:
Instructor of BIO 2323, BIO 1221, 1231, 4811 and CHM 3403

Assessment: Evaluation of student presentations using oral rubric.
Evaluation: 80% "satisfactory" or "superior" performance based on rubrics. Issue: None
Actions: Goal met at 100%. No further action taken at this time.
Responsibility: Faculty requiring student presentations in their course.

University Goal : "LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields."

Assessment: Evaluation of student presentation of a paper from the literature to a panel of faculty and students as part of BIO 4813 or PSC 3001 with rubric.
Evaluation: 80% "satisfactory" or "superior" performance by the senior year. Issue: No data received for BIO 4813. PSC 3001 not evaluated till Spring 2013. Actions: No further action taken at this time.
Responsibility: Instructor of BIO 4813 or PSC 3001.

Assessment: Completion of an independent research project or experiment with minimal assistance in BIO 4811 and/or BIO 4912/4922.
Evaluation: 80% "satisfactory" or "superior" performance by the senior year. Issue: None.
Actions: Goal met at 100%. No further action taken at this time.
Responsibility: Instructor of BIO 4811 and/or BIO 4912/4922.

University Goal : “LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members‘ contributions.”

Assessment: Instructor and team-self evaluation in BIO 1221, BIO 1231, BIO 2201 or BIO 2203.
Evaluation: Team process check survey will be used. 80% of responses with “always satisfied” or “frequently satisfied” to survey which will include peer evaluation.
Issue: None.
Actions: No action taken
Responsibility: Instructor of BIO 1221, BIO 1231, BIO 2201 or BIO 2203.

University Goal : “LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions.”

Assessment: Ethics case study assignment or quiz in PSC 3001 Evaluation:
80% “satisfactory” or “superior” performance.
Issue: First case study assignment given in Spring 2012. Rubric needs to be developed. Actions: Data needs to be accumulated and will be analyzed beginning of Spring 2013. Responsibility: Instructor of PSC 3001 and NS faculty.

b. Report on Plan for 2012-2013 Academic Year

The following needs to be addressed in the upcoming academic year based on this year’s assessment.

University Goal:

- LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems.
- LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines.
- LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities.
- LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields.
- LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members‘ contributions.
- LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions.

Table 1: Assessment Plan for the Chemical Biology Program

LTU Undergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems."	Evaluate knowledge and expertise gained in their field.	ETS National Exam Evaluate exit exam results	60% of graduates score at or above national mean. (4 year running average) Alignment of curriculum with exit exam questions; identification of weak points	Annually, late spring.	Every two years. Fall 2012. Every four years beginning Spring 2013
"LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines."		Direct assessment of coursework with rubric in BIO 2323, BIO 2201, CHM 3411, and BIO 4813 Course Objectives	The designation of qualified/not qualified will be given. 80% will receive a "qualified" designation. 80% "confident" and "very confident" overall of their mastery of the objectives.	Semester the course is offered. Annual	Annual Annual

LTU Undergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities."		PBL problem with poster or paper with rubric and peer review.	80% "satisfactory" or "superior" performance.	Spring Semester	Every two years beginning in Spring 2014.
"LTU graduates will demonstrate professional standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation."		Evaluation of written work including papers and laboratory reports with rubric. Laboratory reports will be evaluated using rubric, including standards for organization, language, and visual communication (tables/graphs). Evaluation of student presentations using oral rubric.	80% "satisfactory" or "superior" performance. 80% "satisfactory" or "superior" performance. 80% "satisfactory" or "superior" performance.	Semester Semester Semester	Annual Annual Annual
"LTU graduates will demonstrate their mastery of mathematics to solve real- world problems by isolating relevant factors, constructing abstract models, communicating precisely and reasoning logically."		LTU core curriculum.			

LTU Undergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate proficiency in reading and interpreting complex, intellectually challenging texts and evaluating their analytical architecture from an independent point of view."		LTU core curriculum.			
"LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields."		Evaluation of student presentation of a paper from the literature to a panel of faculty and students as part of BIO 4813 or PSC 3001 with rubric. Completion of an independent research project or experiment with minimal assistance in BIO 4811 and/or BIO 4912/4922.	80% "satisfactory' or "superior" performance by the senior year. 80% "satisfactory' or "superior" performance by the senior year.	Annual Annual	Annual Annual

LTU Undergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate civic, team, and global leadership skills by identifying a personal leadership philosophy, exhibiting entrepreneurial skills, and becoming agents of positive change."		LTU Leadership core curriculum.			
"LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions."		Instructor and team-self evaluation in BIO 1221, BIO 1231, BIO 2201 or BIO 2203.	Team process check survey will be used. 80% of responses with "always satisfied" or "frequently satisfied" to survey which will include peer evaluation.	Semester the course is offered.	Annual
"LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions."		Ethics case study assignment or quiz in PSC 3001	80% "satisfactory" or "superior" performance.	Annual	Every two years beginning Spring 2013.

BS in Chemistry

1. **Assessment Plan - Chemistry**
   See Table 2.
2. **Action Plan (Loop-Closing) for the Chemistry Program**

   a. Report on 2011-2012 Academic Year

University Goal: "LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems."

Objective: Evaluate knowledge and expertise gained in their field by meeting outcomes on national field exam.
Assessment: ETS National Exam
Evaluation: 60% of graduates score at or above national mean. (4 year running average) Issue: None
Actions: Evaluation completed and running average met.
Responsibility: Tony Sky -Chairperson of the Natural Science Department with assistance from NS faculty.

Evaluation: Alignment of curriculum with exit exam questions; identification of weak points. Issue: None.
Actions: No action taken at this time. Assessment due in 2012-13.
Responsibility: Tony Sky – Chairperson of the Natural Sciences Department with assistance from NS faculty

University Goal : "LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines."

Objective: Students must individually and successfully use instrumentation and chemical literature available in the department. Includes analysis of unknown substances, student-synthesized materials, or natural samples.
Assessment: Direct assessment of coursework with rubric in CHM 3411, CHM4632/1, CHM4541, CHM3463
Evaluation: The designation of qualified/not qualified will be given. 80% will receive a "qualified" designation.
Issue: None.
Actions: Goal met at with overall average of 82%. No further action taken at this time.
Responsibility: Instructors of CHM 3411, CHM4632/1, CHM4541, and CHM3463.

Assessment: Course objectives.
Evaluation: 80% "confident" and "very confident" overall of their mastery of the course objectives.
Issue: None.
Actions: Goal met with an overall average of 93%. No further action taken at this time.
Responsibility: Instructor of course.

University Goal : "LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities."

Assessment: PBL problem with poster or paper with rubric and peer review in PSC 3001. Evaluation:

80% “satisfactory” or “superior” performance.
Issue: No data available. This is a new departmental goal.
Actions: Implementation in Spring 2013. No further action taken at this time.
Responsibility: Instructor of PSC 3001.

University Goal “LTU graduates will demonstrate professional standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation.”

Objective: Evaluation of written work including papers and laboratory reports. Assessment: Direct assessment of student assignments with a rubric.
Evaluation: 80% “satisfactory” or “superior” performance based on rubrics. Issue:
None
Actions: Goal met at 100%. No further action taken at this time.
Responsibility: Instructor CHM 3403, CHM 3452, CHM 3383, CHM4632/1, and CHM4541.

Objective: Laboratory reports will be evaluated using rubric, including standards for organization, language, and visual communication (tables/graphs).
Assessment: Direct assessment of student assignments with a rubric. Evaluation: 80% “satisfactory” or “superior” performance based on rubrics. Issue: None
Actions: Goal met at 100%. No further action taken at this time.
Responsibility: Instructor CHM 3403, CHM 3452, CHM 3383, CHM4632/1, and CHM4541.

Assessment: Evaluation of student presentations using oral rubric. Evaluation: 80% “satisfactory” or “superior” performance based on rubrics. Issue: None
Actions: Goal met at 100%. No further action taken at this time.
Responsibility: Faculty requiring student presentations in their course.

University Goal : “LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields.”

Assessment: Evaluation of student presentation of a paper from the literature to a panel of faculty and students as part of CHM 4643, CHM 4723 or PSC 3001 with rubric.
Evaluation: 80% “satisfactory” or “superior” performance by the senior year. Issue:
No data received . PSC 3001 not evaluated till Spring 2013.
Actions: No further action taken at this time.
Responsibility: Instructor of CHM 4643, CHM 4723 or PSC 3001.

Assessment: Completion of an independent research project or experiment with minimal assistance in CHM4632, or CHM 3463 and/or CHM4912/4922..
Evaluation: 80% “satisfactory” or “superior” performance by the senior year. Issue:
None.
Actions: Goal met in CHM 4912/4922 at 100%. No further action taken at this time.
Responsibility: Instructor of CHM4632, or CHM 3463 and/or CHM4912/4922.

University Goal : “LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members‘ contributions.”

Assessment: Instructor and team-self evaluation in CHM 4632, CHM 4541, CHM 3463. Evaluation: Team process check survey will be used. 80% of responses with "always satisfied" or "frequently satisfied" to survey which will include peer evaluation.
Issue: None
Actions: Goal met at 80%. No further action taken at this time.
Responsibility: Instructor of CHM 4632, CHM 4541, or CHM 3463.

University Goal : "LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions."

Assessment: Ethics case study assignment or quiz in PSC 3001
Evaluation: 80% "satisfactory" or "superior" performance.
Issue: First case study assignment given in Spring 2012. Rubric needs to be developed. Actions: Data needs to be accumulated and will be analyzed beginning of Spring 2013. Responsibility: Instructor of PSC 3001 and NS faculty.

b. Report on Plan for 2012-2013 Academic Year

The following needs to be addressed in the upcoming academic year based on this year's assessment.

University Goal:

- LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems.
- LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines.
- LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities.
- LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields.
- LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions.
- LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions.

Table 1: Assessment Plan for the Chemistry Program

LTU Undergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems."	Evaluate knowledge and expertise gained in their field.	ETS National Exam Evaluate exit exam results	60% of graduates score at or above national mean. (4 year running average) Alignment of curriculum with exit exam questions; identification of weak points	Annually, late spring.	Every two years. Fall 2012. Every four years beginning Spring 2013
"LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines."	Students must individually and successfully use instrumentation and chemical literature available in the department. Includes analysis of unknown substances, student-synthesized materials, or natural samples.	Direct assessment of coursework with rubric in CHM 3411, CHM4632/1, CHM4541, CHM3463 Course Objectives	The designation of qualified/not qualified will be given. 80% will receive a "qualified" designation. 80% "confident" and "very confident" overall of their mastery of the objectives.	Semester the course is offered. Annual	Annual Annual

LTU Undergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic and environmental needs of individuals and communities."		PBL problem with poster or paper with rubric and peer review in PSC 3001.	80% “satisfactory or “superior” performance”	Spring Semester	Every two years beginning in Spring 2014.
“LTU graduates will demonstrate professional standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation.”		Evaluation of written work including papers and laboratory reports with rubric. Laboratory reports will be evaluated using rubric, including standards for organization, language, and visual communication (tables/graphs). Evaluation of student presentations using oral rubric.	80% “satisfactory” or “superior” performance. 80% “satisfactory” or “superior” performance. 80% “satisfactory” or “superior” performance.	Semester Semester Semester	Annual Annual Annual
“LTU graduates will demonstrate their mastery of mathematics to solve real- world problems by isolating relevant factors, constructing abstract models, communicating precisely and reasoning logically.”		LTU core curriculum.			

LTU Undergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate proficiency in reading and interpreting complex, intellectually challenging texts and evaluating their analytical architecture from an independent point of view."		LTU core curriculum.			
"LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields."		Evaluation of student presentation of a paper from the chemical literature to a panel of faculty and students as part of CHM 4643, CHM 4723 or PSC 3001 with rubric. Completion of an independent research project or experiment with minimal assistance in CHM4632, or CHM 3463 and/or CHM4912/4922.	80% "satisfactory' or "superior" performance by the senior year. 80% "satisfactory' or "superior" performance by the senior year.	Annual Annual	Annual Annual

LTU Undergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate civic, team, and global leadership skills by identifying a personal leadership philosophy, exhibiting entrepreneurial skills, and becoming agents of positive change."		LTU Leadership core curriculum.			
"LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions."		Instructor and team-self evaluation in CHM 4632, CHM 4541, CHM 3463.	Team process check survey will be used. 80% of responses with "always satisfied" or "frequently satisfied" to survey which will include peer evaluation.	Semester the course is offered.	Annual
"LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions."		Ethics case study assignment or quiz in PSC 3001	80% "satisfactory" or "superior" performance.	Annual	Every two years beginning Spring 2013.

BS in Environmental Chemistry

1. **Assessment Plan – Environmental Chemistry**
   See Table 3.
2. **Action Plan (Loop-Closing) for the Environmental Chemistry Program**

   a. Report on 2011-2012 Academic Year

University Goal: "LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems."

Objective: Evaluate knowledge and expertise gained in their field by meeting outcomes on national field exam.
Assessment: ETS National Exam
Evaluation: 60% of graduates score at or above national mean. (4 year running average) Issue: None
Actions: Evaluation completed and running average met.
Responsibility: Tony Sky -Chairperson of the Natural Science Department with assistance from NS faculty.

Evaluation: Alignment of curriculum with exit exam questions; identification of weak points. Issue: None.
Actions: No action taken at this time. Assessment due in 2012-13.
Responsibility: Tony Sky – Chairperson of the Natural Sciences Department with assistance from NS faculty

University Goal : "LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines."

Objective: Students must individually and successfully use instrumentation and chemical literature available in the department. Includes analysis of unknown substances, student-synthesized materials, or natural samples.
Assessment: Direct assessment of coursework with rubric in CHM 3392, CHM 4632/1, CHM 4541, CHM 3463
Evaluation: The designation of qualified/not qualified will be given. 80% will receive a "qualified" designation.
Issue: None.
Actions: Goal met with an overall of 82%. No further action taken at this time.
Responsibility: Instructors of CHM 3392, CHM4632/1, CHM4541, and CHM3463.

Assessment: Course objectives.
Evaluation: 80% "confident" and "very confident" overall of their mastery of the course objectives.
Issue: None.
Actions: Goal met with an overall average of 93%. No further action taken at this time.
Responsibility: Instructor of course.

University Goal : "LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities."

Assessment: PBL problem with poster or paper with rubric and peer review in PSC 3001. Evaluation:

80% “satisfactory” or “superior” performance.
Issue: No data available. This is a new departmental goal.
Actions: Implementation in Spring 2013. No further action taken at this time.
Responsibility: Instructor of PSC 3001.

University Goal “LTU graduates will demonstrate professional standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation.”

Objective: Evaluation of written work including papers and laboratory reports. Assessment: Direct assessment of student assignments with a rubric.
Evaluation: 80% “satisfactory” or “superior” performance based on rubrics. Issue: None
Actions: Goal met at 100%. No further action taken at this time.
Responsibility: Instructor CHM 3403, CHM 3452, CHM 3383, CHM4632/1, and CHM4541.

Objective: Laboratory reports will be evaluated using rubric, including standards for organization, language, and visual communication (tables/graphs).
Assessment: Direct assessment of student assignments with a rubric.
Evaluation: 80% “satisfactory” or “superior” performance based on rubrics. Issue: None
Actions: Goal met at 100%. No further action taken at this time.
Responsibility: Instructor CHM 3403, CHM 3452, CHM 3383, CHM4632/1, CHM4541 and CHM 3392.

Assessment: Evaluation of student presentations using oral rubric.
Evaluation: 80% “satisfactory” or “superior” performance based on rubrics. Issue: None
Actions: Goal met at100%. No further action taken at this time.
Responsibility: Faculty requiring student presentations in their course.

University Goal : “LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields.”

Assessment: Evaluation of student presentation of a paper from the literature to a panel of faculty and students as part of CHM 4632, CHM 3463 or PSC 3001 with rubric.
Evaluation: 80% “satisfactory” or “superior” performance by the senior year. Issue: None
Actions: No Environmental major enrolled. No further action taken at this time.
Responsibility: Instructor of CHM 4643, CHM 4723 or PSC 3001.

Assessment: Completion of an independent research project or experiment with minimal assistance in CHM4632, or CHM 3463 and/or CHM4912/4922..
Evaluation: 80% “satisfactory” or “superior” performance by the senior year. Issue: None
Actions: No action taken.
Responsibility: Instructor of CHM4632, or CHM 3463 and/or CHM4912/4922.

University Goal : "LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions."

Assessment: Instructor and team-self evaluation in CHM 4632, CHM 4541, CHM 3463. Evaluation: Team process check survey will be used. 80% of responses with "always satisfied" or "frequently satisfied" to survey which will include peer evaluation.
Issue: None
Actions: Goal met at 80%. No further action taken at this time.
Responsibility: Instructor of CHM 4632, CHM 4541, or CHM 3463.

University Goal : "LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions."

Assessment: Ethics case study assignment or quiz in PSC 3001
Evaluation: 80% "satisfactory" or "superior" performance.
Issue: First case study assignment given in Spring 2012. Rubric needs to be developed. Actions: Data needs to be accumulated and will be analyzed beginning of Spring 2013. Responsibility: Instructor of PSC 3001 and NS faculty.

b. Report on Plan for 2012-2013 Academic Year

The following needs to be addressed in the upcoming academic year based on this year's assessment.

University Goal:

- LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems.
- LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines.
- LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities.
- LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields.
- LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions.
- LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions.

Table 1: Assessment Plan for the Environmental Chemistry Program

LTU Undergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems."	Evaluate knowledge and expertise gained in their field.	ETS National Exam Evaluate exit exam results	60% of graduates score at or above national mean. (4 year running average) Alignment of curriculum with exit exam questions; identification of weak points	Annually, late spring.	Every two years. Fall 2012. Every four years beginning Spring 2013
"LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines."	Students must individually and successfully use instrumentation and chemical literature available in the department. Includes analysis of unknown substances, student-synthesized materials, or natural samples.	Direct assessment of coursework with rubric in CHM 3392, CHM4632/1, CHM4541, CHM3463 Course Objectives	The designation of qualified/not qualified will be given. 80% will receive a"qualified" designation. 80% "confident" and"very confident" overall of their mastery of the objectives.	Semester the course is offered. Annual	Annual Annual

LTU Undergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities.		PBL problem with poster or paper with rubric and peer review in PSC 3001.	80% "satisfactory or "superior" performance."	Spring Semester	Every twoyears beginning in Spring 2014.
"LTU graduates will demonstrate professional standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation."		Evaluation of written work including papers and laboratory reports with rubric. Laboratory reports will be evaluated using rubric, including standards for organization, language, and visual communication (tables/graphs). Evaluation of student presentations using oral rubric.	80% "satisfactory" or "superior" performance. 80% "satisfactory" or "superior" performance. 80% "satisfactory" or "superior" performance.	Semester Semester Semester	Annual Annual Annual
"LTU graduates will demonstrate their mastery of mathematics to solve real- world problems by isolating relevant factors, constructing abstract models, communicating precisely and reasoning logically."		LTU core curriculum.			

LTU Undergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate proficiency in reading and interpreting complex, intellectually challenging texts and evaluating their analytical architecture from an independent point of view."		LTU core curriculum.			
"LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields."		Evaluation of student presentation of a paper from the chemical literature to a panel of faculty and students as part of CHM 4643, CHM 4723 or PSC 3001 with rubric. Completion of an independent research project or experiment with minimal assistance in CHM4632, or CHM 3463 and/or CHM4912/4922.	80% "satisfactory' or "superior" performance by the senior year. 80% "satisfactory' or "superior" performance by the senior year.	Annual Annual	Annual Annual

LTU Undergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate civic, team, and global leadership skills by identifying a personal leadership philosophy, exhibiting entrepreneurial skills, and becoming agents of positive change."		LTU Leadership core curriculum.			
"LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions."		Instructor and team-self evaluation in CHM 4632, CHM 4541, CHM 3463.	Team process check survey will be used. 80% of responses with "always satisfied" or "frequently satisfied" to survey which will include peer evaluation.	Semester the course is offered.	Annual
"LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions."		Ethics case study assignment or quiz in PSC 3001	80% "satisfactory" or "superior" performance.	Annual	Every two years beginning Spring 2013.

BS in Molecular and Cell Biology

1. **Assessment Plan – Molecular and Cell Biology**
   See Table 4.

2. **Action Plan (Loop-Closing) for Molecular and Cell Biology Program**

   a. **Report on 2011-2012 Academic Year**

University Goal: "LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems."

Objective: Evaluate knowledge and expertise gained in their field by meeting outcomes on national field exam.
Assessment: ETS National Exam
Evaluation: 60% of graduates score at or above national mean. (4 year running average)
Issue: More Data needed.
Actions: Evaluation completed and running average not met. More data needed for new program.
Responsibility: Tony Sky -Chairperson of the Natural Science Department with assistance from NS faculty.

Evaluation: Alignment of curriculum with exit exam questions; identification of weak points.
Issue: Need more data.
Actions: No action taken at this time. Assessment due in 2012-13.
Responsibility: Tony Sky – Chairperson of the Natural Sciences Department with assistance from NS faculty

University Goal : "LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines."

Assessment: Direct assessment of student assignments with rubric.
Course objectives in BIO 2323, BIO 2201, CHM 3411 and BIO 4813.
Evaluation: The designation of qualified/not qualified will be given. 80% will receive a "qualified" designation.
Issue: Data not received.
Actions: Goal not met. No further action taken at this time.
Responsibility: Instructors of BIO 2323, BIO 2201, CHM 3411 and BIO 4813.

Assessment: Direct assessment of student assignments with rubric.
Course objectives in BIO 2323, BIO 2201, CHM 3411 and BIO 4813.
Evaluation: 80% "confident" and "very confident" overall of their mastery of the course objectives.
Issue: None.
Actions: Goal met at 88%. No further action taken at this time.
Responsibility: Instructors of BIO 2323, BIO 2201, CHM 3411 and BIO 4813.

University Goal : "LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities."

Assessment: PBL problem with poster or paper with rubric and peer review in PSC 3001. Evaluation: 80% "satisfactory" or "superior" performance.
Issue: No data available. This is a new departmental goal.
Actions: Implementation in Spring 2013. No further action taken at this time.
Responsibility: Instructor of PSC 3001.

University Goal "LTU graduates will demonstrate professional standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation."

Objective: Evaluation of written work including papers and laboratory reports. Assessment: Direct assessment of student assignments with a rubric.
Evaluation: 80% "satisfactory" or "superior" performance based on rubrics. Issue: None
Actions: Goal met at 100%. No further action taken at this time. Responsibility:
Instructor of BIO 2323, BIO 1221, 1231, 4811 and CHM 3403

Objective: Laboratory reports will be evaluated using rubric, including standards for organization, language, and visual communication (tables/graphs).
Assessment: Direct assessment of student assignments with a rubric.
Evaluation: 80% "satisfactory" or "superior" performance based on rubrics. Issue: None
Actions: Goal met at 100%. No further action taken at this time. Responsibility:
Instructor of BIO 2323, BIO 1221, 1231, 4811 and CHM 3403

Assessment: Evaluation of student presentations using oral rubric.
Evaluation: 80% "satisfactory" or "superior" performance based on rubrics. Issue: None
Actions: Goal met at 100%. No further action taken at this time.
Responsibility: Faculty requiring student presentations in their course.

University Goal : "LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields."

Assessment: Evaluation of student presentation of a paper from the literature to a panel of faculty and students as part of BIO 4813 or PSC 3001 with rubric.
Evaluation: 80% "satisfactory" or "superior" performance by the senior year. Issue: No data received for BIO 4813. PSC 3001 not evaluated till Spring 2013. Actions: No further action taken at this time.
Responsibility: Instructor of BIO 4813 or PSC 3001.

Assessment: Completion of an independent research project or experiment with minimal assistance in BIO 4811 and/or BIO 4912/4922.
Evaluation: 80% "satisfactory" or "superior" performance by the senior year. Issue: None.
Actions: Goal met at 100%. No further action taken at this time.
Responsibility: Instructor of BIO 4811 and/or BIO 4912/4922.

University Goal : "LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions."

Assessment: Instructor and team-self evaluation in BIO 1221, BIO 1231, BIO 2201 or BIO 2203.
Evaluation: Team process check survey will be used. 80% of responses with "always satisfied" or "frequently satisfied" to survey which will include peer evaluation.
Issue: None.
Actions: No action taken
Responsibility: Instructor of BIO 1221, BIO 1231, BIO 2201 or BIO 2203.

University Goal : "LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions."

Assessment: Ethics case study assignment or quiz in PSC 3001 Evaluation:
80% "satisfactory" or "superior" performance.
Issue: First case study assignment given in Spring 2012. Rubric needs to be developed. Actions: Data needs to be accumulated and will be analyzed beginning of Spring 2013.
Responsibility: Instructor of PSC 3001 and NS faculty.

b. Report on Plan for 2012-2013 Academic Year

The following needs to be addressed in the upcoming academic year based on this year's assessment.

University Goal:

- LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems.
- LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines.
- LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities.
- LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields.
- LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions.
- LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions.

Table 1: Assessment Plan for the Molecular and Cell Biology Program

LTU Undergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems."	Evaluate knowledge and expertise gained in their field.	ETS National Exam Evaluate exit exam results	60% of graduates score at or above national mean. (4 year running average) Alignment of curriculum with exit exam questions; identification of weak points	Annually, late spring.	Every two years. Fall 2012. Every four years beginning Spring 2013
"LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines."		Direct assessment of coursework with rubric in BIO 2323, BIO 2201, CHM 3411, and BIO 4813 Course Objectives	The designation of qualified/not qualified will be given. 80% will receive a "qualified" designation. 80% "confident" and "very confident" overall of their mastery of the objectives.	Semester the course is offered. Annual	Annual Annual

LTU Undergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities.		PBL problem with poster or paper with rubric and peer review in PSC 3001.	80% "satisfactory or "superior" performance."	Spring Semester	Every twoyears beginning in Spring 2014.
"LTU graduates will demonstrate professional standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation."		Evaluation of written work including papers and laboratory reports with rubric. Laboratory reports will be evaluated using rubric, including standards for organization, language, and visual communication (tables/graphs). Evaluation of student presentations using oral rubric.	80% "satisfactory" or "superior" performance. 80% "satisfactory" or "superior" performance. 80% "satisfactory" or "superior" performance.	Semester Semester Semester	Annual Annual Annual
"LTU graduates will demonstrate their mastery of mathematics to solve real- world problems by isolating relevant factors, constructing abstract models, communicating precisely and reasoning logically."		LTU core curriculum.			

LTU Undergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate proficiency in reading and interpreting complex, intellectually challenging texts and evaluating their analytical architecture from an independent point of view."		LTU core curriculum.			
"LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields."		Evaluation of student presentation of a paper from the literature to a panel of faculty and students as part of BIO 4813 or PSC 3001 with rubric. Completion of an independent research project or experiment with minimal assistance in BIO 4811 and/or BIO 4912/4922.	80% "satisfactory' or "superior" performance by the senior year. 80% "satisfactory' or "superior" performance by the senior year.	Annual Annual	Annual Annual

LTU Undergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate civic, team, and global leadership skills by identifying a personal leadership philosophy, exhibiting entrepreneurial skills, and becoming agents of positive change."		LTU Leadership core curriculum.			
"LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions."		Instructor and team-self evaluation in BIO 1221, BIO 1231, BIO 2201, or BIO 2203.	Team process check survey will be used. 80% of responses with "always satisfied" or "frequently satisfied" to survey which will include peer evaluation.	Semester the course is offered.	Annual
"LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions."		Ethics case study assignment or quiz in PSC 3001	80% "satisfactory" or "superior" performance.	Annual	Every two years beginning Spring 2013.

BS in Physics

1. **Assessment Plan - Physics**
   See Table 5.
2. **Action Plan (Loop-Closing) for the Physics Program**

   a. Report on 2011-2012 Academic Year

University Goal: "LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems."

Objective: Evaluate knowledge and expertise gained in their field by meeting outcomes on national field exam.
Assessment: ETS National Exam
Evaluation: 60% of graduates score at or above national mean. (4 year running average) Issue: None
Actions: Evaluation completed and running average met.
Responsibility: Tony Sky -Chairperson of the Natural Science Department with assistance from NS faculty.

Evaluation: Alignment of curriculum with exit exam questions; identification of weak points. Issue: None.
Actions: No action taken at this time. Assessment due in 2012-13.
Responsibility: Tony Sky – Chairperson of the Natural Sciences Department with assistance from NS faculty

University Goal : "LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines."

Assessment: Direct assessment of coursework with rubric in PHY 3661 and PHY 4781.
Evaluation: The designation of qualified/not qualified will be given. 80% will receive a "qualified" designation.
Issue: None.
Actions: Goal met with an average of 87%. Responsibility:
Instructors of PHY 3661 and PHY 4781.

Assessment: Course objectives.
Evaluation: 80% "confident" and "very confident" overall of their mastery of the course objectives.
Issue: None.
Actions: Goal met with an overall average of 84%. No further action taken at this time.
Responsibility: All instructors of Physics courses.

University Goal : "LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities."

Assessment: PBL problem with poster or paper with rubric and peer review in PSC 3001. Evaluation: 80% "satisfactory" or "superior" performance.
Issue: No data available. This is a new departmental goal.
Actions: Implementation in Spring 2013. No further action taken at this time.

Responsibility: Instructor of PSC 3001.

University Goal "LTU graduates will demonstrate professional standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation."

Objective: Evaluation of written work including papers and laboratory reports. Assessment: Direct assessment of student assignments with a rubric.
Evaluation: 80% "satisfactory" or "superior" performance based on rubrics. Issue: None
Actions: Goal met at 80%.
Responsibility: Instructor PHY 3653, PHY 4843, and PHY 4912/4922.

Objective: Laboratory reports will be evaluated using rubric, including standards for organization, language, and visual communication (tables/graphs).
Assessment: Direct assessment of student assignments with a rubric. Evaluation: 80% "satisfactory" or "superior" performance based on rubrics. Issue: None
Actions: Goal met at 80%.
Responsibility: Instructor PHY 3653, PHY 4843, and PHY 4912/4922.

Assessment: Evaluation of student presentations using oral rubric. Evaluation: 80% "satisfactory" or "superior" performance based on rubrics. Issue: None
Actions: Goal met at 100%. No further action taken at this time.
Responsibility: Faculty requiring student presentations in their course.

University Goal : "LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields."

Assessment: Evaluation of student presentation of a paper from the literature to a panel of faculty and students as part of PSC 3001 with rubric.
Evaluation: 80% "satisfactory" or "superior" performance by the senior year. Issue:
No data received . PSC 3001 not evaluated till Spring 2013.
Actions: No further action taken at this time.
Responsibility: Instructor of PSC 3001.

Assessment: Completion of an independent research project or experiment with minimal assistance in PHY 3661, PHY 4781 and/or PHY 4912/4922.
Evaluation: 80% "satisfactory" or "superior" performance by the senior year. Issue:
None.
Actions: Goal met in PHY 4912/4922 at 100%. No further action taken at this time.
Responsibility: Instructor of PHY 3661, PHY 4781 and/or PHY 4912/4922.

University Goal : "LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions."

Assessment: Instructor and team-self evaluation in PHY 2413/2423.
Evaluation: Team process check survey will be used. 80% of responses with "always satisfied" or "frequently satisfied" to survey which will include peer evaluation.
Issue: Data not received.
Actions: No further action taken at this time.

Responsibility: Instructor of PHY 2413/2423.

University Goal : “LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions.”

Assessment: Ethics case study assignment or quiz in PSC 3001
Evaluation: 80% “satisfactory” or “superior” performance.
Issue: First case study assignment given in Spring 2012. Rubric needs to be developed. Actions: Data needs to be accumulated and will be analyzed beginning of Spring 2013. Responsibility: Instructor of PSC 3001 and NS faculty.

b.. Report on Plan for 2012-2013 Academic Year

The following needs to be addressed in the upcoming academic year based on this year’s assessment.

University Goal:

- LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems.
- LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines.
- LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities.
- LTU graduates will demonstrate critical thinking and apply analytical and problem- solving skills in scientific fields.
- LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members‘ contributions.
- LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions.

Table 1: Assessment Plan for the Physics Program

LTU Undergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems."	Evaluate knowledge and expertise gained in their field.	ETS National Exam Evaluate exit exam results	60% of graduates score at or above national mean. (4 year running average) Alignment of curriculum with exit exam questions; identification of weak points	Annually, late spring.	Every two years. Fall 2012. Every four years beginning Spring 2013
"LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines."		Direct assessment of coursework with rubric in PHY 3661 and PHY 4781. Course Objectives	The designation of qualified/not qualified will be given. 80% will receive a "qualified" designation. 80% "confident" and "very confident" overall of their mastery of the objectives.	Semester the course is offered. Annual	Annual Annual

LTU Undergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities.		PBL problem with poster or paper with rubric and peer review in PSC 3001.	80% "satisfactory or "superior" performance."	Spring Semester	Every twoyears beginning in Spring 2014.
"LTU graduates will demonstrate professional standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation."		Evaluation of written work including papers and laboratory reports with rubric. Laboratory reports will be evaluated using rubric, including standards for organization, language, and visual communication (tables/graphs). Evaluation of student presentations using oral rubric.	80% "satisfactory" or "superior" performance. 80% "satisfactory" or "superior" performance. 80% "satisfactory" or "superior" performance.	Semester Semester Semester	Annual Annual Annual
"LTU graduates will demonstrate their mastery of mathematics to solve real- world problems by isolating relevant factors, constructing abstract models, communicating precisely and reasoning logically."		LTU core curriculum.			

LTU Undergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate proficiency in reading and interpreting complex, intellectually challenging texts and evaluating their analytical architecture from an independent point of view."		LTU core curriculum.			
"LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields."		Evaluation of student presentation of a paper from the literature to a panel of faculty and students as part of PSC 3001 with rubric. Completion of an independent research project or experiment with minimal assistance in PHY 3661, PHY 4781 and/or PHY 4912/4922.	80% "satisfactory' or "superior" performance by the senior year. 80% "satisfactory' or "superior" performance by the senior year.	Annual Annual	Annual Annual

LTU Undergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate civic, team, and global leadership skills by identifying a personal leadership philosophy, exhibiting entrepreneurial skills, and becoming agents of positive change."		LTU Leadership core curriculum.			
"LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions."		Instructor and team-self evaluation in PHY 2413/2423.	Team process check survey will be used. 80% of responses with "always satisfied" or "frequently satisfied" to survey which will include peer evaluation.	Semester	Annual
"LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions."		Ethics case study assignment or quiz in PSC 3001	80% "satisfactory" or "superior" performance.	Annual	Every two years beginning Spring 2013.

Master of Educational Technology

1. Assessment Plan Master of Educational Technology
See Table 1.

2. Action Plan (Loop-Closing) for Master of Educational Technology

a. Report on 2011-2012 Academic Year

1. Graduates will strengthen competencies in interactive technologies and teaching with technology.
Assessment: Capstone (direct assessment) and Exit Survey (indirect assessment) Evaluation:
start summer 2013
Issues: n/a
Actions: work on curriculum Responsibility: program
directors

2. Graduates demonstrate the ability to apply interactive technologies into their teaching design Assessment:
Capstone (direct assessment) and Exit Survey (indirect assessment)
Evaluation: start summer 2013 Issues: n/a
Actions: faculty will update curriculum and requirements
Responsibility: program directors and program faculty

3. Graduates will review literature research on interactive technologies and will use these methods besides or instead of a traditional teaching method in their capstone project Assessment: Capstone (direct assessment)
Evaluation: start summer 2013 Issues: n/a
Actions: advising
Responsibility: program directors and capstone advisors

4. Graduates will be able to communicate clearly and effectively both orally and in writing in their Capstone Project
Assessment: Capstone (direct assessment) Evaluation:
start summer 2013
Issues: n/a
Actions: faculty will update curriculum and requirements
Responsibility: program directors and program faculty

5. Graduates will be able to demonstrate knowledge and understanding of professional issues in their Distance Learning Through Technology course
Assessment: MET6243 Distance Learning Evaluation:
start summer 2013
Issues: n/a
Actions: faculty will update curriculum and requirements
Responsibility: program directors and program faculty

b. Report on Plan for 2012-2013 Academic Year

- This 2012 fall semester the MET program will undergo the Academic Planning Program Review and additional data will be analyzed to draw conclusion on changes and improvements that are needed in the program.

- An exit survey will be implemented starting fall2012, to collect data on how our graduates see their preparation in the program.

- A ethics survey will be developed and deployed in the MET6243 course starting fall 2012

- Bi-annual all-faculty meetings to review and update curriculum (this is an ongoing process that has been in place for the past three years)

- Start analyzing 2012-2013 data during summer 2013.

Table 1: Assessment Plan for Master of Educational Technology

LTU Graduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
LTU graduates will apply and, in accordance with their course of study, develop advanced knowledge within their discipline.	1. Graduates will strengthen competencies in interactive technologies and teaching with technology.	Content Rubric (2) applied to Capstone Project.	80% of candidates will have a "superior" on the Content Rubric	Ongoing – every candidate has to enroll for the Capstone Project	Annually, starting summer 2013
		Exit Survey	80% of graduates will score a 4 or better on the Exit Survey	To start Fall 2012	Annually, starting summer 2013
LTU graduates will analyze and interpret information and implement decisions using the latest techniques and technologies.	2. Graduates demonstrate the ability to apply interactive technologies into their teaching design	Interactive Technologies Rubric Applied to Capstone Project	100% of candidates will have a topic that includes interactive technologies	Ongoing – every candidate has to enroll for the Capstone Project	Annually, starting summer 2013
LTU graduates will evaluate scholarly literature and, in accordance with their course of study, contribute to the literature.	3. Graduates will review literature research on interactive technologies and will use these methods besides or instead of a traditional teaching method in their capstone project	Content Rubric (2) on Literature Research applied to Capstone Project	80% of candidates will have a "superior" on the Content Rubric	Ongoing – every candidate has to enroll for the Capstone Project	Annually, starting summer 2013

LTU Graduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
LTU graduates will communicate effectively using written, oral, graphical, and digital formats.	4. Graduates will be able to communicate clearly and effectively both orally and in writing in their Capstone Project	Form, Clarity and Organization (1) Rubric applied to Capstone Project	80% of candidates will have a "superior" on the Form Rubric	Ongoing – every candidate has to enroll for the Capstone Project	Annually, starting summer 2013
		Language and Delivery (3) and Presentation (4) Rubric applied to Capstone Project	80% of candidates will have a "superior" on the Delivery and Presentation Rubric	Ongoing – every candidate has to enroll for the Capstone Project	Annually, starting summer 2013
LTU graduates will develop a broad perspective on professional issues, such as lifelong learning, sustainability, leadership, and ethics.	5. Graduates will be able to demonstrate knowledge and understanding of professional issues in their Distance Learning through Technology course	Survey in MET6243 Distance Learning	80% of candidates will score a 4 or better on Survey	Ongoing – every candidate enrolled in the MET6243	Annually, starting summer 2013

MS in Education

1. Assessment Plan Master of Science Education
See Table 1.

2. Action Plan (Loop-Closing) for Master of Science Education

a. Report on 2011-2012 Academic Year

1. Graduates will strengthen competencies in science content and teaching science. Assessment: Capstone (direct assessment) and Exit Survey (indirect assessment) Evaluation: start summer 2013
Issues: n/a
Actions: review curriculum to address any areas that show underperformance.
Responsibility: program directors

2. Graduates demonstrate the ability to apply contemporary teaching and learning methods within strong and integrated science content
Assessment: Capstone (direct assessment) Evaluation: start summer 2013
Issues: n/a
Actions: faculty will update curriculum and requirements
Responsibility: program directors and program faculty

3. Graduates will review literature research on contemporary teaching and learning methods besides or instead of a traditional teaching method and analyze results /implement in their Capstone Project
Assessment: Capstone (direct assessment) Evaluation: start summer 2013
Issues: n/a Actions: advising
Responsibility: program directors and capstone advisors

4. Graduates will be able to communicate clearly and effectively both orally and in writing in their Capstone Project
Assessment: Capstone (direct assessment) Evaluation: start summer 2013
Issues: n/a
Actions: faculty will update curriculum and requirements
Responsibility: program directors, program faculty and capstone advisors

5. Graduates will use differentiated teaching and assessment methods in science to increase student interest in learning and to reach different student audiences
Assessment: Projects in SCE6103 Introductory Seminar Evaluation: start summer 2013
Issues: n/a
Actions: faculty will update curriculum and requirements
Responsibility: program directors and program faculty

b. Report on Plan for 2012-2013 Academic Year

- Data on an exit survey on how our graduates see their preparation in the program will be collected and analyzed during summer 2013.

- First closing of the loop for this assessment plan will be performed during summer 2013.

Table 1: Revised Assessment Plan for Master of Science Education

LTU Graduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administratio n Timeline	Loop-Closing Timeline
LTU graduates will apply and, in accordance with their course of study, develop advanced knowledge within their discipline.	1. Graduates will strengthen competencies in science content and teaching science.	Content Rubric (2) applied to Capstone Project.	80% of candidates will achieve a "superior" on the Content Rubric	Ongoing – every candidate has to enroll for the Capstone Project	Annually, starting summer 2013
		Exit Survey	80% of graduates will score a 4 or better on the Exit Survey	Ongoing – every candidate completes an exit survey	Annually, starting summer 2013
LTU graduates will analyze and interpret information and implement decisions using the latest techniques and technologies.	2. Graduates demonstrate the ability to apply contemporary teaching and learning methods within strong and integrated science content	Contemporary Methods of Teaching and Learning Rubric Applied to Capstone Project	100% of candidates will have a topic that includes Contemporary Methods of Teaching and Learning	Ongoing – every candidate has to enroll for the Capstone Project	Annually, starting summer 2013
LTU graduates will evaluate scholarly literature and, in accordance with their course of study, contribute to the literature.	3. Graduates will review literature research on contemporary teaching and learning methods besides or instead of a traditional teaching method and analyze results /implement in their Capstone Project	Content Rubric (2) on Literature Research applied to Capstone Project	80% of candidates will achieve a "superior" on the Content Rubric	Ongoing – every candidate has to enroll for the Capstone Project	Annually, starting summer 2013

LTU Graduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administratio n Timeline	Loop-Closing Timeline
LTU graduates will communicate effectively using written, oral, graphical, and digital formats.	4. Graduates will be able to communicate clearly and effectively both orally and in writing in their Capstone Project	Form, Clarity and Organization (1) Rubric applied to Capstone Project	80% of candidates will achieve a "superior" on the Form Rubric	Ongoing – every candidate has to enroll for the Capstone Project	Annually, starting summer 2013
		Language and Delivery (3) and Presentation (4) Rubric applied to Capstone Project	80% of candidates will achieve a "superior" on the Delivery and Presentation Rubric	Ongoing – every candidate has to enroll for the Capstone Project	Annually, starting summer 2013
LTU graduates will develop a broad perspective on professional issues, such as lifelong learning, sustainability, leadership, and ethics.	5. Graduates will use differentiated teaching and assessment methods in science to increase student interest in learning and to reach different student audiences	Projects in SCE6103 Introductory Seminar	80% of candidates will achieve a "superior" on projects evaluations in the Introductory Seminar course	Ongoing – every candidate enrolled in the SCE6103	Annually, starting summer 2013

College of Engineering

BS in Biomedical Engineering

1. Assessment Plan for BME Program

See Table 1below.

2. Action Plan (Loop-Closing) for BME Program

a. Report on 2011-2012 Academic Year

During the BME program loop-closing meeting for the 2011-2012 academic year, the following outcomes were reviewed:

Outcome a*: an ability to apply knowledge of mathematics, science, and engineering.*

- *Assessment:* Faculty evaluation of senior projects, course objectives, direct assessment of student work, and alumni survey
- *Evaluation:* Assessment results indicate a 3.8 for the level of achievement on a 5.0 scale due to lower level of achievement than the target level in course objectives and direct assessment in the following courses: BME 3103 Bioinstrumentation, BME 3703 Biotransport, and BME 4313 Tissue Mechanics.
- *Issue:* Significantly different background of students on electric circuit theory; some students' lack of confidence and proficiency on difficult concepts and problems in biotransport and tissue mechanics such as momentum balance, Navier-Stokes equation, mass transport, and quasi-linear viscoelastic and biphasic properties of biological tissues.
- *Actions:* All BME program faculty members will meet and evaluate whether the prerequisite for BME 3103 Bioinstrumentation should be changed to be the same for all BME students. The instructor for BME 3703 Biotransport will incorporate active collaborative learning activities in the class when covering the topics of solving fluid flow and mass transport problems. The instructor for BME 4313 Tissue Mechanics will continue to emphasize the viscoelastic concept in class and also reevaluate the corresponding level of attainment in evaluating student work assignment.
- *Responsibility:* All BME faculty members

Outcome b*: an ability to design and conduct experiments, as well as to analyze and interpret data.*

- *Assessment:* Faculty evaluation of senior projects, course objectives, direct assessment of student work, and alumni survey
- *Evaluation:* Assessment results indicate a 3.8 for the level of achievement on a 5.0 scale due to lower level of achievement than the target level in direct assessment in one courses BME 4201 MEMS Lab.
- *Issue:* Due to the use of a new type of staining agent, the students were not able to complete one lab session targeting a learning objective supporting this Outcome.
- *Actions:* More time will be allocated to this session.
- *Responsibility:* Yawen Li

Outcome e*: an ability to identify, formulate, and solve engineering problems.*

- *Assessment:* Evaluation of senior project presentations, faculty evaluation of senior projects, course objectives, direct assessment of student work, and alumni survey
- *Evaluation:* Assessment results indicate a 3.8 for the level of achievement on a 5.0 scale due to lower level of achievement than the target level in direct assessment in the following two courses: BME 3703 Biotransport, and BME 4313 Tissue Mechanics.

- *Issue:* Some students' lack of confidence and proficiency on difficult concepts and problems in biotransport and tissue mechanics such as momentum balance, Navier-Stokes equation, mass transport, and nonlinear and viscoelastic constitutive equations.
- *Actions:* The instructor for BME 3703 Biotransport will incorporate active collaborative learning activities in the class when covering the topics of solving fluid flow and mass transport problems. The instructor for BME 4313 Tissue Mechanics will continue to emphasize the viscoelastic concept in class and also reevaluate the corresponding level of attainment in evaluating student work assignment.
- *Responsibility:* Yawen Li, Eric Meyer

***Outcome k**: Use the techniques, skills and modern engineering tools necessary for engineering practice.*

- *Assessment:* Faculty evaluation of senior projects, course objectives, direct assessment of student work, and alumni survey
- *Evaluation:* Assessment results indicate a 3.8 for the level of achievement on a 5.0 scale due to lower level of achievement than the target level in direct assessment in the following courses: BME 4103 Foundations of Medical Imaging and BME 4201 MEMS Lab.
- *Issue:* The instructor for BME 4103 did not have enough time to implement a project that makes use of MIMICS, a medical image processing software. For BME 4201, due to the use of a new type of staining agent, the students were not able to complete one lab session targeting the learning objectives supporting this Outcome.
- *Actions:* A MIMICS project will be implemented. More time will be allocated to the MEMS Lab session targeting the learning objectives corresponding to this Outcome
- *Responsibility:* Eric Meyer, Yawen Li

***Outcome l**: Understand biology and physiology; apply advanced math, science, and engineering to solve problems at the interface of engineering and biology.*

- *Assessment:* Course objectives, direct assessment of student work, and alumni survey
- *Evaluation:* Assessment results indicate a 3.8 for the level of achievement on a 5.0 scale due to lower level of achievement than the target level in course objectives and direct assessment in the following two courses: BME 3703 Biotransport, and BME 4313 Tissue Mechanics.
- *Issue:* Some students' lack of confidence and proficiency on difficult concepts and problems in biotransport and tissue mechanics such as momentum balance,

  Navier-Stokes equation, mass transport, and nonlinear and viscoelastic constitutive equations.
- *Actions:* The instructor for BME 3703 Biotransport will incorporate active collaborative learning activities in the class when covering the topics of solving fluid flow and mass transport problems. The instructor for BME 4313 Tissue Mechanics will continue to emphasize the viscoelastic concept in class and also reevaluate the corresponding level of attainment in evaluating student work assignment.
- *Responsibility:* Yawen Li, Eric Meyer

***Outcome m**: Make measurements on and interpret data from living systems; address problems at the interface of living and non-living systems.*

- *Assessment:* Course objectives, direct assessment of student work, and alumni survey
- *Evaluation:* Assessment results indicate a 3.8 for the level of achievement on a 5.0 scale due to lower level of achievement than the target level in direct assessment in one courses BME 4201 MEMS Lab.

- *Issue:* Due to the use of a new type of staining agent, the students were not able to complete one lab session targeting a learning supporting this Outcome.
- *Actions:* More time will be allocated to this session.
- *Responsibility:* Yawen Li

The remaining programs outcomes were reviewed in accordance with the BME program assessment plan and no corrective action is necessary based on evaluation of assessment results.

In the 2010-2011 assessment report, corrective actions were proposed for a number of courses and the senior design sequence which did not reach the target level of attainment on one or two of the Outcomes (k), (l) and (m). Reassessment of these courses in the 2011-2012 academic year showed obvious improvement on the three outcomes with implementation of the corrective actions especially on Outcomes (l) and (m). Reassessment of BME 4313 Tissue Mechanics revealed the need of continuing improvement on a particular learning objective that support Outcomes (a), (e) and (l). Reassessment of BME 4201 MEMS Lab revealed lower level of attainment on Outcomes (b), (k) and (m) due to incompletion of one lab session. At the same time, assessment of the revised course added to the core curriculum (BME 3703 Biotransport) indicated that some students needed to improve their performance on a number of learning objectives that support Outcomes (a), (e), and (l). These courses will be reassessed in the 2012- 2013 academic year.

b. Report on Plan for 2012-2013 Academic Year

All program outcomes will be evaluated in accordance with the BME program assessment plan shown in Table 1. This plan has been modified so that the Program learning outcomes are mapped to the newly adopted LTU Undergraduate Learning Outcomes. In addition, the corrective actions on outcomes a, b, e, *k, l* and *m* will be evaluated.

In the 2012-2013 academic year the faculty will also continue to evaluate the use of various rubrics and summary reporting formats. During the Annual University Assessment Day on September 21, 2012, the faculty will finalize the format for summary reports for direct assessment in lectures and laboratories. Furthermore, the faculty will reevaluate the use of measuring performance based on a of 5-point scale.

Table 1: Assessment Plan for Biomedical Engineering Program

LTU Uudergraduate Learning Outcomes	BME ABET Outcomes*	Assessment Tools	Metrics/ Indicators**	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems."	*a. Math, science, engn.* *b. Design and conduct experiments* *c. Design* *e. Solve engn. problems* *l. Solve engn problems at the interface of engn and biology* *m. Exp. (interaction between living and non-living materials/systems)*	Direct assessment of student assignments. Faculty evaluation of Sr. Projects Course Objectives Alumni Survey	4.0 on Level 3 4.0 on Level 5 4.0 on Level 5 4.0 on Level 3 4.0 on Level 3 4.0 on Level 3	Every semester. Every semester Every semester Every 3 years from 2011	Annual Annual Annual
"LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines."	*k. Techniques and modern engn. tools.* *l. Solve engn problems at the interface of engn and biology* *m. Exp. (interaction between living and non-living materials/systems)*	Direct assessment of student assignments. Faculty evaluation of Sr. Projects Course Objectives Alumni Survey	4.0 on Level 3 4.0 on Level 3 4.0 on Level 3	Every semester Spring semester Every semester Every 3 years from 2011	Annual Annual Annual
"LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities."	*h. Global, economic, environmental and social*	Exit Interview Direct assessment of student assignments. Course Objectives	4.0 on Level 3	On graduation Every semester Every semester	Annual

LTU Uudergraduate Learning Outcomes	BME ABET Outcomes*	Assessment Tools	Metrics/ Indicators**	Administration Timeline	Loop-Closing Timeline

"LTU graduates will demonstrate professional standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation."	*g. Communication*	Faculty evaluation of senior project presentations. Direct assessment of student assignments. Course Objectives WPE	4.0 on Level 4 Pass the WPE	Spring semester Every semester Every semester	Annual Annual Annual Continuous by University
"LTU graduates will demonstrate their mastery of mathematics to solve real-world problems by isolating relevant factors, constructing abstract models, communicating precisely and reasoning logically."	*a. Math, science, engn.* *e. Solve engn. problems* *l. Solve engn problems at the interface of engn and biology* *m. Exp. (interaction between living and non-living materials/systems)*	Direct assessment of student assignments. Faculty evaluation of Sr. Projects Course Objectives Alumni Survey	4.0 on Level 3 4.0 on Level 3 4.0 on Level 3 4.0 on Level 3	Every Semester Every Semester Every Semester Every 3 years from 2011	Annual Annual Annual
"LTU graduates will demonstrate proficiency in reading and interpreting complex, intellectually challenging texts and evaluating their analytical architecture from an independent point of view."		LTU core curriculum			Continuously by the University

LTU Uudergraduate Learning Outcomes	BME ABET Outcomes*	Assessment Tools	Metrics/ Indicators**	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields."	*e. Solve engn. problems* *l. Solve engn problems at the interface of engn and biology* *m. Exp. (interaction between living and non-living materials/systems)*	Direct assessment of student assignments. Faculty evaluation of Sr. Projects Course Objectives Alumni Survey	4.0 on Level 3 4.0 on Level 3 4.0 on Level 3	Every semester. Every semester Every semester	Annual Annual Annual
"LTU graduates will demonstrate civic, team, and global leadership skills by identifying a personal leadership philosophy, exhibiting entrepreneurial skills, and becoming agents of positive change."		LTU Leadership core curriculum			Continuously by University
"LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions."	*d. Teams*	Faculty evaluation in senior design. Course Objectives Direct assessment of student assignments Alumni Survey	4.0 on Level 3	Spring Semester Every Semester Spring Semester Every 3 years from 2011	Annual Annual

LTU Uudergraduate Learning Outcomes	BME ABET Outcomes*	Assessment Tools	Metrics/ Indicators**	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions."	*f. Professional and ethics*	Direct assessment of student assignments. Exit Interviews Course Objectives Alumni Survey	4.0 on Level 3	Every semester On graduation Every semester Every 3 years form 2011	Annual

*: BME ABET Outcomes

a) an ability to apply knowledge of mathematics, science, and engineering
b) an ability to design and conduct experiments, as well as to analyze and interpret data
c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
d) an ability to function on multidisciplinary teams
e) an ability to identify, formulate, and solve engineering problems
f) an understanding of professional and ethical responsibility
g) an ability to communicate effectively
h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
i) a recognition of the need for, and an ability to engage in life-long learning
j) a knowledge of contemporary issues
k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
l) an understanding of biology and physiology, and the capability to apply advanced mathematics (including differential equations and statistics), science, and engineering to solve the problems at the interface of engineering and biology;
m) the ability to make measurements on and interpret data from living systems, addressing the problems associated with the interaction between living and non-living materials and systems.

**: The metric/indicator used for each Outcome is based on a 5-point scale with Rank 4.0 being > 75% of the students meet the target "level attained" for the program outcome. The target level attained is quantified using Bloom's taxonomy:

Level 1 (L1) – knowledge Level 2 (L2) – comprehension Level 3 (L3) – Application Level 4 (L4) – Analysis
Level 5 (L5) – Synthesis Level 6 (L6) - Evaluation

BS in Civil Engineering

1. Assessment Plan

See Table 1: Assessment Plan for the Department of Civil Engineering
Appendix 1: Student Outcome Assessment Schedule
Appendix 2: Student Outcome Descriptions
Appendix 3: Course/Student Outcomes Coverage Matrix

2..Action Plan (Loop-Closing)

a. Report on 2011-2012 Academic Year

Based on the close-the-loop meeting for the 2011-2012 academic year the Department recognized a weakness in the following outcomes:

#10: Sustainability
Assessment: Direct assessment of student assignments, labs and tests
Evaluation: Assessment results indicate that the appropriate level of achievement was not attained
Issue: There were no assignments or test questions that specifically addressed sustainability concepts
Actions: faculty determined that in the short term sustainability was best addressed in the senior capstone sequence; additional focus was placed on sustainability in the proposal deliverables (fall term), in the poster presentation (spring term), and the final oral presentations (spring term).
Responsibility: L. Mata/J. Tocco

#11: Contemporary Issues and Historical Perspectives
Assessment: Direct assessment of student assignments, projects and tests
Evaluation: Assessment results indicate that more courses needed to include this outcome in the objectives (some instructors were in fact addressing the Contemporary Issues outcome, but no objective was attached to it)
Issue: Contemporary issues were addressed in the close the loop meeting and faculty discussed the opportunity to add discussions in classes;
Actions: Faculty will suggest opportunities to cover contemporary issues in various courses, including CE Management, Mechanics of Materials, and Transportation Engineering. Also, faculty would determine if existing course objectives could be revised to reflect such discussions already taking place, and if PBL scenarios could include contemporary elements.
Responsibility: J. Tocco

b.. Report on Plan for 2012-2013 Academic Year

Student outcomes assessed in the 2011-2012 academic year:
#6 Mechanics #7 Experiments #9 Design
#10 Sustainability #11 Contemporary Issues #12 Risk and Uncertainty
#13 Project Management #14 Breadth in Civil Eng. #15 Technical Specialization
#16 Communication #17 Public Policy #18 Business Administration
#20 Leadership #21 Teamwork #22 Attitudes
#23 Lifelong Learning #24 Professional & Ethical Responsibility

Courses assessed:

- Ethics & Professional Issues
- Structural Design Test Lab
- CE Design Project 2
- CE Management Practices
- CE Design Project 1

The close-the-loop meeting for the 2011-2012 academic year suggested a weakness in the achievement levels of the following outcomes:

<u>#15: Technical Specialization</u>
Assessment: Direct assessment of student capstone projects
Evaluation: Assessment results indicate that students need to create designs that are more in-depth and specific
Issue: At the close the loop meeting faculty discussed the various subdisciplines covered in the capstone and determined that students need to focus more on the details and create more complete designs
Actions: Faculty will suggest ways to assist students with creating designs that are more thorough, including revising grading rubrics for more specificity for each subdiscipline
Responsibility: L. Mata/J. Tocco

<u>#16: Communication</u>
Assessment: Direct assessment of student capstone projects
Evaluation: Assessment results indicate that students need to generate written documents that are more consistent and professional
Issue: At the close the loop meeting faculty discussed the technical reports required in the capstone and determined that students needed more clearer direction with respect to report writing
Actions: Faculty will suggest ways to elicit better writing from the students, including revising grading rubrics to more clearly stating writing requirements
Responsibility: L. Mata/J. Tocco

<u>General Continuous Improvement/Assessment Issues</u>

- From this term forward the Department will assess all elective courses
- The *Civil Engineering Assessment Repository* was created on Blackboard to facilitate information sharing among fulltime and adjunct faculty. Folders include the Assessment Schedule, the Student Outcomes, links to the Department Mission and Program Objectives, etc.

Table 1: Assessment Plan for the Department of Civil Engineering

University Student Outcomes	Civil Engineering Student Outcomes	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
DISCIPLINE-SPECIFIC KNOWLEDGE					
KNOWLEDGE IN DISCIPLINE LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems.	**Outcome #9 Design**	Direct assessment of student tests, assignments, projects, etc.	*Rank 4* on direct assessment rubric; Achievement *Level 5* for top tier courses	Every semester on a rotational basis; see Assessment Schedule	Annual
	Outcome #13 Project Management	Direct assessment of student tests, assignments, projects, etc.	*Rank 4* on direct assessment rubric; Achievement *Level 5* for top tier courses	Every semester on a rotational basis; see Assessment Schedule	Annual
	Outcome #14 Breadth in CE Areas	Direct assessment of student tests, assignments, projects, etc.	*Rank 4* on direct assessment rubric; Achievement *Level 4* for top tier courses	Every semester on a rotational basis; see Assessment Schedule	Annual
		Fundamentals of Engineering Exam	Above national average for Carnegie peer institutions	Every semester	Biennial
	Outcome #15 Technical Specialization	Direct assessment of student tests, assignments, projects, etc.	*Rank 4* on direct assessment rubric; Achievement *Level 3* for top tier courses	Every semester on a rotational basis; see Assessment Schedule	Annual
		Fundamentals of Engineering Exam	Above national average for Carnegie peer institutions	Every semester	Biennial

University Student Outcomes	Civil Engineering Student Outcomes	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
TECHNOLOGY LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines.	**Outcome #15 Technical Specialization**	Direct assessment of student tests, assignments, projects, etc.	*Rank 4* on direct assessment rubric; Achievement *Level 3* for top tier courses	Every semester	Annual
		Advisory Board evaluation of capstone projects	*Meets Expectations* on technical presentation rubric	Spring semester	Annual
SUSTAINABILITY LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities.	**Outcome #10 Sustainability**	Direct assessment of student tests, assignments, projects, etc.	*Rank 4* on direct assessment rubric; Achievement *Level 3* for top tier courses	Every semester on a rotational basis; see Assessment Schedule	Annual
CRITICAL THINKING					
COMMUNICATION LTU graduates will demonstrate professional	**Outcome #16 Communication**	Advisory Board and faculty evaluation of capstone poster and project presentations	*Meets Expectations* on oral evaluation and poster presentation rubrics	Every spring semester; see Assessment Schedule	Annual

University Student Outcomes	Civil Engineering Student Outcomes	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation.		Direct assessment of student tests, assignments, projects, etc.	*Rank 4* on direct assessment rubric; Achievement *Level 5* for top tier courses	Every semester on a rotational basis; see Assessment Schedule	Annual
MATHEMATICS LTU graduates will demonstrate their mastery of mathematics to solve real- world problems by isolating relevant factors, constructing abstract models, communicating precisely and reasoning logically.	**Outcome #1 Mathematics**	Direct assessment of student tests, assignments, projects, etc.	*Rank 4* on direct assessment rubric; Achievement *Level 3* for top tier courses	Every semester on a rotational basis; see Assessment Schedule	Annual
		Fundamentals of Engineering Exam	Above national average for Carnegie peer institutions	Every semester	Biennial
READING LTU graduates will demonstrate proficiency in reading and interpreting complex, intellectually challenging texts and evaluating their analytical architecture from an independent point of view.	Not directly supported by the Civil Engineering program				

University Student Outcomes	Civil Engineering Student Outcomes	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
SCIENTIFIC ANALYSIS LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields.	**Outcome #8** **Problem Recognition and Solving**	Direct assessment of student tests, assignments, projects, etc.	*Rank 4* on direct assessment rubric; Achievement *Level 4* for top tier courses	Every semester on a rotational basis; see Assessment Schedule	Annual
LEADERSHIP & ETHICS					
LEADERSHIP LTU graduates will demonstrate civic, team, and global leadership skills by identifying a personal leadership philosophy, exhibiting entrepreneurial skills, and becoming agents of positive change.	**Outcome #20** **Leadership**	TBD--Coordinate with University	TBD--Coordinate with University	TBD--Coordinate with University	TBD--Coordinate with University
TEAMWORK LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members‘ contributions.	**Outcome #21** **Teamwork**	Direct assessment of student tests, assignments, projects, etc.	*Rank 4* on direct assessment rubric; Achievement *Level 3*	Every semester on a rotational basis; see Assessment Schedule	Annual
		Peer evaluations by students in the capstone	Rated on a rubric from *Poor* to *Excellent*	Every semester	Annual

University Student Outcomes	Civil Engineering Student Outcomes	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
PROFESSIONAL ETHICS LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions.	**Outcome #24 Professional and Ethical Responsibility**	Direct assessment of student tests, assignments, projects, etc.	*Rank 4* on direct assessment rubric; Achievement *Level 3*	Every semester on a rotational basis; see Assessment Schedule	Annual
		Fundamentals of Engineering Exam	Above national average for Carnegie peer institutions	Every semester	Biennial
No comparable University Outcome	**Outcome #2 Natural Sciences**	Direct assessment of student tests, assignments, projects, etc.	*Rank 4* on direct assessment rubric; Achievement *Level 3*	Every semester on a rotational basis; see Assessment Schedule	Annual
No comparable University Outcome	**Outcome #3 Humanities**	Direct assessment of student assignments	*Rank 4* on direct assessment rubric; Achievement *Level 3*	Every semester on a rotational basis; see Assessment Schedule	Annual
No comparable University Outcome	**Outcome #5 Materials Science**	Direct assessment of student tests, assignments, projects, etc.	*Rank 4* on direct assessment rubric; Achievement *Level 3*	Every semester on a rotational basis; see Assessment Schedule	Annual
		Fundamentals of Engineering Exam	Above national average for Carnegie peer institutions	Every semester	Biennial
No comparable University Outcome	**Outcome #6 Mechanics**	Direct assessment of student tests, assignments, projects, etc.	*Rank 4* on direct assessment rubric; Achievement *Level 4*	Every semester on a rotational basis; see Assessment Schedule	Annual
		Fundamentals of Engineering Exam	Above national average for Carnegie peer institutions	Every semester	Biennial

University Student Outcomes	Civil Engineering Student Outcomes	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
No comparable University Outcome	**Outcome #7 Experiments**	Direct assessment of student tests, assignments, projects, etc.	*Rank 4* on direct assessment rubric; Achievement *Level 5*	Every semester on a rotational basis; see Assessment Schedule	Annual
No comparable University Outcome	**Outcome #11 Contemporary Issues & Historical Perspectives**	Direct assessment of student tests, assignments, projects, etc.	*Rank 4* on direct assessment rubric; Achievement *Level 3*	Every semester on a rotational basis; see Assessment Schedule	Annual
		Graduating seniors exit interview	General review	Every semester	Annual
No comparable University Outcome	**Outcome #12 Risk & Uncertainty**	Direct assessment of student tests, assignments, projects, etc.	*Rank 4* on direct assessment rubric; Achievement *Level 3*	Every semester on a rotational basis; see Assessment Schedule	Annual
No comparable University Outcome	**Outcome #17 Public Policy**	Direct assessment of student tests, assignments, projects, etc.	*Rank 4* on direct assessment rubric; Achievement *Level 2*	Every semester on a rotational basis; see Assessment Schedule	Annual
No comparable University Outcome	**Outcome #18 Business & Public Administration**	Direct assessment of student tests, assignments, projects, etc.	*Rank 4* on direct assessment rubric; Achievement *Level 2*	Every semester on a rotational basis; see Assessment Schedule	Annual
No comparable University Outcome	**Outcome #19 Globalization**	Direct assessment of student tests, assignments, projects, etc.	*Rank 4* on direct assessment rubric; Achievement *Level 2*	Every semester on a rotational basis; see Assessment Schedule	Annual
No comparable University Outcome	**Outcome #22 Attitudes**	Direct assessment of student tests, assignments, projects, etc.	*Rank 4* on direct assessment rubric; Achievement *Level 2*	Every semester on a rotational basis; see Assessment Schedule	Annual
		Graduating seniors exit interview	General review	Every semester	Annual

University Student Outcomes	**Civil Engineering Student Outcomes**	**Assessment Tools**	**Metrics/ Indicators**	**Administration Timeline**	**Loop-Closing Timeline**
No comparable University Outcome	**Outcome #23 Lifelong Learning**	Direct assessment of student assignments	*Rank 4* on direct assessment rubric; Achievement *Level 4*	Every semester on a rotational basis; see Assessment Schedule	Annual

LAWRENCE TECHNOLOGICAL UNIVERSITY
DEPARTMENT OF CIVIL ENGINEERING

APPENDIX 1

STUDENT OUTCOMES ASSESSMENT SCHEDULE

NOTES

- The Schedule sets forth the terms each course and its salient outcomes are scheduled for assessment.
- The next anticipated accreditation review is fall 2016.
- In preparation for accreditation, all courses are assessed in fall 2015 and spring 2016.

COURSES	STUDENT OUTCOMES/TERMS OUTCOMES ARE ASSESSED																						
	#1 Mathematics	#2 Natural Sciences	#3 Humanities	#4 Social Sciences	#5 Materials Science	#6 Mechanics	#7 Experiments	#8 Problem Recognition & Solving	#9 Design	#10 Sustainability	#11 Contemporary Issues & Historical Perspectives	#12 Risk & Uncertainty	#13 Project Management	#14 Breadth in CE Areas	#15 Technical Specialization	#16 Communication	#17 Public Policy	#18 Business & Public Administration	#19 Globalization	#20 Leadership	#21 Teamwork	#22 Attitudes	#23 Lifelong Learning	#24 Professional & Ethical Responsibility
ECE1012 CE Perspectives			F13 F15	F13 F15															F13 F15			F13 F15		
ECE1013 Surveying and Land Measurement							F13 S14 F15 S16							F13 S14 F15 S16										
ECE1101 CE Computer Graphics Lab															F13 F15									
ECE1102 Engineering Computer Applications Lab												F13 F15												
ECE1413 CE Materials					F12 S13 F15 S16																			
LDR2001 Leadership																				F13 F15 S16				
ECE2103 Computer Aided Infrastructure Planning										F15 S16		F15 S16												
MCS3403 Probability & Statistics												S13 F14 F15 S16												

COURSES	STUDENT OUTCOMES/TERMS OUTCOMES ARE ASSESSED																						
	#1 Mathematics	#2 Natural Sciences	#3 Humanities	#4 Social Sciences	#5 Materials Science	#6 Mechanics	#7 Experiments	#8 Problem Recognition & Solving	#9 Design	#10 Sustainability	#11 Contemporary Issues & Historical Perspectives	#12 Risk & Uncertainty	#13 Project Management	#14 Breadth in CE Areas	#15 Technical Specialization	#16 Communication	#17 Public Policy	#18 Business & Public Administration	#19 Globalization	#20 Leadership	#21 Teamwork	#22 Attitudes	#23 Lifelong Learning	#24 Professional & Ethical Responsibility
ECE3013 Mechanics of Materials	S13 F14 F15 S16	S13 F14 F15 S16			S13 F14 F15 S16																			
ECE3213 Construction Engineering					F13 S14 F15 S16												F13 S14 F15 S16	F13 S14 F15 S16						
ECE3324 Environmental Eng. 1														F13 S14 F15 S16										
ECE3424 Soil Mechanics					S13 F14 F15 S16		S13 F14 F15 S16														S13 F14 F15 S16			
ECE3523 Hydromechanics						F13 S14 F15 S16		F13 S14 F15 S16																
ECE3723 Theory of Structures	S13 F14 F15 S16	S13 F14 F15 S16				S13 F14 F15 S16																		
ECE3823 Transportation Engineering				F12 S13 F15 S16							F12 S13 F15 S16													
ECE4022 CE Design Project 1				F12 F13 F14 F15					F12 F13 F14 F15	F12 F13 F14 F15				F12 F13 F14 F15		F12 F13 F14 F15			F12 F13 F14 F15	F12 F13 F14 F15	F12 F13 F14 F15	F12 F13 F14 F15	F12 F13 F14 F15	
ECE4032 CE Design Project 2				S13 S14 S15 S16					S13 S14 S15 S16	S13 S14 S15 S16				S13 S14 S15 S16		S13 S14 S15 S16			S13 S14 S15 S16	S13 S14 S15 S16	S13 S14 S15 S16	S13 S14 S15 S16	S13 S14 S15 S16	

COURSES	STUDENT OUTCOMES/TERMS OUTCOMES ARE ASSESSED																					
	#1 Mathematics	#2 Natural Sciences	#3 Humanities	#4 Social Sciences	#5 Materials Science	#6 Mechanics	#7 Experiments	#8 Problem Recognition & Solving	#9 Design	#10 Sustainability	#11 Contemporary Issues & Historical Perspectives	#12 Risk & Uncertainty	#13 Project Management	#14 Breadth in CE Areas	#15 Technical Specialization	#16 Communication	#17 Public Policy	#18 Business & Public Administration	#19 Globalization	#20 Leadership	#21 Teamwork	#22 Attitudes	#23 Lifelong Learning	#24 Professional & Ethical Responsibility
ECE4051 Ethics & Professional Issues			F12 S13 F15 S16								F12 S13 F15 S16						F12 S13 F15 S16		F12 S13 F15 S16			F12 S13 F15 S16	F12 S13 F15 S16	F12 S13 F15 S16
ECE4243 CE Management Practices								S13 F13 F15 S16						S13 F13 F15 S16	S13 F13 F15 S16	S13 F13 F15 S16	S13 F13 F15 S16	S13 F13 F15 S16	S13 F13 F15 S16					
ECE4263 Cost Estimating, Bidding and Contracting													F13 F15					F13 F15						F13 F15
ECE4343 Environmental Engineering 2														S13 S15 S16	S13 S15 S16									
ECE4363 Environmental Eng. Design									S13 S15 S16					S13 S15 S16	S13 S15 S16									
ECE4443 Foundation Engineering						F12 F14 F15			F12 F14 F15					F12 F14 F15	F12 F14 F15	F12 F14 F15								
ECE4544 Hydraulic Engineering						F12 S13 F15 S16	F12 S13 F15 S16	F12 S13 F15 S16	F12 S13 F15 S16	F12 S13 F15 S16		F12 S13 F15 S16		F12 S13 F15 S16	F12 S13 F15 S16						F12 S13 F15 S16			
ECE4563 Hydrology												F13 F15		F13 F15	F13 F15									
ECE4733 Advanced Structural Analysis												F13 F15		F13 F15	F13 F15									
ECE4743 Concrete Design									F12 S13 F15 S16					F12 S13 F15 S16	F12 S13 F15 S16	F12 S13 F15 S16								
ECE4753 Steel Design									S13 S15 S16					S13 S15 S16	S13 S15 S16									
ECE4761 Structural Design Test Lab						S13 F14 F15 S16	S13 F14 F15 S16		S13 F14 F15 S16			S13 F14 F15 S16									S13 F14 F15 S16			

COURSES	STUDENT OUTCOMES/TERMS OUTCOMES ARE ACCESSED																						
	#1 Mathematics	#2 Natural Sciences	#3 Humanities	#4 Social Sciences	#5 Materials Science	#6 Mechanics	#7 Experiments	#8 Problem Recognition & Solving	#9 Design	#10 Sustainability	#11 Contemporary Issues & Historical Perspectives	#12 Risk & Uncertainty	#13 Project Management	#14 Breadth in CE Areas	#15 Technical Specialization	#16 Communication	#17 Public Policy	#18 Business & Public Administration	#19 Globalization	#20 Leadership	#21 Teamwork	#22 Attitudes	#23 Lifelong Learning	#24 Professional & Ethical Responsibility
ECE4843 Highway Engineering									F12 F14 F15					F12 F14 F15	F12 F14 F15									

ADDITIONAL ASSESSMENT TOOLS	STUDENT OUTCOMES/TERMS OUTCOMES ARE ACCESSED																						
	#1 Mathematics	#2 Natural Sciences	#3 Humanities	#4 Social Sciences	#5 Materials Science	#6 Mechanics	#7 Experiments	#8 Problem Recognition & Solving	#9 Design	#10 Sustainability	#11 Contemporary Issues & Historical Perspectives	#12 Risk & Uncertainty	#13 Project Management	#14 Breadth in CE Areas	#15 Technical Specialization	#16 Communication	#17 Public Policy	#18 Business & Public Administration	#19 Globalization	#20 Leadership	#21 Teamwork	#22 Attitudes	#23 Lifelong Learning	#24 Professional & Ethical Responsibility
Fundamentals of Engineering National Test	S13 S16				S13 S16	S13 S16						S13 S16		S13 S16	S13 S16									S13 S16

Department of Civil Engineering Appendix 2: Student Outcome Descriptions

Outcome lumber and Title	To graduate with a B.S. Degree in Civil Engineering from Lawrence Technological University, and enter the practice of civil engineering, an individual must demonstrate competence in each of 24 Student Outcomes.
Foundational Outcomes	
1 hematics	***Solve*** problems in mathematics through differential equations and ***apply*** this knowledge to the solution of engineering problems. **(L3)**
2 Natural ciences	***Solve*** problems in calculus-based physics, chemistry and geology, and ***apply*** this knowledge to the solution of engineering problems. **(L3)**
3 manities	***Demonstrate*** the importance of the humanities in the professional practice of engineering. **(L3)**
4 l Sciences	***Demonstrate*** the incorporation of social sciences knowledge into the professional practice of engineering. **(L3)**
Technical Outcomes	
5 aterials cience	***Use*** knowledge of materials science to ***solve*** problems appropriate to civil engineering. **(L3)**
6 echanics	***Analyze*** and ***solve*** problems in solid and fluid mechanics. **(L4)**
7 periments	***Specify*** and ***design*** an experiment to meet a specified need; conduct the experiment and analyze, interpret and ***explain*** the resulting data. **(L5)**
8 roblem ecogniti on and olving	***Develop*** problem statements and ***solve*** both well-defined and open-ended civil engineering problems by selecting and applying appropriate techniques and tools. **(L4)**
9 Design	***Design*** a system or process to meet desired needs within such realistic constraints as economic, environmental, social, political, ethical, health and safety, constructability and sustainability. **(L5)**
10 tainability	***Apply*** the principles of sustainability to the design of traditional and emergent engineering systems and ***explain*** how civil engineers should strive to comply with the principles of sustainable development in the performance of their professional duties. **(L3)**
11 temporary sues and storical spectives	***Explain*** the impact of historical and contemporary issues on the identification and formulation of solutions to engineering problems, and ***explain*** the impact of engineering solutions on the economy, environment, political landscape and society. **(L3)**
12 isk and ncertaint y	***Apply*** the principles of probability and statistics and ***solve*** problems containing uncertainty. **(L3)**
13 Project nageme nt	***Analyze*** a proposed project and ***formulate*** documents for incorporation into the project management plan. **(L4)**
14 dth in Civil gineering Areas	***Analyze*** and ***solve*** well-defined engineering problems in at least four technical areas appropriate to civil engineering. **(L4)**

15 Technical Specialization	***Apply*** specialized tools or technologies to ***solve*** problems in traditional or emerging specialized technical areas of civil engineering. **(L3)**
Professional Outcomes	
16 Communication	***Plan, compose*** and ***integrate*** the verbal, written, virtual and graphical communication of a project to technical and non-technical audiences. **(L5)**
17 Public Policy	***Discuss*** and ***explain*** key concepts and processes involved in public policy. **(L2)**
18 Business and Public Administration	***Explain*** key concepts and processes used in business and public administration. **(L2)**
19 Globalization	***Explain*** global issues related to professional practice, infrastructure, environment and service populations as such issues arise across cultures and countries. **(L2)**
20 Leadership	***Explain*** leadership principles and attitudes and ***apply*** those principles and attitudes when making decisions and directing the efforts of a small group. **(L3)**
21 Teamwork	***Function*** effectively as a member of an intra-disciplinary team and ***evaluate*** the performance of the team and individual team members. **(L3)**
22 Attitudes	***Explain*** attitudes supportive of the professional practice of civil engineering. **(L2)**
23 Lifelong Learning	***Demonstrate*** the ability for self-directed learning and ***identify*** additional knowledge, skills and attitudes appropriate for continued professional practice. **(L4)**
24 Professional and Ethical Responsibility	***Explain*** the many aspects of professionalism and what it means to be a member of the civil engineering profession; ***analyze*** a situation involving multiple conflicting professional and ethical interests to determine an appropriate course of action. **(L4)**

KEY

Level 1 (L1): Knowledge **Level 2 (L2): Comprehension**
Level 3 (L3): Application **Level 4 (L4): Analysis**
Level 5 (L5): Synthesis **Level 5 (L5): Evaluation**

Lawrence Technological University
Department of Civil Engineering

Appendix 3
Course/Student Outcomes Coverage Summary Matrix

Required
Civil Engineering

Foundational Outcomes					Technical Outcomes										Professional Outcomes								
Course	Math (1)	Natural Science (2)	Humanities (3)	Social Sciences (4)	Material Science (5)	Mechanics (6)	Experiments (7)	Problem Solving (8)	Design (9)	Sustainability (10)	Cont. Issues & Historical (11)	Risk & Uncertainty (12)	Project Management (13)	Breadth (14)	Technical Specialization (15)	Communication (16)	Public Policy (17)	Business & Public Admin. (18)	Globalization (19)	Leadership (20)	Teamwork (21)	Attitudes (22)	Lifelong Learning (23)	Prof. and Ethical Responsibility (24)
1013	3						4	3			2			4	1	3					3			
1101								2							2									
1102	3							2				1												
1413		1			3	2	4	3	3		1	1		3	1	4					3			2
LDR2001																				3		3		
MCS3403												3												
2103	3							3		2		2												
3013	3	3			3	3		3	3															
3213					1	1			2				2	2		3	2	2						
3324	3	1					3	3	3		2			4	1	4	1				3			
3424	2	1			3	3	5	3	1			1		3	2	4					3			
3523	3					3		3						3										
3723	3	3				4		3	4					3										4
3823	3			2			3	3	3		2		1	3	3	4	2	2			3			
4022				3	3	3		3	4	3		1	3	4	3	5	2	2		3	3	2	4	
4032				3	3	3		4	5	3		2	4	4	3	5	2	2		3	3	2	4	
4051			3							2	3					4	2		2	2		2	4	4
4243								4		2	3	2	4	4	3	5	2	2	2					
4544	3	3				4	5	4	5	3	3	3		4	3	4					3			
4743	3				2	3		3	5			2		4	3	5								4
4761	3					4	5		4			3		4	1	4					3			
Required Level of Cognitive Achievement	L3	L3	L3	L3	L3	L4	L5	L4	L5	L3	L3	L3	L4	L4	L3	L5	L2	L2	L2	L3	L3	L2	L4	L4

Lawrence Technological University
Department of Civil Engineering

Course/Student Outcomes
Coverage Summary Matrix

Elective
Civil Engineering

Foundational Outcomes					Technical Outcomes										Professional Outcomes								
Course	Math (1)	Natural Science (2)	Humanities (3)	Social Sciences (4)	Material Science (5)	Mechanics (6)	Experiments (7)	Problem Solving (8)	Design (9)	Sustainability (10)	Cont. Issues & Historical (11)	Risk & Uncertainty (12)	Project Management (13)	Breadth (14)	Technical Specialization (15)	Communication (16)	Public Policy (17)	Business & Public Admin. (18)	Globalization (19)	Leadership (20)	Teamwork (21)	Attitudes (22)	Lifelong Learning (23)	Prof. and Ethical Responsibility (24)
4263												2	2			4	2	2		3	3			
4343	3	1						3	3					4	3									
4363								3	5					4	3								4	
4443					3	4		3	5			2		4	3	4					3			
4563	3	2						2	2	1		3		4	3									
4733	3	3				3		4	4			3		4	3									
4753	3				1	3		4	5			1		4	3									
4843	3	2		2	2			3	5			2		4	3	4	2				3			3
Required Level of Cognitive Achievement	L3	L3	L3	L3	L3	L4	L5	L4	L5	L3	L3	L3	L4	L4	L3	L5	L2	L2	L2	L3	L3	L2	L4	L4

Master of Civil Engineering

1. Assessment Plan

The educational outcomes of the Master of Civil Engineering (MCE) and Master of Science in Civil Engineering (MSCE) degree programs are listed below. They have been adapted from the Body of Knowledge 2 (BOK2) promulgated by ASCE. Outcome titles based on BOK2 and the maximum expected level of achievement are given in parenthesis (see below the list of the outcomes for the key).

(a) *Formulate* and solve ill-defined engineering problem appropriate to civil engineering by *selecting* and applying appropriate techniques and tools (BOK2: Problem recognition and solving, L4)

(b) *Apply* specialized tools or technologies to solve problems in a traditional or emerging specialized technical area appropriate to civil engineering (BOK2, Technical specialization, L3)

(c) *Analyze* a complex system or process in a traditional or emerging specialized technical area appropriate to civil engineering (BOK2, Technical specialization, L4)

(d) *Design* a system or process or create new knowledge or technologies in a traditional or emerging specialized technical area appropriate to civil engineering (BOK2, Technical specialization, L5)

(e) *Plan, compose* and *integrate* the verbal, written, virtual, and graphical communication of a project to technical and non-technical audiences (BOK2, Communication, L5)

Additional outcome for MSCE program

(f) *Evaluate* the design of a complex system or process, or *evaluate* the validity of newly-created knowledge in a traditional or emerging advanced specialized technical area appropriate to civil engineering (BOK2, Technical specialization, L6)

Key: L1 through **L6** refer to these levels of achievement based on Bloom's Taxonomy:
Level 1 **(L1)** - Knowledge
Level 2 **(L2)** - Comprehension
Level 3 **(L3)** - Application Level
4 **(L4)** - Analysis
Level 5 **(L5)** - Synthesis
Level 6 **(L6)** – Evaluation

MCE/MSCE program outcomes support the university graduate learning outcomes as described in Table 1. Please refer to column two in Table 1 to see the inter-relationship between university graduate learning outcomes and the MCE/MSCE program outcomes. Program assessment is conducted using the following tools:

Direct Assessment of courses: Direct assessment of student learning is performed in specific selected courses. Please note that MCE/MSCE program has not designated concentrations. Most courses are offered once in two years.

Assessment of thesis and graduate projects: The members of the committee are to

provide their evaluations outlining the quality of the thesis or project using the rubric provided to them.

Exit Interviews: The objective of the exit interview is to receive a summative view of what is happening in the department and an indication of overall student satisfaction. Program Director conducts exit interviews. The process includes a survey form to be filled out by students regarding their education at LTU and specific graduate program outcomes followed by a brief interview by the program director.

The results of the assessment of the program outcomes is presented to the department faculty during the annual close loop meeting in summer. Any actions that need to be taken to improve the graduate curriculum are handled by Chair and Graduate Director on an annual basis.

2. Action Plan (Loop-Closing)

a. Report on 2011-2012 Academic Year

This section is not applicable as the assessment plan is still being implemented for the first time during the 2012-2013 academic year.

b. Report on Plan for 2012-2013 Academic Year

Since the assessment plan is still being implemented, there are few documents and procedures that need to be developed during the current academic year. They are listed bwlo:

- Course objectives for the courses selected for direct assessment
- Rubric for thesis/graduate project evaluation
- Exit interview questionnaire
- Exit interview mechanism to capture all graduating students.

Table 1: Assessment Plan for the MCE/MSCE Program

University Graduate Learning Outcomes	Supporting Program Outcomes*	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
DISCIPLINE-SPECIFIC KNOWLEDGE					
"LTU graduates will apply and, in accordance with their course of study, develop advanced knowledge within their discipline."	Outcome (b) Outcome (d)	Direct Assessment of Coursework	85% should reach the highest expected achievement level	Each Semester	Every Summer
"LTU graduates will analyze and interpret information and implement decisions using the latest techniques and technologies"	Outcome (a) Outcome (c)	Direct Assessment of Coursework	85% should reach the highest expected achievement level	Each Semester	Every Summer
CRITICAL THINKING					
"LTU graduates will evaluate scholarly literature and, in accordance with their course of study, contribute to the literature."	Outcome (d) Outcome (f)	Direct Assessment of Coursework & Evaluation of Thesis and Graduate Project Reports (only for MSCE)	85% should reach the highest expected achievement level	Each Thesis/Graduate Project Defense	Every Summer
"LTU graduates will communicate effectively using written, oral, graphical, and digital formats."	Outcome (e)	Direct Assessment of Coursework	85% should reach the highest expected achievement level	Each Semester	Every Summer
LEADERSHIP & ETHICS					
"LTU graduates will develop a broad perspective on professional issues, such as lifelong learning, sustainability, leadership, and ethics."	Outcome (d) Outcome (f)	Exit Interview	85% of graduating students must agree that they have reached the highest expected achievement level	Exit Interview conducted with each student petitioned to graduate and each Thesis/Graduate Project Defense	Every Summer

*See section 1 in the report for details on program outcomes

Master of Construction Engineering Management

1. Assessment Plan

The educational outcomes of the Master of Construction Engineering Management (MCEM) program are listed below. They have been adapted from the Body of Knowledge 2 (BOK2) promulgated by ASCE. Outcome titles based on BOK2 and the maximum expected level of achievement are given in parenthesis (see below the list of the outcomes for the key).

a) *Create* appropriate processes, subsidiary plans and contract documents for incorporation into the project management plan (BOK2: Project Management, L4)

b) *Plan, compose* and *integrate* the verbal, written, virtual and graphical components of a project and communicate them to technical and non-technical audiences (BOK2, Communication, L5)

c) *Apply* techniques to simple public policy problems related to civil engineering projects (BOK2, Public Policy, L3)

d) *Synthesize* case studies, experiences and lessons learned to cultivate professional and ethical conduct (BOK2, Professional and Ethical Responsibility, L5)

e) *Apply* business and public administration concepts and process (BOK2, Business and Public Administration, L3)

Key: L1 through **L6** refer to these levels of achievement based on Bloom's Taxonomy:
Level 1 **(L1)** - Knowledge
Level 2 **(L2)** - Comprehension
Level 3 **(L3)** - Application Level 4
(L4) - Analysis
Level 5 **(L5)** - Synthesis
Level 6 **(L6)** – Evaluation

MCEM program outcomes support the university graduate learning outcomes as described in Table 1. Please refer to column two in Table 1 to see the inter-relationship between university graduate learning outcomes and the MCEM program outcomes. Program assessment is conducted using the following tools:

Direct Assessment: Direct assessment of student learning is performed in specific selected courses. While each graduate civil engineering course has learning objectives the assessment will be carried out in the core curriculum.

Exit Interviews: The objective of the exit interview is to receive a summative view of what is happening in the department and an indication of overall student satisfaction. Program Director conducts exit interviews. The process includes a survey form to be filled out by students regarding their education at LTU and specific graduate program outcomes followed by a brief interview by the program director.

The results of the assessment of the program outcomes are presented to the department faculty during the annual close loop meeting in summer. Any actions that need to be taken to improve the graduate curriculum are handled by Chair and Graduate Director on an annual basis.

2. Action Plan (Loop-Closing)

a. Report on 2011-2012 Academic Year

This section is not applicable as the assessment plan is still being implemented for the first time during the 2012-2013 academic year.

b. Report on Plan for 2012-2013 Academic Year

Since the assessment plan is still being implemented, there are few documents and procedures that need to be developed during the current academic year. They are:

- Course objectives for the courses selected for direct assessment
- Exit interview questionnaire
- Exit interview mechanism to capture all graduating students.

Table 1: Assessment Plan for the MCEM Program

University Graduate Learning Outcomes	Supporting Program Outcomes*	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
DISCIPLINE-SPECIFIC KNOWLEDGE					
"LTU graduates will apply and, in accordance with their course of study, develop advanced knowledge within their discipline."	Outcome (a) Outcome (c) Outcome (e)	Direct Assessment of Coursework	85% should reach the highest expected achievement level	Each Semester	Every Summer
"LTU graduates will analyze and interpret information and implement decisions using the latest techniques and technologies"	Outcome (a) Outcome (c) Outcome (e)	Direct Assessment of Coursework	85% should reach the highest expected achievement level	Each Semester	Every Summer
CRITICAL THINKING					
"LTU graduates will evaluate scholarly literature and, in accordance with their course of study, contribute to the literature."	Outcome (d)	Direct Assessment of Coursework	85% should reach the highest expected achievement level	Each Semester	Every Summer
"LTU graduates will communicate effectively using written, oral, graphical, and digital formats."	Outcome (b)	Direct Assessment of Coursework	85% should reach the highest expected achievement level	Each Semester	Every Summer
LEADERSHIP & ETHICS					
"LTU graduates will develop a broad perspective on professional issues, such as lifelong learning, sustainability, leadership, and ethics."	Outcome (d)	Exit Interview	85% of graduating students must agree that they have reached the highest expected achievement level	Exit Interview conducted with each student petitioned to graduate	Every Summer

PhD in Civil Engineering

1. Assessment Plan

The educational outcomes for the PhD in Civil Engineering program are defined based on the research components, i.e. proposal exam and final defense. Since coursework related outcomes are covered through the assessment of MCEM and MSCE/MCE programs, they are not part of this assessment plan. The educational outcomes have been adapted from the Body of Knowledge 2 (BOK2) promulgated by ASCE. Outcome titles based on BOK2 and the maximum expected level of achievement are given in parenthesis (see below the list of the outcomes for the key).

(a) Evaluate the effectiveness of a designed experiment in meeting an ill-defined real-world need (BOK2: Experiments, L6)

(b) Evaluate the design of a complex system or process, or evaluate the validity of newly-created knowledge in a traditional or emerging advanced specialized technical area appropriate to civil engineering (BOK2, Technical specialization, L6)

(c) Plan, compose and integrate the verbal, written, virtual, and graphical communication of a project to technical and non-technical audiences (BOK2, Communication, L5)

Key: L1 through **L6** refer to these levels of achievement based on Bloom's Taxonomy:
Level 1 **(L1)** - Knowledge
Level 2 **(L2)** - Comprehension
Level 3 **(L3)** - Application Level
4 **(L4)** - Analysis
Level 5 **(L5)** - Synthesis
Level 6 **(L6)** – Evaluation

PhD program outcomes support the university graduate learning outcomes as described in Table 1. Please refer to column two in Table 1 to see the inter-relationship between the university graduate learning outcomes and the MCE/MSCE program outcomes. Program assessment is conducted using the following tool.

Evaluation of research components (i.e. Proposal Exam and Final Defense): The members of the committee are to provide their evaluations outlining the quality of the proposal as well as the dissertation using the rubric provided to them.

Exit Interviews: The objective of the exit interview is to receive a summative view of what is happening in the department and an indication of overall student satisfaction. Program Director conducts exit interviews. The process includes a survey form to be filled out by students regarding their education at LTU and specific graduate program outcomes followed by a brief interview by the program director.The result of the assessment of the program outcomes is presented to the department faculty during the annual close loop meeting in summer. Any actions that need to be taken to improve the graduate curriculum are handled by Chair and Graduate Director on an annual basis.

2. Action Plan (Loop-Closing)

a. Report on 2011-2012 Academic Year

This section is not applicable as the assessment plan is still being implemented for the first time during the 2012-2013 academic year.

b. Report on Plan for 2012-2013 Academic Year

Since the assessment plan is still being implemented, the following documents and procedures are being developed in the current academic year:

- Rubric for proposal and final defense evaluation
- Exit interview questionnaire
- Exit interview mechanism to capture all graduating students.

Table 1: Assessment Plan for the PhD in Civil Engineering Program

University Graduate Learning Outcomes	Supporting Program Outcomes*	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
DISCIPLINE-SPECIFIC KNOWLEDGE					
"LTU graduates will apply and, in accordance with their course of study, develop advanced knowledge within their discipline."	Outcome (b) Outcome (d)	Direct Assessment of Coursework	85% should reach the highest expected achievement level	Each Semester	Every Summer
"LTU graduates will analyze and interpret information and implement decisions using the latest techniques and technologies"	Outcome (a) Outcome (c)	Direct Assessment of Coursework	85% should reach the highest expected achievement level	Each Semester	Every Summer
CRITICAL THINKING					
"LTU graduates will evaluate scholarly literature and, in accordance with their course of study, contribute to the literature."	Outcome (d) Outcome (f)	Direct Assessment of Coursework & Evaluation of Thesis and Graduate Project Reports (only for MSCE)	85% should reach the highest expected achievement level	Each Semester	Every Summer
"LTU graduates will communicate effectively using written, oral, graphical, and digital formats."	Outcome (e)	Direct Assessment of Coursework	85% should reach the highest expected achievement level	Each Semester	Every Summer
LEADERSHIP & ETHICS					
"LTU graduates will develop a broad perspective on professional issues, such as lifelong learning, sustainability, leadership, and ethics."	Outcome (d) Outcome (f)	Exit Interview	85% of graduating students must agree that they have reached the highest expected achievement level	Exit Interview conducted with each student petitioned to graduate	Every Summer

BS in Electrical Engineering

1. **Assessment Plan for Electrical Engineering Program**
   See Table 1below.

2. **Action Plan (Loop-Closing) for Electrical Engineering Program**

   a. **Report on 2011-2012 Academic Year**

In the 2011-2012 academic year, outcomes (a) "Knowledge in Disciplines" and (f) "ethic" has been accessed in ECE department. During the EEE program loop-closing meeting on the Assessment Day, the faculty discussed both of those outcomes. More details are as following:

Outcome a: an ability to apply knowledge of mathematics, science, and engineering *(including computing skills)*

• ***Assessment* (1)*:* Direct assessment of student lab report in EEE2114 (EE)** Circuit I
• *Evaluation: Average blower than threshold of 3.0 (average score:2.31)* for the level of achievement on a 5.0 scale.
• *Issue and Actions: Dr. Richard Johnston assigned the circuit lab with modern simulation tools in class EEE2114(EE) circuit I class. Reports are collected and accessed by faculties.*
• *Responsibility: Dr. Richard Johnston*

• ***Assessment* (2)*:* Direct assessment of student work in senior projects** --
Simulation reports in previous labs are asked to submitted in EEE 3011 Introduction to ECE Projects; Faculty give assessment
• *Evaluation: Average exceeded threshold of 3.0 (average score:3.1)* for the level of achievement on a 5.0 scale.
• *Issue: Instrument needs be improved based on feedback.*
• *Actions: All faculties met during the* EEE program loop-closing meeting for the 2011- 2012 academic year, and gave assessment.
• *Responsibility: Senior Design instructor*

• ***Assessment* (3)*:* Direct assessment of scores in Fundamentals of Engineering Exam**
• *Evaluation:* The average score of 6 students' FE exams in afternoon sessions has been compared with the national average.
• *Issue: Totally Among the total 9 subjects in the afternoon session, 6 of the scores are above or close to the national average and 3 subjects scores are obviously below*. They are mathematics, electricity and Magnetism, signal processing;
• *Actions: ECE Department will sponsor 5 students to take the FE exam (at least 2 from EE and 2 from CompE . Assistance on the above 3 subjects from professors are considered.*
• *Responsibility: All faculties of ECE.*

Outcome f: "an understanding of professional and ethical responsibility"

• **Assessment(1):** Students in *EEE 3011 Introduction to ECE Projects were assigned a fact of ethic essay and were asked to compare the fact to the IEEE code of conduct and draw conclusion as to whether the fact ethical or not? Faculties rate the essays in the loop-closing meeting based on a score of 5-point scale.*

• *Evaluation: Assessment inconclusive*
• *Issue:* In the loop-closing meeting, faculties thoroughly discuss the methods to improve the design. Several issues include, how to carefully select the fact(s) relevant to ethical issues, how to make sure such design can successfully access students understanding of professional and ethical responsibilities? And how faculties could evaluate the quality and rate scores reasonably via students essays on ethical issues.
• *Actions: Improved assessment instrument are expected according to the issues above.*
• *Responsibility: Senior Design instructor.*

• **Assessment(2): Ethics assessment from the "Ethics and Business Practices" subject of FE exam**
• *Evaluation: LTU average score (88) is above the national average (81).*
• *Issue:* n/A
• *Actions: ECE Department will sponsor 5 students to take the FE exam and the outcomes will be observed.*
• *Responsibility: ECE Chair.*

b. Report on Plan for ECE Undergraduate Academic Year

In the 2012-2013 academic year the faculty will also continue to evaluate the use of various rubrics and summary reporting formats.

The following EEE ABET Outcomes will be used for the future assessment:

a) an ability to apply knowledge of mathematics, science, and engineering
b) an ability to design and conduct experiments, as well as to analyze and interpret data
c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
d) an ability to function on multidisciplinary teams
e) an ability to identify, formulate, and solve engineering problems
f) an understanding of professional and ethical responsibility
g) an ability to communicate effectively
h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
i) a recognition of the need for, and an ability to engage in life-long learning
j) a knowledge of contemporary issues
k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

All program outcomes will be evaluated in accordance with the EEE program assessment plan shown in Table 1. This plan has been modified so that the Program learning outcomes are mapped to the newly adopted LTU Undergraduate Learning Outcomes. In addition, the corrective actions on outcomes a, b, c, *d* and *k* will be evaluated.

Table 1: Assessment Plan for Electrical Engineering Undergraduate

LTU Uudergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administratio n Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems."	*a. Math, science, engineering.* *b. Design and conduct experiments* *c. Design* *e. Solve engineering problems*	Direct assessment of student assignments. FE exam Faculty evaluation of Sr. Projects Course Objectives	3.0/5.0 3.0/5.0 3.0/5.0 3.0/5.0	Every semester. Every semester Every semester. Every semester. .	Annual Annual Annual Annual
"LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines."	d. Design *k. Techniques and modern engineering tools.*	Direct assessment of student assignments. Faculty evaluation of Sr. Projects Course Objectives	3.0/5.0 3.0/5.0	Every semester. Every semester.	Every 3 semesters, beginning Fall 2012 Every 3 semesters, beginning Fall 2012
"LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities."	c.Design	Exit Interview Direct assessment of student assignments.	3.0/5.0	Every semester. .	Every 3 semesters, beginning Fall 2012

LTU Uudergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administratio n Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate professional standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation."	g. *Communication*	Faculty evaluation of senior project presentations. Direct assessment of student assignments. Course Objectives WPE	3.0/5.0	Every semester.	Annual
"LTU graduates will demonstrate their mastery of mathematics to solve real-world problems by isolating relevant factors, constructing abstract models, communicating precisely and reasoning logically."	*a. Math, science, engineering.* *e. Solve engineering. problems*	Direct assessment of student assignments. FE exam Faculty evaluation of Sr. Projects Course Objectives Alumni Survey	3.0/5.0	Every semester.	Annual
"LTU graduates will demonstrate proficiency in reading and interpreting complex, intellectually challenging texts and evaluating their analytical architecture from an independent point of view."		LTU core curriculum		Every semester.	Continuously by the University
"LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields."	k. *Techniques and modern engineering tools.*	Direct assessment of student assignments. Faculty evaluation of Sr. Projects Course Objectives	3.0/5.0	Every semester.	Every 3 semesters, beginning Fall 2012

LTU Uudergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administratio n Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate civic, team, and global leadership skills by identifying a personal leadership philosophy, exhibiting entrepreneurial skills, and becoming agents of positive change."		LTU Leadership core curriculum		Every semester.	Continuously by University
"LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions."	d. *Multidisciplinary teams*	Faculty evaluation in senior design. Course Objectives Direct assessment of student assignments	3.0/5.0	Every semester.	Every 3 semesters, beginning Fall 2012
"LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions."	*f. Professional and ethics*	Direct assessment of student assignments. FE exam Exit Interviews Course Objectives	3.0/5.0	Every semester.	Every 3 semesters, beginning Fall 2012

BS in Computer Engineering

1. **Assessment Plan for Computer Engineering Program**
   See Table 1below.

2. **Action Plan (Loop-Closing) for Computer Engineering Program**

   a. Report on 2011-2012 Academic Year

   In the 2011-2012 academic year, outcomes (a) "Knowledge in Disciplines" and (f) "ethic" has been accessed in ECE department. During the EEE program loop-closing meeting on the Assessment Day, the faculty discussed both of those outcomes. More details are as following:

Outcome a: an ability to apply knowledge of mathematics, science, and engineering *(including computing skills)*

• ***Assessment* (1)*:* Direct assessment of student lab report in EEE2114 (CE)** Circuit I
• *Evaluation: Average above the threshold of 3.0 (average score:3.34)* for the level of achievement on a 5.0 scale.
• *Issue: and* • *Actions: Dr. Richard Johnston assigned the circuit lab with modern simulation tools in class EEE2114(CE) circuit I class. Reports are collected and accessed by faculties.*
• *Responsibility: Dr. Richard Johnston*

• ***Assessment* (2)*:* Direct assessment of student work in senior projects** -- *Simulation reports in previous labs are asked to submitted in EEE 3011 Introduction to ECE Projects; Faculty give assessment*
• *Evaluation: Average exceeded threshold of 3.0 (average score:3.1)* for the level of achievement on a 5.0 scale.
• *Issue: Instrument needs be improved based on feedback.*
• *Actions: All faculties met during the* EEE program loop-closing meeting for the 2011- 2012 academic year, and gave assessment.
• *Responsibility: Senior Design instructor*

• ***Assessment* (3)*:* Direct assessment of scores in Fundamentals of Engineering Exam**
• *Evaluation:* The average score of 6 students' FE exams in afternoon sessions has been compared with the national average.
• *Issue: Totally Among the total 9 subjects in the afternoon session, 6 of the scores are above or close to the national average and 3 subjects scores are obviously below*. They are mathematics, electricity and Magnetism, signal processing;
• *Actions: ECE Department will sponsor 5 students to take the FE exam (at least 2 from EE and 2 from CompE . Assistance on the above 3 subjects from professors are considered.*
• *Responsibility: All faculties of ECE.*

Outcome f: "an understanding of professional and ethical responsibility"

• **Assessment(1):** Students in *EEE 3011 Introduction to ECE Projects were assigned a fact of ethic essay and were asked to compare the fact to the IEEE code of conduct and draw conclusion as to whether the fact ethical or not? Faculties rate the essays in the loop-*

closing meeting based on a score of 5-point scale.

- *Evaluation: Assessment inconclusive*
- *Issue:* In the loop-closing meeting, faculties thoroughly discuss the methods to improve the design. Several issues include, how to carefully select the fact(s) relevant to ethical issues, how to make sure such design can successfully access students understanding of professional and ethical responsibilities? And how faculties could evaluate the quality and rate scores reasonably via students essays on ethical issues.

- *Actions: Improved assessment instrument are expected according to the issues above.*
- *Responsibility: Senior Design instructor.*

- **Assessment(2): Ethics assessment from the "Ethics and Business Practices" subject of FE exam**
  - *Evaluation: LTU average score (88) is above the national average (81).*
  - *Issue:* n/A
  - *Actions: ECE Department will sponsor 5 students to take the FE exam and the outcomes will be observed.*
  - *Responsibility: ECE Chair.*

b. Report on Plan for ECE Undergraduate Academic Year

In the 2012-2013 academic year the faculty will also continue to evaluate the use of various rubrics and summary reporting formats.

The following EEE ABET Outcomes will be used for the future assessment:

a) an ability to apply knowledge of mathematics, science, and engineering
b) an ability to design and conduct experiments, as well as to analyze and interpret data
c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
d) an ability to function on multidisciplinary teams
e) an ability to identify, formulate, and solve engineering problems
f) an understanding of professional and ethical responsibility
g) an ability to communicate effectively
h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
i) a recognition of the need for, and an ability to engage in life-long learning
j) a knowledge of contemporary issues
k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

All program outcomes will be evaluated in accordance with the EEE program assessment plan shown in Table 1. This plan has been modified so that the Program learning outcomes are mapped to the newly adopted LTU Undergraduate Learning Outcomes. In addition, the corrective actions on outcomes a a, b, c, *d* and *k* will be evaluated.

Table 1: Assessment Plan for Computer Engineering Undergraduate

LTU Uudergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems."	*a. Math, science, engineering.* *b. Design and conduct experiments* *c. Design* *e. Solve engineering problems*	Direct assessment of student assignments. FE exam Faculty evaluation of Sr. Projects Course Objectives	3.0/5.0 3.0/5.0 3.0/5.0 3.0/5.0	Every semester. Every semester Every semester. Every semester. .	Annual Annual Annual Annual
"LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines."	d. Design *k. Techniques and modern engineering tools.*	Direct assessment of student assignments. Faculty evaluation of Sr. Projects Course Objectives	3.0/5.0 3.0/5.0	Every semester. Every semester.	Every 3 semesters, beginning Fall 2012 Every 3 semesters, beginning Fall 2012
"LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities."	c.Design	Exit Interview Direct assessment of student assignments.	3.0/5.0	Every semester. .	Every 3 semesters, beginning Fall 2012

LTU Uudergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate professional standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation."	g. *Communication*	Faculty evaluation of senior project presentations. Direct assessment of student assignments. Course Objectives WPE	3.0/5.0	Every semester.	Annual
"LTU graduates will demonstrate their mastery of mathematics to solve real-world problems by isolating relevant factors, constructing abstract models, communicating precisely and reasoning logically."	*a. Math, science, engineering.* *e. Solve engineering. problems*	Direct assessment of student assignments. FE exam Faculty evaluation of Sr. Projects Course Objectives Alumni Survey	3.0/5.0	Every semester.	Annual
"LTU graduates will demonstrate proficiency in reading and interpreting complex, intellectually challenging texts and evaluating their analytical architecture from an independent point of view."		LTU core curriculum		Every semester.	Continuously by the University
"LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields."	k. *Techniques and modern engineering tools.*	Direct assessment of student assignments. Faculty evaluation of Sr. Projects Course Objectives	3.0/5.0	Every semester.	Every 3 semesters, beginning Fall 2012

LTU Uudergraduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
"LTU graduates will demonstrate civic, team, and global leadership skills by identifying a personal leadership philosophy, exhibiting entrepreneurial skills, and becoming agents of positive change."		LTU Leadership core curriculum		Every semester.	Continuously by University
"LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions."	d. *Multidisciplinary teams*	Faculty evaluation in senior design. Course Objectives Direct assessment of student assignments	3.0/5.0	Every semester.	Every 3 semesters, beginning Fall 2012
"LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions."	*f. Professional and ethics*	Direct assessment of student assignments. FE exam Exit Interviews Course Objectives	3.0/5.0	Every semester.	Every 3 semesters, beginning Fall 2012

BS in Engineering Technology

1. Assessment Plan

The 2011-2012 plan is presented in Table 1.

2. Action Plan (Loop-Closing) for the BSET Program

a. Report on 2011-2012 Academic Year

In 2011-2012, Learning Objectives of thirteen courses were assessed. The Course Learning Objectives (CLOs) of each course are mapped to the Program Learning Outcomes (PLOs) a through k listed at the end of this report.

PLOs are mapped to the University Educational Outcomes as seen in Table 1.

Two types of assessment forms were used, direct (by instructor) and indirect (by student).

Both types were meant to assess the same Course Learning Objectives to assure consistency of the assessment process. Two rubrics were developed to be used by instructors for the direct assessment and by the students for the indirect.

Results of the assessment process has been discussed in the "closing the loop meeting" in the ET Department on August 31, 2012.

Discussing results of assessed courses, the department concluded that the PLOs were met and exceeded in most of the knowledge areas. The data proved consistency of most of the assessment results from both the direct and indirect methods of assessment.

In the Engineering Technology Close the Loop Meeting of August 31, 2012, the faculty thoroughly reviewed and discussed the following Program Learning Objectives and suggested the course of action:

Outcome a*:* an appropriate mastery of the knowledge, techniques, skills, and modern tools of their disciplines

• *Assessment:* Direct and indirect assessment of TME1023, TME2013, TIE3063, TME3113, TEE3013.

• *Evaluation: Direct a*ssessment results of learning objectives of above courses indicated that the overall performance exceeded the target of 80% by an average of 9%. The indirect assessment results revealed that 95.6% of students believed that the objectives were very well met or perfectly met.

• *Issue: There is inconsistency in the assessment of the learning outcome of TIE3063. Direct assessment shows exceeding of 80% target by 18%, where the indirect assessment done by students indicated a 7% exceeding of target.*

• *Actions: The instructor will be advised to review the target achievement level. The course assessment will be monitored again and compared with the previous to rule out the effect of*

randomness in the assessment.
• *Responsibility:* Sabah Abro, instructor of the course.

Outcome b*: an ability to apply knowledge of mathematics, science, and engineering.*
• *Assessment:* Direct and indirect assessment of MCS2313, TEE 2013, TEE 2093, MCS3324, TME3333.
• *Evaluation: Direct a*ssessment results of course learning objectives of MCS2313, MCS3324, TEE2013, TEE2093 indicated a shortage of the 3% in reaching the 80% level of mastery level and the indirect assessment results revealed that 87.5% of students believed that the objectives were very well met or perfectly met.
• *Issue: There is a minor inconsistency in the assessment of the learning outcome. The issue was discussed in closing the loop meeting and also with instructors. It is believed that student's pre-calculus skills need to be improved.*
• *Actions: Instructors* will incorporate active collaborative learning activities in the class when covering different topics. Instructors *will encourage students to review their algebraic skills, also proposed work to serve this task will be added to the syllabus and post some links and materials on Black Board.*
• *Responsibility:* Sabah Abro, Jim O'Connor

Outcome c*:* an ability to conduct, analyze, and interpret experiments, and apply experimental results to improve processes
• *Assessment:* Direct and indirect assessment of TIE4115, MC2023 courses.
• *Evaluation: Direct a*ssessment results indicate that mastery levels of objectives was exceeded the indirect assessment results revealed that high percentage of students believed that the objectives were very well met or perfectly met.
• *Issue: No issues where raised*
• *Actions:* No actions are required at this point.
• *Responsibility:* Sabah Abro is to monitor the assessment when these courses are offered.

Outcome d*:* an ability to apply creativity in the design of systems, components, or processes appropriate to program educational objectives.
• *Assessment:* Direct and indirect assessment of TIE4115, Senior Project course.
• *Evaluation: Direct a*ssessment results indicate that the 80% mastery levels of objectives were exceeded by 3%. The indirect assessment results revealed that 96% of students believed that the objectives were very well met or perfectly met.
• *Issue: study of p*aten and research for product is time consuming. Since the course is five credit hours and it has to be completed in one semester.
• *Actions:* A lecturer will be planned to talk about this issue to the students.
• *Responsibility:* Ken Cook.

Outcome e*:* an ability to function effectively on teams.
• *Assessment:* Direct and indirect assessment of TIE4115, Senior Project course.
• *Evaluation: Direct a*ssessment results indicate that the 80% mastery objective was exceeded by 1%. The indirect assessment results revealed that 75% of students believed that the objectives were perfectly met, yet 25% did not think so.
• *Issue: Individual team member's participation still being an issue that has to be dealt with.*
• *Actions:* A peer-to-peer evaluation form will be used in class, so team members can evaluate each

other.
• *Responsibility:* Ken Cook and Sabah Abro.

Outcome f*:* an ability to identify, analyze and solve technical problems.
• *Assessment:* Direct and indirect assessment of TME3333, TIE3163 and TME4103 courses.
• *Evaluation: Direct a*ssessment results indicate that 80% mastery level of objectives was exceeded by 9%. The indirect assessment results revealed that an average of 80% of students believed that the objectives were perfectly or very well met.
• *Issue: There was inconsistency between direct and indirect assessment indicators for TIE3163. The indirect assessment revealed that only 64% of the students believed that course objectives were met at the mastery level.*
• *Actions: A full time instructor will be teaching the course and the assessment will be monitored and compared with current results.* Instructor will incorporate active collaborative learning activities in the class when covering the topics of solving problems.
Responsibility: Pat Shamamy and Sabah Abro.

Outcome g*:* an ability to communicate effectively
• *Assessment:* Direct and indirect assessment of TIE4115, TIE3203 and WPE (COM3000).
• *Evaluation: Direct, indirect a*ssessment and WPE exam results indicate that mastery levels of objectives was exceeded.
• *Issue: No issues where raised*
• *Actions:* No actions are required at this point.
• *Responsibility:* Sabah Abro is to monitor the future assessment results.

Outcome h*: a* recognition of the need for, and an ability to engage in lifelong learning
• *Assessment:* Direct and indirect assessment of TIE4115, MC2023 courses.
• *Evaluation: Direct and indirect a*ssessment results indicate that the 80% mastery level was exceeded.
• *Issue: No issues where raised*
• *Actions:* No actions are required at this point.
• *Responsibility:* Sabah Abro is to monitor the assessment when these courses are offered.

Outcome i*:* an ability to understand professional, ethical and social responsibilities
• *Assessment:* Direct and indirect assessment of TIE4115, TIE3203 and completing the leadership program.
• *Evaluation: Direct, indirect a*ssessment and completing the leadership program, indicated that outcome was satisfied.
. • Issue: No issues where raised
• *Actions:* No actions are required at this point.
• *Responsibility:* Sabah Abro is to monitor the future assessment results.

Outcome j*:* a respect for diversity and knowledge of contemporary professional, societal and global issues.
• *Assessment:* Direct and indirect assessment of TIE4115, Senior Project course.
• *Evaluation: Direct a*ssessment results indicate that the 80% mastery levels of objectives were exceeded by 3%. The indirect assessment results revealed that 96% of students believed that the objectives were very well met or perfectly met.
• *Issue: There are considerable differences between students in understanding the global manufacturing and industrial issues.*

• *Actions: Instructor will devote one class period to a* lecturer about this issue to the students.
• *Responsibility:* Ken Cook.

Outcome k*:* a commitment to quality, timeliness, and continuous improvement.
• *Assessment:* Direct and indirect assessment of TIE4115, Senior Project course and TIE3203 Technical Project Management.
• *Evaluation: Direct a*ssessment results indicate that the 80% mastery levels of objectives were exceeded by 3%. The indirect assessment results revealed that 96% of students believed that the objectives were perfectly or very well met.
• *Issue: Data were available from one course only.*
• *Actions:* TIE3203 should be assessed directly and indirectly and the result to be integrated with those of TIE4115.
• *Responsibility:* Jerry Cuper and Sabah Abro.

b. Report on Plan for 2012-2013 Academic Year

It was decided that all program outcomes will be evaluated as part of the department continuous improvement plan and the new assessment plan that is presented in Table 1 below. This plan itself will be revisited to make sure that the mapping of courses and Program Learning Outcomes to the new University Learning Outcomes was well planned.
The department will discuss the report that will be prepared by the assessment coordinator in closing the loop meeting of 2013. The discussion will cover data presented as a follow-up on the action items decided in 2012 meeting.

All BSET courses that will be offered during 2012-2013 academic year will be assessed using the assessment plan and process of the department.
The department is planning to discuss the assessment plan and the continuous improvement plan. Based on closing the loop meeting, the faculty will concentrate on three outcomes that has relevantly more series issues and finalize the conclusion and actions required.

Table 1: Engineering Technology Assessment Plan

University Educational Outcomes	Supporting Program Outcome	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
DISCIPLINE-SPECIFIC KNOWLEDGE					
KNOWLEDGE IN DISCIPLINE "LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems."	a: knowledge, techniques, skills b: math, science, engineering, and technology c: conduct, analyze, interpret experiments	Objectives of All core courses	A target score 80% or better in achieving relevant course objectives and percentages of rank 4 to 5 of the indirect assessment	Semester when courses are offered	Annual
TECHNOLOGY "LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines."	a: knowledge, techniques, skills d: design of systems, components, or processes f : identify, analyze, solve tech. problems	Objectives of TIE4115, TIE3163, TME1023, TIE3063, MCS3324, TME3333, TME4103, TEE3103	A target score 80% or better in achieving relevant course objectives and percentages of rank 4 to 5 of the indirect assessment	Semester when courses are offered	Annual

University Educational Outcomes	Supporting Program Outcome	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
SUSTAINABILITY "LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities."	d: design of systems, components, or processes h: ability to engage in lifelong learning j: professional, societal and global issues k: quality, timeliness, and continuous improvement	Objectives of TIE4115, TIE3203 TME4413, TME4343, Leadership program	A target score 80% or better in achieving relevant course objectives and percentages of rank 4 to 5 of the indirect assessment. Passing Leadership courses.	Semester when courses are offered	Annual
COMMUNICATION "LTU graduates will demonstrate professional standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation."	g: communicate effectively	Objectives of TIE4115, TIE3203, WPE (COM3000)	A target score 80% or better in achieving relevant course objectives and percentages of rank 4 to 5 of the indirect assessment. Passing WPE exam	Semester when courses are offered	Annual
MATHEMATICS "LTU graduates will demonstrate their mastery of mathematics to solve real-world problems by isolating relevant factors, constructing abstract models, communicating precisely and reasoning logically."	b: math, science, engineering, and technology c: conduct, analyze, interpret experiments	MCS2313, MCS3324, TEE4214, TME3204, TEE4224	A target score 80% or better in achieving relevant course objectives and percentages of rank 4 to 5 of the indirect assessment	Semester when courses are offered	Annual

University Educational Outcomes	Supporting Program Outcome	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
READING "LTU graduates will demonstrate proficiency in reading and interpreting complex, intellectually challenging texts and evaluating their analytical architecture from an independent point of view."	f : identify, analyze, solve tech. problems g: communicate effectively	Objectives of TIE4115, TIE3203, TIE3163, WPE (COM3000)	A target score 80% or better in achieving relevant course objectives and percentages of rank 4 to 5 of the indirect assessment. Passing WPE	Semester when courses are offered	Annual
SCIENTIFIC ANALYSIS "LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields."	c: conduct, analyze, interpret experiments d: design of systems, components, or processes	Objectives of TEE4214, TEE4224, MCS3324, TIE4115, TME3113	A target score 80% or better in achieving relevant course objectives and percentages of rank 4 to 5 of the indirect assessment	Semester when courses are offered	Annual
LEADERSHIP "LTU graduates will demonstrate civic, team, and global leadership skills by identifying a personal leadership philosophy, exhibiting entrepreneurial skills, and becoming agents of positive change."	e: function effectively on teams i: professional, ethical and social responsibilities j: professional, societal and global issues	Objective of TIE4115, TIE3163, TIE3203, TME4343, Leadership Program	A target score 80% or better in achieving relevant course objectives and percentages of rank 4 to 5 of the indirect assessment	Semester when courses are offered	Every two years

University Educational Outcomes	Supporting Program Outcome	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
TEAMWORK "LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions."	e: function effectively on teams k: quality, timeliness, and continuous improvement	Objectives of TIE4115, TIE3203, TME3333, TME4343, TME4413	A target score 80% or better in achieving relevant course objectives and percentages of rank 4 to 5 of the indirect assessment	Semester when courses are offered	Annual
PROFESSIONAL ETHICS "LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions."	i: professional, ethical and social responsibilities j: professional, societal and global issues	Objectives of TIE4115, TME4343, TIE3203, TME4413	A target score 80% or better in achieving relevant course objectives and percentages of rank 4 to 5 of the indirect assessment	Semester when courses are offered	Every Two Years

Program Learning Outcomes

a an appropriate mastery of the knowledge, techniques, skills, and modern tools of their disciplines
b an ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering, and technology
c an ability to conduct, analyze, and interpret experiments, and apply experimental results to improve processes
d an ability to apply creativity in the design of systems, components, or processes appropriate to program educational objectives
e an ability to function effectively on teams
f an ability to identify, analyze and solve technical problems
g an ability to communicate effectively
h a recognition of the need for, and an ability to engage in lifelong learning
i an ability to understand professional, ethical and social responsibilities
j a respect for diversity and knowledge of contemporary professional, societal and global issues
k a commitment to quality, timeliness, and continuous improvement

BS in Mechanical Engineering

1. Assessment Plan B.S. Mechanical Engineering

See Table 1 below. Listed here is an interpretation of the second column for Table 1: ABET Criterion 3: B.S. Mechanical Engineering Program Outcomes

Upon successful completion of the B.S.M.E. degree program, the graduate will have

a) an ability to apply knowledge of mathematics, science, and engineering;
b) an ability to design and conduct experiments, as well as to analyze and interpret data;
c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability;
d) an ability to function on multidisciplinary teams;
e) an ability to identify, formulate, and solve engineering problems;
f) an understanding of professional and ethical responsibility;
g) an ability to communicate effectively;
h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context;
i) a recognition of the need for, and an ability to engage in life-long learning
j) a knowledge of contemporary issues;
k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

2. Action Plan (Loop-Closing) for B.S. Mechanical Engineering

a. Report on 2011-2012 Academic Year

Before anything, some "assessment housecleaning" was in order for the department. After being granted six more years of ABET Accreditation, the department was a bit complacent for the 2010-2011 Academic year. Data collection had became lacking, closing-the-loop timelines were not being adhered to, and a formal process that the faculty could rely on needed to be developed and posted. For the 2011-2012 Academic year, first, our Assistant Department Chair, Chris Riedel, was officially tasked to oversee our ABET Accreditation process, while Andy Gerhart was tasked to coordinate our ABET work with the University's outcomes (becoming the new department Assessment Committee rep). While Dr. Riedel cleaned up, organized, and documented the department's ABET process, Dr. Gerhart mapped the program outcomes to the newly adopted LTU Undergraduate Learning Outcomes. The department found that the reduction in LTU Outcomes helped to streamline our internal assessment process.

It was decided to collect data for all outcomes every year, but the collection would be split between the Fall and Spring semesters. During the summer of 2012, we would have a department meeting focused on closing-the-loop on all of the data that was collected. While this is over-ambitious and not the intention for subsequent years (as noted in the Assessment Plan Table 1.), we needed to get a feel for what was good so far and what needed changed right away. Therefore, the loop-closing was not overly in depth but got the BSME assessment steered in a sustainable future path.

Data collection commenced and will continue according to the following tables:

ABET Program Outcomes Mapping to Courses/Tools											
	a	b	c	d	e	f	g	h	i	j	k
EGE 1012 Introduction to Engineering			x	x		x					x
EGE 1102 Engineering Computer Applications Lab											x
EGE 2103 Statics					x						
EGE 3003 Thermodynamics					x						
EME 2012 Mechanical Engineering Graphics											x
EME 3011 Introduction to Projects			x				x				
EME 3013 Mechanics of Materials					x						
EME 3123 Fluid Mechanics					x						
EME 3033 Engineering Numerical Methods	x										x
EME 3133 Kinematics and Dynamics of Machines	x										x
EME 3043 Dynamics	x						x				
EME 4003 Design of Machine Elements					x						
EME 4013 Heat Transfer					x		x				
EME 4212 Engineering Projects 1			x	x			x	x		x	
EME 4222 Engineering Projects 2			x	x		x	x				
EME 4252 Senior Project Fundamentals			x	x		x	x	x		x	
EME 4253 Senior Capstone Project			x	x		x	x				
EME 4412 Thermal Science Lab		x					x				
Alumni Survey									x		
Registrar's Data									x		
Lecture Series								x		x	
Exit interview									x	x	

A few of the rows in the first two tables are blank as the department continues to make some final decisions. Many of those decisions revolve around identifying or creating meaningful and straightforward rubrics. For this reason, a Rubrics Committee has been formed. Details of which rubrics were unsuccessful in the 2011-2012 Academic Year are noted below. (Note: The Rubrics Committee met for the first time on September 24, 2012 and new rubrics have already been identified or created to be used immediately.) Following is a summary of our loop-closing meeting. Note that the highlighted portions of Table 1 indicate where changes have occurred.

•*Objective/Outcome:* Knowledge in Discipline
•*Assessment:* See Table 1
•*Evaluation:* All
•*Issue and Actions:* Outcome a data was a fair representation of meeting the goals and did not need changes. Outcome c did not contain rigor to truly gauge students mastery of knowledge and design skill. A new rubric will be sought. (Note: preliminary identification occurred in late September 2012.) Data from Outcome e was widely varied. Each course instructor applied different standards to the rubric making the results inconsistent. Dr. Yee and Dr. Li tried a new rubric that should allow for better consistency. The Thermo-Fluids faculty also decided that the instructor and not the course coordinator should complete the assessment to streamline the process. The metric is under review and may change during the next loop-closing.
•*Responsibility:* Course instructors implement the plan; Dr. Riedel and Dr. Gerhart track the results.

•*Objective/Outcome:* Technology
•*Assessment:* See Table 1
•*Evaluation:* All
•*Issue and Actions:* Outcome k does not have a metric. This will be addressed in the 2012-2013 Academic Year. Outcome b tool is working fine. The metric had been refined multiple times between 2003 and 2010 and appears to be at the appropriate level. Loop-closing has been occurring every year and will likely continue that sequence.
•*Responsibility:* Course instructors implement the plan; Dr. Riedel and Dr. Gerhart track the results.

•*Objective/Outcome:* Sustainability
•*Assessment:* See Table 1
•*Evaluation:* All
•*Issue and Actions:* This has been a major focus. Until recently, it was unknown if this outcome would be a program responsibility or would be handled by the Leadership Programs. Social will be handled by the Leadership Programs. Environmental and economic will be handled by the BSME program. During the 2011 Assessment Day Afternoon Department Breakout Session (and again for 2012 Assessment Day), determining meaningful sustainability assessment was the major topic. Outcome h, while useful, is difficult to apply a metric. The department is still considering what to do with the collected coursework. Therefore two more assessment tools were added in two separate courses. The instructors (Dr. Ahad and Prof. Reimer) collected data in 2011-2012, but results are still pending. The administration timeline will likely be every semester, but the course instructors will finalize that decision this year.
•*Responsibility:* Course instructors implement the plan; Dr. Riedel and Dr. Gerhart track the results.

•*Objective/Outcome:* Communication
•*Assessment:* See Table 1
•*Evaluation:* All
•*Issue and Actions:* Outcome g covers all three forms of communication. EME 4412 had not been using the writing rubric and will likely not in the future. The lab reports are distinctly different than the type of report that the department would like to assess. The other two courses used a rubric that was not effective. A new rubric was identified in September 2012 that will be used in the future. The metric will be set before the Spring semester (when the rubric will be used). For oral communication, the department decided to add an early assessment (sophomores) so that comparison can be made to later assessment (seniors). EME 2011 was added to the assessment. For EME 4412, the metric has been raised multiple times since 2003 to better reflect the level at which we want our students. The metric will be lower for EME 2011 students. Graphical communication assessment is a new addition. The department discovered that we already collect data for this in the written and oral communication rubrics. That data will be collected for the same courses as written communication and monitored for future loop-closing. Projects 2 reports have also been added to the written and graphical communications assessment. Data can then be compared from

late-sophomore to late-senior year for loop-closing.
•*Responsibility:* Course instructors implement the plan; Dr. Riedel and Dr. Gerhart track the results.

•*Objective/Outcome:* Mathematics
•*Assessment:* See Table 1
•*Evaluation:* All
•*Issue and Actions:* Outcome a data collection and metric was acceptable as is. Students appear to be reaching our goal. The department is comfortable that our students are reaching acceptable proficiency in math. A loop-closing timeline was added.
•*Responsibility:* Course instructors implement the plan; Dr. Riedel and Dr. Gerhart track the results.

•*Objective/Outcome:* Scientific Analysis
•*Assessment:* See Table 1
•*Evaluation:* All
•*Issue and Actions:* Outcome a and b data collection and metric was acceptable as is. Students appear to be reaching our goal. The department is comfortable that our students are reaching acceptable proficiency in scientific analysis. A loop- closing timeline was added.
•*Responsibility:* Course instructors implement the plan; Dr. Riedel and Dr. Gerhart track the results.

•*Objective/Outcome:* Leadership
•*Assessment:* See Table 1
•*Evaluation:* All
•*Issue and Actions:* For the most part, the Leadership outcome is being assessed by the Leadership Program Assessment Team (Dr. Gerhart, Dr. Carpenter, and Director Jim Jolly). Nonetheless, Outcome h is already being assessed by the department. No changes were necessary and data was acceptable. A loop-closing timeline was added. Consideration is being made to adding an assessment involving Engineering Solution Impact. Stay tuned….
Responsibility: Course instructors implement the plan; Dr. Riedel and Dr. Gerhart track the results.

•*Objective/Outcome:* Lifelong Learning
•*Assessment:* See Table 1
•*Evaluation:* All
•*Issue and Actions:* Outcome i does not map to the university goals in a meaningful way (i.e., without being forced). The department has therefore added a row to the table. ABET has not been concerned about our assessment of this regardless of the fact that a metric is missing. Changes may be pending, but we did not come to any loop-closing conclusions.
•*Responsibility:* Course instructors and Dr. Riedel implement the plan; Dr. Riedel and Dr. Gerhart track the results.

•*Objective/Outcome:* Teamwork
•*Assessment:* See Table 1

•*Evaluation:* All
•*Issue and Actions:* Outcome d data collection is acceptable, but the metrics were unacceptable. The Rubrics Committee will review the data in Fall 2012 and create metrics. Initial data appeared to indicate that the students were improving in their teamwork skills, but that data was not deemed reliable. Two new assessment tools were suggested. No final decision was made on their administration. A loop-closing timeline was added.
•*Responsibility:* Course instructors/students implement the plan; Dr. Riedel and Dr. Gerhart track the results.

•*Objective/Outcome:* Ethics
•*Assessment:* See Table 1
•*Evaluation:* All
•*Issue and Actions:* Outcome f data collection and metric was acceptable as is, although it had not been applied for a few years in EGE 1012. The quiz is under heavy critique whether it produces meaningful results. Preliminary evidence from Dr. Yee says it is effective in senior projects courses. Two new tools are under consideration, the first of which has been administered for many years, but without a metric. A metric will likely be added in Fall 2012, but may be suspended until Summer 2013.
•*Responsibility:* Course instructors implement the plan; Dr. Riedel and Dr. Gerhart track the results.

b. Report on Plan for 2012-2013 Academic Year

Loop closing will commence as indicated in Table 1. Besides that the action items listed in section 2.a. will be followed. A summary is repeated here for clarity.
•*Objective/Outcome:* Knowledge in Discipline
•*Actions:* Outcome c did not contain rigor to truly gauge students mastery of knowledge and design skill. A new rubric will be sought. (Note: preliminary identification occurred in late September 2012.) Data from Outcome e was widely varied. Each course instructor applied different standards to the rubric making the results inconsistent. Dr. Yee and Dr. Li tried a new rubric that should allow for better consistency. The Thermo-Fluids faculty also decided that the instructor and not the course coordinator should complete the assessment to streamline the process. The metric is under review and may change during the next loop-closing.

•*Objective/Outcome:* Technology
•*Actions:* Outcome k does not have a metric. This will be addressed in the 2012-2013 Academic Year.

•*Objective/Outcome:* Sustainability
•*Actions:* Outcome h, while useful, is difficult to apply a metric. The department is still considering what to do with the collected coursework. Therefore two more assessment tools were added in two separate courses. The instructors (Dr. Ahad and Prof. Reimer) collected data in 2011-2012, but results are still pending. The administration timeline will likely be every semester, but the course instructors will finalize that decision this year.

•*Objective/Outcome:* Communication
•*Actions:* Outcome g covers all three forms of communication. Two courses were using a rubric that was not effective. A new rubric was identified in September 2012 that will be used in the future. The metric will be set before the Spring semester (when the rubric will be used). For oral communication, the department decided to add an early assessment (sophomores) so that comparison can be made to later assessment (seniors). EME 2011 was added to the assessment. The metric will be lower for EME 2011 students than in EME 4412. Graphical communication assessment is a new addition. The department discovered that we already collect data for this in the written and oral communication rubrics. That data will be collected for the same courses as written communication and monitored for future loop-closing. Projects 2 reports have also been added to the written and graphical communications assessment. Data can then be compared from late-sophomore to late-senior year for loop-closing.

•*Objective/Outcome:* Leadership
•*Actions:* Consideration is being made to adding an assessment involving Engineering Solution Impact. Stay tuned….

•*Objective/Outcome:* Lifelong Learning
•*Actions:* Outcome i changes may be pending, but we did not come to any loop-closing conclusions.

•*Objective/Outcome:* Teamwork

•*Actions:* Outcome d data collection is acceptable, but the metrics were unacceptable. The Rubrics Committee will review the data in Fall 2012 and create metrics. Initial data appeared to indicate that the students were improving in their teamwork skills, but that data was not deemed reliable. Two new assessment tools were suggested. No final decision was made on their administration.

•*Objective/Outcome:* Ethics
•*Actions:* Outcome f data collection and metric was acceptable as is, although it had not been applied for a few years in EGE 1012. The quiz is under heavy critique whether it produces meaningful results. Preliminary evidence from Dr. Yee says it is effective in senior projects courses. Two new tools are under consideration, the first of which has been administered for many years, but without a metric. A metric will likely be added in Fall 2012, but may be suspended until Summer 2013.

Table 1: Assessment Plan for B.S. Mechanical Engineering

LTU Undergraduate Learning Outcomes	ME ABET Outcomes	Assessment Tools	Metric/Indicators	Administration Timeline	Loop-Closing Timeline
Discipline-Specific Knowledge					
KNOWLEDGE IN DISCIPLINE LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems.	Outcome a Outcome c Outcome e	FE style questions on final exams in EME3033, EME3133, EME3043 ~~Quiz on design technique in EGE1012, EME3011, EME4212, EME4222~~ Graded problems based on rubric in EGE2013, EME3013, EME4003, EGE3003, EME3123, EME4013	70% of students receive a score of 60% or higher 70% of students receive a score of 50%, 70%, 80%, and 87%, respectively, or higher 50% of students receive a score of 70% or higher	Fall Semester Every Semester Fall (3003, 2013, 4013); Spring (3013, 3123, 4003)	Every three semesters, beginning Spring 2013 Every three semesters, beginning Spring 2013
TECHNOLOGY LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines.	Outcome k Outcome b	Evaluation of coursework in EGE1012, EGE1102, EME2012, EME3033, EME3133 Exam questions on laboratory technique in EME4412	In progress 70% of students receive a score of 60% or higher	Every Semester Every Semester	Every three semesters, beginning Spring 2013
SUSTAINABILITY LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities.	Outcome h N/A N/A	Evaluation of coursework in EME4222, EME4252 or EME4253 EME 3023 Manf. Processes (environment and economic - part of project) EGE 3311 Strat. Mang. (economic - rubric under development)	In progress Rubric Evaluation by DEMS and IAB (metric goal?) Rubric for Presentation evaluation (by industry reps, LTU instructor, current working student, alum)	Every Semester ?? ??	

Critical Thinking					
COMMUNICATION LTU graduates will demonstrate professional standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation.	Outcome g	Writing rubric will be used in EME 3043, EME4013, EME 4412 Oral presentation rubric will be used in EME 2011, EME4412 Graphical assignments from Dynamics, Heat Transfer, and Projects 2 reports. Presentations from EME 2011 and EME 4412.	In progress EME4412: 80% of students receive a score of 85% or higher Elements of written rubric: (80% will receive 70%)?? Elements of oral rubric: (80% of students will score 80%)?? Projects Posters rubric in dev.	Spring Semester Every Semester	Every three semesters, beginning Spring 2013 Every three semesters, beginning Spring 2013
MATHEMATICS LTU graduates will demonstrate their mastery of mathematics to solve real-world problems by isolating relevant factors, constructing abstract models, communicating precisely, and reasoning logically.	Outcome a	FE style questions on final exams in EME3033, EME3133, EME3043	70% of students receive a score of 60% or higher	Fall Semester	Every three semesters, beginning Spring 2013
READING LTU graduates will demonstrate proficiency in reading and interpreting complex, intellectually challenging texts and evaluating their analytical architecture from an independent point of view.	Not accessed within program	N/A	N/A	N/A	N/A
SCIENTIFIC ANALYSIS LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields.	Outcome a Outcome b	FE style questions on final exams in EME3003, EME3034, EME3133 Exam questions on laboratory technique in EME4412	70% of students receive a score of 60% or higher 70% of students receive a score of 60% or higher	Fall Semester Every Semester	Every three semesters, beginning Spring 2013

Leadership and Ethics					
LEADERSHIP LTU graduates will demonstrate civic, team, and global leadership skills by identifying a personal leadership philosophy, exhibiting entrepreneurial skills, and becoming agents of positive change.	Outcome h	Seminars (with exit survey) on contemporary engineering topics in EME4212, EME4222 or EME4252, EME4253	Required attendance and completion of survey Assignment on engineering soln impact	Every Semester	Every three semesters, beginning Spring 2013
III.4. lifelong learning.	Outcome i	Alumni Survey Seminars (with exit survey) on contemporary engineering topics in EME4212, EME4222	TBD Required attendance and completion of survey	Once every year	Every two semesters, beginning Fall 2012
TEAMWORK LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions.	Outcome d	Peer evaluations of teamwork projects in EGE1012, EME4212, EME4222 or EME4252, EME4253 Faculty Advisor meeting in EME4212 or EME4252 Faculty and IAB Eval at final presentation	~~70% of students achieve a score of 68%, 78%, and 89%, respectively, or higher~~ ? ?	Every Semester	Every three semesters, beginning Spring 2013
ETHICS LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions.	Outcome f	Ethics quiz (multiple choice) in EGE1012 and EME4222 or EME4253 Ethics case study assignment in EGE1012 Ethics/Integrity statement on final report in EME4212, EME4222 or EME4252, EME4253	50% and 70%, respectively, of students will achieve a score of 50% and 70%, respectively, or higher ? ?	Every Semester Every Semester	Every three semesters, beginning Spring 2013

BS in Industrial Operations Engineering

1. **Assessment Plan: Bachelor of Science in Industrial Operations Engineering (BSIOE)**
   See Table 1 below.

2. **Action Plan (Loop-Closing) for Bachelor of Science in Industrial Operations** Engineering (BSIOE)
   Not applicable for this year

   a Report on Fall 2012 and Spring 2013
   This is the first semester that the program will be assessed as per attached chart

   b. Report on Plan for 2012 Academic Year
   Not applicable since this is the first year that the program will be assessed

Table 1: Assessment Plan for Bachelor of Science in Industrial Operations Engineering (BSIOE)

LTU Undergraduate Learning Outcomes	ME ABET Outcomes	Assessment Tools	Indicators	Administration Timeline	Loop-Closing Timeline
Discipline-Specific Knowledge					
KNOWLEDGE IN DISCIPLINE LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems.	Outcome a Outcome c Outcome e	FE style questions on final exams in IOE3033, IOE3354, EME3043 ~~Quiz on design technique in EGE1012, EME3011, EME4212, EME4222~~ Graded problems based on rubric in EGE2013, EME3013, , EGE3003, EME3123	70% of students receive a score of 60% or higher 70% of students receive a score of 50%, 70%, 80%, and 87%, respectively, or higher 50% of students receive a score of 70% or higher	Fall Semester Every Semester Fall (3003, 2013,); Spring (3013, 3123)	Every three semesters, beginning Spring 2013 Every three semesters, beginning Spring 2013
TECHNOLOGY LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines.	Outcome k Outcome b	Evaluation of coursework in EGE1012, EGE1102, IOE2012, IOE3033, IOE3354 Exam questions on laboratory technique in IOE4552	In progress 70% of students receive a score of 60% or higher	Every Semester Every Semester	Every three semesters, beginning Spring 2013
SUSTAINABILITY LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities.	Outcome h	Evaluation of coursework in EME4222, EME4252 or EME4253 Manf. Processes Strat. Mang.	In progress ?? ??	Every Semester ?? ??	

Critical Thinking					
COMMUNICATION LTU graduates will demonstrate professional standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation.	Outcome g	Writing rubric will be used in EME 3043, IOE4454, EME 4412 Oral presentation rubric will be used in EME 2011, IOE4552 Graphical assignments from ME Graphics and ECAL	In progress IOE4552: 80% of students receive a score of 85% or higher ?	Spring Semester Every Semester	Every three semesters, beginning Spring 2013 Every three semesters, beginning Spring 2013
MATHEMATICS LTU graduates will demonstrate their mastery of mathematics to solve real-world problems by isolating relevant factors, constructing abstract models, communicating precisely, and reasoning logically.	Outcome a	FE style questions on final exams in IOE3033, IOE3354, EME3043	70% of students receive a score of 60% or higher	Fall Semester	Every three semesters, beginning Spring 2013
READING LTU graduates will demonstrate proficiency in reading and interpreting complex, intellectually challenging texts and evaluating their analytical architecture from an independent point of view.					
SCIENTIFIC ANALYSIS LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields.	Outcome a Outcome b	FE style questions on final exams in EME3003, EME3043, EME3133 Exam questions on laboratory technique in IOE4552	70% of students receive a score of 60% or higher 70% of students receive a score of 60% or higher	Fall Semester Every Semester	Every three semesters, beginning Spring 2013

Leadership and Ethics					
LEADERSHIP LTU graduates will demonstrate civic, team, and global leadership skills by identifying a personal leadership philosophy, exhibiting entrepreneurial skills, and becoming agents of positive change.	Outcome h	Seminars (with exit survey) on contemporary engineering topics in EME4212, EME4222 or EME4252, EME4253	Required attendance and completion of survey Assignment on engineering soln impact	Every Semester	Every three semesters, beginning Spring 2013
III. 4. lifelong learning.	Outcome i	Alumni Survey Seminars (with exit survey) on contemporary engineering topics in EME4212, EME4222	TBD Required attendance and completion of survey	Once every year	Every two semesters, beginning Fall 2012
TEAMWORK LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions.	Outcome d	Peer evaluations of teamwork projects in EGE1012, EME4212, EME4222 or EME4252, EME4253 Faculty Advisor meeting in EME4212 or EME4252 Faculty and IAB Eval at final presentation	~~70% of students achieve a score of 68%, 78%, and 89%, respectively, or higher~~ ? ?	Every Semester	Every three semesters, beginning Spring 2013
ETHICS LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions.	Outcome f	Ethics quiz (multiple choice) in EGE1012 and EME4222 or EME4253 Ethics case study assignment in EGE1012 Ethics/Integrity statement on final report in EME4212, EME4222 or EME4252, EME4253	50% and 70%, respectively, of students will achieve a score of 50% and 70%, respectively, or higher ? ?	Every Semester Every Semester	Every three semesters, beginning Spring 2013

BS in Robotics Engineering

1. Assessment Plan for the Bachelor of Science in Robotics Engineering

Table 1 provides a mapping of the university-wide undergraduate learning outcomes to the BSRE program-specific learning outcomes, in addition to the corresponding assessment techniques, metrics, and loop closing information that has been identified at the moment. The BSRE program learning outcomes, based in part on the ABET engineering outcomes, are:

a) an ability to apply knowledge of mathematics, science, and engineering,
b) an ability to design and conduct experiments, as well as to analyze and interpret data,
c) an ability to design a robotic system, component, or process to meet desired needs,
d) an ability to function on multidisciplinary teams,
e) an ability to identify, formulate, and solve engineering problems,
f) an understanding of professional and ethical responsibility,
g) an ability to communicate effectively,
h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context,
i) a recognition of the need for, and an ability to engage in life-long learning,
j) a knowledge of contemporary issues, and
k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

2. Action Plan (Loop-Closing) for the Bachelor of Science in Robotics Engineering

a. Report on 2011-2012 Academic Year

The BSRE program debuted in the Fall 2011 semester, making this the first academic year the degree was offered. As a result, no assessment activity specific to the program was implemented during the past academic year. At the moment, all students enrolled in the BSRE program have not taken any BSRE specific classes as they are mainly freshmen and sophomores taking core curriculum and existing entry level engineering and computer science classes.

b. Report on Plan for 2012-2013 Academic Year

For the upcoming academic year, the main focus of the assessment plan will be geared towards mapping the a through k objectives of the BSRE program to existing assessment activities in the mechanical engineering, electrical engineering, and computer science courses that are part of the BSRE flowchart. The results will be used as a basis to help identify the assessment plans for the new BSRE-specific classes that are currently being developed.

Table 1: Assessment Plan for the BSRE Program

LTU Undergraduate Learning Outcomes	ME ABET Outcomes	Assessment Tools	Indicators	Administration Timeline	Loop-Closing Timeline
Discipline-Specific Knowledge					
KNOWLEDGE IN DISCIPLINE LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems.	Outcome a Outcome c Outcome e	FE style questions on final exams in EME3133	70% of students receive a score of 60% or higher	Fall Semester	Every three semesters, beginning Spring 2013
TECHNOLOGY LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines.	Outcome k Outcome b	Evaluation of coursework in EGE1012 and EME3133	In progress	Every Semester	Every three semesters, beginning Spring 2013
SUSTAINABILITY LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities.	Outcome h	Evaluation of coursework in EME4252 or EME4253	In progress	Every Semester	

Critical Thinking					
COMMUNICATION LTU graduates will demonstrate professional standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation.	Outcome g				
MATHEMATICS LTU graduates will demonstrate their mastery of mathematics to solve real-world problems by isolating relevant factors, constructing abstract models, communicating precisely, and reasoning logically.	Outcome a	FE style questions on final exams in EME3133	70% of students receive a score of 60% or higher	Fall Semester	Every three semesters, beginning Spring 2013
READING LTU graduates will demonstrate proficiency in reading and interpreting complex, intellectually challenging texts and evaluating their analytical architecture from an independent point of view.					
SCIENTIFIC ANALYSIS LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields.	Outcome b Outcome e				

Leadership and Ethics					
LEADERSHIP LTU graduates will demonstrate civic, team, and global leadership skills by identifying a personal leadership philosophy, exhibiting entrepreneurial skills, and becoming agents of positive change.	Outcome h	Seminars (with exit survey) on contemporary engineering topics in EME4252, and EME4253	Required attendance and completion of survey Assignment on engineering solution impact	Every Semester	Every three semesters, beginning Spring 2013
TEAMWORK LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions.	Outcome d	Peer evaluations of teamwork projects in EGE1012, EME4252, EME4253 Faculty Advisor meeting in EME4252 Faculty and IAB Eval at final presentation		Every Semester	Every three semesters, beginning Spring 2013
ETHICS LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions.	Outcome f	Ethics quiz (multiple choice) in EGE1012 and EME4253 Ethics case study assignment in EGE1012 Ethics/Integrity statement on final report in EME4252 and EME4253	50% and 70%, respectively, of students will achieve a score of 50% and 70%, respectively, or higher	Every Semester Every Semester	Every three semesters, beginning Spring 2013

MS in Mechanical Engineering

1. **Assessment Plan – M.S. Mechanical Engineering**
   See Table 1, below.

2. **Action Plan (Loop-Closing) for M.S. Mechanical Engineering**

   a. **Report on 2011-2012 Academic Year**
      No program assessment was done in the 2011-2012 academic year. The program will start its formal assessment plan (see Table 4 below) in Fall 2012.

   b. **Report on Plan for 2012-2013 Academic Year**
      The program will implement its new assessment plan shown below in Table 4 in Fall 2012. In general, data will be collected yearly and loop closing will be done every two years. Data will be collected in EME5173 in Fall 2012 and data will be collected in EME5223 and EME 5153 in Spring 2012. An ME Graduate Seminar will be developed this year and implemented in Fall 2013.

Table 4: Assessment Plan for Master of Science in Mechanical Engineering (MSME)

LTU Graduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
LTU graduates will apply and, in accordance with their course of study, develop advanced knowledge within their discipline.	EME 5223 Advanced Mech of Mat. EME5153 Applied Thermodynamics	Common final exam problem	80% of students will score 85% or better on the common exam problem	Once a year in the Spring semester beginning 2013	Every two years beginning 2015
LTU graduates will analyze and interpret information and implement decisions using the latest techniques and technologies.	EME5213 Mechanical Vibrations or EME 5173 Transport Phenomena	Analysis and interpretation, using software, of a peer reviewed technical paper.	Using a rubric, 80% of students will score 85% or better in analysis and interpretation.	Once a year in the Fall semester beginning Fall 2012	Every two years beginning 2014
LTU graduates will evaluate scholarly literature and, in accordance with their course of study, contribute to the literature.	EME5213 Mechanical Vibrations or EME 5173 Transport Phenomena	Evaluation of a peer reviewed technical paper	Using a rubric, 80% of students will score 85% or better for their overall evaluation.	Once a year in the Fall semester beginning Fall 2012	Every two years beginning 2014
LTU graduates will communicate effectively using written, oral, graphical, and digital formats.	EME5213 Mechanical Vibrations or EME 5173 Transport Phenomena	Written report and oral presentation of a technical paper.	Using a rubric 80% of students will score 85% or better for written, oral and graphical communication.	Once a year in the Fall semester beginning Fall 2012	Every two years beginning 2014
LTU graduates will develop a broad perspective on professional issues, such as lifelong learning, sustainability, leadership, and ethics.	EME5xx0 ME Graduate Seminar	Mandatory attendance at seminars. Must also submit one page summary of each seminar.	Must attend at least 3 seminars and receive a satisfactory grade for all summaries.	Every Fall and Spring semester beginning Fall 2013	Every year beginning 2014

MS in Mechatronics System Engineering

1. **Assessment Plan M.S. Mechatronic Systems Engineering**
   See Table 1, below

2. **Action Plan (Loop-Closing) for M.S. Mechatronic Systems Engineering**

   a. **Report on 2011-2012 Academic Year**
      No program assessment was done in the 2011-2012 academic year. The program will start its formal assessment plan (see Table 5 below) in Fall 2012.

   b. **Report on Plan for 2012-2013 Academic Year**
      The program will implement its new assessment plan shown below in Table 5 in Fall 2012. In general, data will be collected yearly and loop closing will be done every two years. Data will be collected in MSE6183 in Fall 2012 and data will be collected in MSE6173 in Spring 2013. An ME Graduate Seminar will be developed this year and implemented in Fall 2013.

Table 1: Assessment Plan for Master of Science in Mechatronic Systems Engineering (MSMSE)

LTU Graduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
LTU graduates will apply and, in accordance with their course of study, develop advanced knowledge within their discipline.	MSE5133 Modern Control in Mech. Sys. or MSE6153 Optimization in Mech Sys.	Common final exam problem	80% of students will score 85% or better on the common exam problem	Once a year in the Spring semester beginning 2013	Every two years beginning 2015
LTU graduates will analyze and interpret information and implement decisions using the latest techniques and technologies.	MSE6173 Mechatronic Systems Implementation 1	Analysis and interpret a peer reviewed technical paper using software.	Using a rubric, 80% of students will score 85% or better in analysis and interpretation.	Once a year in the Spring semester beginning Spring 2013	Every two years beginning 2014
LTU graduates will evaluate scholarly literature and, in accordance with their course of study, contribute to the literature.	MSE6173 Mechatronic Systems Implementation 1	Evaluation of a peer reviewed technical paper	Using a rubric, 80% of students will score 85% or better for their overall evaluation.	Once a year in the Spring semester beginning Spring 2013	Every two years beginning 2014
LTU graduates will communicate effectively using written, oral, graphical, and digital formats.	MSE6183 Mechatronic Systems Implementation 2	Written report and oral presentation of one of the course projects.	Using a rubric 80% of students will score 85% or better for written, oral and graphical communication.	Once a year in the Fall semester beginning Fall 2012	Every two years beginning 2014
LTU graduates will develop a broad perspective on professional issues, such as lifelong learning, sustainability, leadership, and ethics.	EME5xx0 ME Graduate Seminar	Mandatory attendance at seminars. Must also submit one page summary of each seminar.	Must attend at least 3 seminars and receive a satisfactory grade for all summaries.	Every Fall and Spring semester beginning Fall 2013	Every year beginning 2014

MS in Automotive Engineering

1. **Assessment Plan – Master of Science in Automotive Engineering (MSAE)**
   See Table 1, below.

2. **Action Plan (Loop-Closing) for MSAE**

   a. **Report on 2011-2012 Academic Year**
      No assessment for 2011-2012.

   b. **Report on Plan for 2012-2013 Academic Year**

   In Fall 2012, the MSAE program will implement its new assessment plan shown in Table 6. Data will be collected annually and loop closing will be done every two years.

   Data will be collected as listed below:

Course	When data will be first collected
EME5433 Vehicle Dynamics 1	Fall 2012
EME6623 Automotive Control Systems 1	Fall2012
EME6353 Automotive Mechanical Systems	Spring 2013
EME6373 Powertrain Systems 1	Spring 2013
EME5XX0 ME Graduate Seminar	Fall 2013

   A mechanical engineering graduate seminar will be developed this year and implemented in Fall 2013.

Table 1: Assessment Plan for Master of Science in Automotive Engineering (MSAE)

LTU Graduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
LTU graduates will apply and, in accordance with their course of study, develop advanced knowledge within their discipline.	EME6353 Automotive Mechanical Systems	Exam problem.	Using a rubric, 80% of the students will score 85% or better on the exam problem.	Once a year each Spring semester starting in 2013.	Every two years starting in 2015.
LTU graduates will analyze and interpret information and implement decisions using the latest techniques and technologies.	EME5433 Vehicle Dynamics 1	Exam problem or project	Using a rubric, 75% of students will score 85% of better.	Annually each fall beginning Fall 2012	Every two years starting in 2014
LTU graduates will evaluate scholarly literature and, in accordance with their course of study, contribute to the literature.	EME6373 Powertrain Sytems 1	Oral or written report	Using a rubric, 75% of students will score 85% of better.	Annually each Spring starting in Spring 2013.	Every two years starting in 2015
LTU graduates will communicate effectively using written, oral, graphical, and digital formats.	EME6623 Automotive Control Systems1	Oral project presentation	Using a rubric, 75% of students will score 85% of better.	Annually each fall beginning Fall 2012	Every two years starting in 2014
LTU graduates will develop a broad perspective on professional issues, such as lifelong learning, sustainability, leadership, and ethics.	EME5XX0 ME Graduate Seminar	Mandatory attendance at seminars. Must also submit a one page summary of each seminar.	Must attend at least 3seminars in the semester and receive satisfactory grades for all summary papers.	Every Fall and Spring semester beginning Fall 2013.	Every year starting in 2014.

Master of Engineering Management

1. **Assessment Plan – Master of Engineering Management**
   See Table 1, below.

2. **Action Plan (Loop-Closing) for MEM**

   a. **Report on 2011-2012 Academic Year**

   b. **Report on Plan for 2012-2013 Academic Year**

Table 1: Assessment Plan for Master of Engineering Management (MEM)

LTU Graduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicator s	Administrati on Timeline	Loop-Closing Timeline
LTU graduates will apply and, in accordance with their course of study, develop advanced knowledge within their discipline.	- Core Courses Technical Contents - Projects from core courses	evaluate core courses using rubrics	80% above 80%	every year	every two years
LTU graduates will analyze and interpret information and implement decisions using the latest techniques and technologies.	- Utilization of Excel, Word, PPT, Bb in coursework. - Utilization of Minitab in QC.	evaluate those tools for respective courses: QC, SCM	80% above 80%	every year	every two years
LTU graduates will evaluate scholarly literature and, in accordance with their course of study, contribute to the literature.	- Projects from selected courses	evaluate projects from selected courses	80% above 80%	per dissertation	two years
LTU graduates will communicate effectively using written, oral, graphical, and digital formats.	– Project reports and presentations	evaluate selected course projects	80% above 80%	per dissertation	two years
LTU graduates will develop a broad perspective on professional issues, such as lifelong learning, sustainability, leadership, and ethics.	- Course content and project contends addressing those issues	evaluate selected course projects and student's seminar participation	80% above 80%	two years	three years

Master of Engineering in Manufacturing Systems

1. **Assessment Plan – Master of Engineering in Manufacturing Systems**
   See Table 1, below.

2. **Action Plan (Loop-Closing) for MEMS**

   a. **Report on 2011-2012 Academic Year**

   b. **Report on Plan for 2012-2013 Academic Year**

Table 1: Assessment Plan for MEMS

LTU Graduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
LTU graduates will apply and, in accordance with their course of study, develop advanced knowledge within their discipline.	Eight required courses. Manufacturing projects in each of the core courses.	Exams, projects, case studies, in-class exercises and oral presentations.	75% of the students receive a Score of 85% or higher	Every year	Every year.
LTU graduates will analyze and interpret information and implement decisions using the latest techniques and technologies.	Utilization of Excel, Word, PPT, Minitab, Arena, and Bb in coursework.	Exams, projects, case studies, in-class exercises and oral presentations.	70% of the students receive a Score of 85% or higher	Every year	Every year.
LTU graduates will evaluate scholarly literature and, in accordance with their course of study, contribute to the literature.	Course projects and case studies.	Projects and case studies.	75% of the students receive a Score of 85% or higher	Every year	Every year.
LTU graduates will communicate effectively using written, oral, graphical, and digital formats.	Written reports and presentations in the required courses.	Projects, case studies, and in-class exercises.	75% of the students receive a Score of 85% or higher	Every year	Every year.
LTU graduates will develop a broad perspective on professional issues, such as lifelong learning, sustainability, leadership, and ethics.	Group discussion, case studies, and membership in professional societies.	Projects, case studies, and in-class exercises.	80% of the students receive a Score of 75% or higher	Every year	Every year.

MS in Industrial Engineering

1. **Assessment Plan – Master of Science in Industrial Engineering**
   See Table 1, below.

2. **Action Plan (Loop-Closing) for MSIE**

   a. **Report on 2011-2012 Academic Year**

   b. **Report on Plan for 2012-2013 Academic Year**

Table 1: Assessment Plan for Master of Science in Industrial Engineering (MSIE)

LTU Graduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
LTU graduates will apply and, in accordance with their course of study, develop advanced knowledge within their discipline.	– Six MSIE Core Courses – Projects in each of the core courses.	evaluate core courses using rubrics	80% above 80%	every two years	every two years
LTU graduates will analyze and interpret information and implement decisions using the latest techniques and technologies.	– Utilization of Excel, Word, PPT, Bb in coursework – Utilization of Minitab in QC and Simulation Courses. – Utilization of ARENA Software in Eng. Sys. Simulation Course. – Lindo Software for Optimization	evaluate those tools for respective courses (EME 5603, EME 6403, EME 6653)	80% above 80%	every two years	every two years
LTU graduates will evaluate scholarly literature and, in accordance with their course of study, contribute to the literature.	– Literature reviews for some core courses projects.	evaluate projects from selected courses	80% above 80%	every two years	every two years
LTU graduates will communicate effectively using written, oral, graphical, and digital formats.	– Written report, oral presentation, and graphical communication of core courses' projects	evaluate selected course projects	80% above 80%	every two years	two years
LTU graduates will develop a broad perspective on professional issues, such as lifelong learning, sustainability, leadership, and ethics.	– Projects and courses addressing lifelong learning, sustainability and ethics	evaluate selected course projects and student's seminar participation	80% above 80%	every two years	two years

Doctorate in Mechanical Engineering

1. Assessment Plan Doctor of Engineering in Mechanical Engineering (DEME)

See Table 1 below.

2. Action Plan (Loop-Closing) for D.E. Mechanical Engineering

a. Report on 2011-2012 Academic Year

No program assessment was done in the 2011-2012 academic year. The program will start its formal assessment plan (see Table 10 below) in Fall 2012.

b. Report on Plan for 2012-2013 Academic Year

The program will implement its new assessment plan shown below in Table 10 in Fall 2012. In general, data will be collected yearly and loop closing will be done every two years. Data from all dissertation proposals and defenses will be collected in Fall and Spring. An ME Graduate Seminar will be developed this year and implemented in Fall 2013.

Table 1: Assessment Plan for Doctor of Engineering in Mechanical Engineering (DEME)

LTU Graduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
LTU graduates will apply and, in accordance with their course of study, develop advanced knowledge within their discipline.	One course in both the Solid Mechanics track and the Thermal-Fluids track.	Common final exam problem	80% of students will score 85% or better on the common exam problem	Once a year in the Spring semester beginning 2013	Every two years beginning 2015
LTU graduates will analyze and interpret information and implement decisions using the latest techniques and technologies.	Dissertation Final Defense	Dissertation Final Defense	Student passes final defense.	Fall and Spring semesters beginning Fall 2012	Every two years beginning 2014
LTU graduates will evaluate scholarly literature and, in accordance with their course of study, contribute to the literature.	Dissertation and publications	Dissertation and publications	Student passes final defense and has peer reviewed publications of their dissertation work.	Fall and Spring semesters beginning Fall 2012	Every two years beginning 2014
LTU graduates will communicate effectively using written, oral, graphical, and digital formats.	Dissertation Proposal, Dissertation Final Defense, and publications	Dissertation Proposal, Dissertation Final Defense, and publications	Student passes proposal, passes final defense and has peer reviewed publications of their dissertation work.	Fall and Spring semesters beginning Fall 2012	Every two years beginning 2014
LTU graduates will develop a broad perspective on professional issues, such as lifelong learning, sustainability, leadership, and ethics.	EME5xx0 ME Graduate Seminar	Mandatory attendance at seminars. Must also submit one page summary of each seminar.	Must attend at least 3 seminars and receive a satisfactory grade for all summaries.	Every Fall and Spring semester beginning Fall 2013	Every year beginning 2014

Doctorate in Manufacturing Systems

1. **Assessment Plan – Doctor of Engineering in Manufacturing Systems**
   See Table 11 below.

2. **Action Plan (Loop-Closing) for MSIE**

   a. **Report on 2011-2012 Academic Year**

   b. **Report on Plan for 2012-2013 Academic Year**
      See Table 1 below.

Table 1: Assessment Plan for Doctor of Engineering in Manufacturing Systems (DEMS)

LTU Graduate Learning Outcomes	Supporting Program Learning Objective	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
LTU graduates will apply and, in accordance with their course of study, develop advanced knowledge within their discipline.	* Six DEMS advanced core courses * Advanced manufacturing projects in each of the core courses. * Literature survey in their applied research area.	* Projects and exams. * Literature surveys, research proposal and dissertation exams.	* Score > 85% * Pass grade by every member of the dissertation committee.	* Every year * Every dissertation	* Every two years * Every dissertation
LTU graduates will analyze and interpret information and implement decisions using the latest techniques and technologies.	* Utilization of Excel, Word, PPT, Bb in coursework and dissertation. * Utilization of Minitab in QC and DOE and Mat Lab for Process Control. * Utilization of ARENA Software in Mfg. Sys. Simulation courses.	* Projects and exams. * Research proposals and dissertations.	* Score > 85% * Pass by every member of the dissertation committee.	* Every year * Every dissertation	* Every two years * Every dissertation
LTU graduates will evaluate scholarly literature and, in accordance with their course of study, contribute to the literature.	* Comprehensive literature reviews are required for the core courses' projects. * Exhaustive literature survey in their applied research area. * Publications in refereed journals.	* Research proposals and dissertations.	* Pass by every member of the dissertation committee.	* Every dissertation	* Every dissertation
LTU graduates will communicate effectively using written, oral, graphical, and digital formats.	* Reports and presentations for LTU and industry. * Writing and presenting both research proposal and dissertation. * Publications in refereed journals. * Presentations in conferences.	* Projects * Research proposals and dissertations.	* Score > 85% * Pass by every member of the dissertation committee.	* Every year * Every dissertation	* Every two years * Every dissertation
LTU graduates will develop a broad perspective on professional issues, such as lifelong learning, sustainability, leadership, and ethics.	* Team work projects * Active participation in professional societies. * Publications in refereed journals. * Attendance and presentations in national and international conferences.	* Surveys of DEMS graduates	* Number of professional societies, publications in refereed journals, and presentations in conferences.	* Every two years	* Every two years

College of Management

BS in Business Management

1. **Assessment Plan**

The assessment plan for the BSBM program is provided in table 1 below.

2. **Action Plan (Loop-Closing)**
   a. **Report on 2011-2012 Academic Year**

Since the previous year's results were all met, there was no specific plan to make any changes in the assessment plan. However, the director of the program was to contact the internship coordinators of the firms which took our students and incorporate any helpful suggestions they may have to improve the program, especially the student's experience. This has been carried out.

The responsibility for this program will be with the Director of the undergraduate programs, Karen Evans, along with assistance from Nadia Shuayto (a past coordinator of the program) and the Srikant Raghavan (the coordinator of Assessment activities in the College.)

Based on the close-the-loop meeting for the 2011-2012 academic year, the BSBM program assessed and evaluated the following outcomes:

[Outcome: Strategic Capstone Exam for all the seniors in the program.]
Assessment: This exam was not administered as a new exam is under development.
Evaluation: No evaluation was possible as the tool was not administered.
Issue: The main issue here is to get the new tool ready so that it can be used for assessment.
Actions: Monitor the progress in developing the new tool.
Responsibility: The Undergraduate Program Director, Karen Evans and the Assessment Committee Chair, Srikant Raghavan.

[Outcome: Evaluation of the internship experience of the senior students.]
Assessment: 80% of the students received a grade of 80% or more from their supervisors.
Evaluation: Since that was the goal, the goal was met.
Issue: The only issue here is to assess the results using raw data rather than by percentage. The evaluation can however by done by percentage.
Actions: No action is contemplated as the goal has been met.
Responsibility: The Undergraduate Program Director, Karen Evans and the Assessment Committee Chair, Srikant Raghavan.

[Outcome: Writing Proficiency Exam (WPE)]
Assessment: Of the 5 juniors who took the WPE, 4 of them passed it, with a pass rate of 80%.
Evaluation: Since the goal was that 80% of those juniors who attempt the WPE will pass it at the first attempt, the goal was achieved.
Issue: Since the goal was met, there is no issue to address here.
Actions: The director of the program will consider raising the bar, if appropriate, since the previous goal was met.

Responsibility: The Undergraduate Program Director, Karen Evans and the Assessment Committee Chair, Srikant Raghavan.

b. Report on Plan for 2012-2013 Academic Year

The main action plan for the next academic year is to develop and administer a suitable capstone exam for the program. Second, the use of raw data for the analysis of the internship supervisor's assessment would be made. Third, the raising of the threshold for the WPE instrument will be considered. The responsibility for all these task rest on the Director of the undergraduate programs, Karen Evans. However, the College assessment committee will provide assistance as and when required.

Table 1: Assessment Plan for the BSBM program

University Undergraduate Learning Outcomes	Supporting Program Objectives/Outcomes	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
DISCIPLINE-SPECIFIC KNOWLEDGE					
KNOWLEDGE IN DISCIPLINE "LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems."	Students will demonstrate subject knowledge in accounting, economics, management, information systems, finance, marketing and the legal environment, and demonstrate the ability to apply facts, concepts, theories and analytical methods. Gain practical experience in a workplace and apply theoretical tools and concepts.	ETS Major Field Test (Business) Internship Supervisory Evaluation	Since 2012-13 will be the first year of implementing the MFT, the goal will be to pilot the exam and establish metrics All students score 80+%	Each semester in MGT4213 Business Capstone Each semester.	Annual Annual
TECHNOLOGY "LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines."	Students will apply technological skills, including ability to use electronic databases and desktop applications, to create and present solutions to business problems	Instructor Course Evaluation Rubric Internship Supervisory Evaluation	8+ points out of 10 in courses where applied technology is required. In all courses with presentations, rate proficiency of presentation technology at 4 or higher out of 5 All students rated at 4/5 or higher on Use of Technology	TBD Annual	Every two years

SUSTAINABILITY "LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities."	Assessment Committee, program director and CoM faculty will discuss creating supporting objectives for this new learning outcome	TBD	TBD	TBD	By end of 2012-13 academic year

University Undergraduate Learning Outcomes	**Supporting Program Objectives/Outcomes**	**Assessment Tools**	**Metrics/ Indicators**	**Administration Timeline**	**Loop-Closing Timeline**
CRITICAL THINKING					
COMMUNICATION "LTU graduates will demonstrate professional standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation."	Cultivate effective communication	HSSC University-wide Writing Assessment	HSSC should establish benchmarks	As determined by HSSC	As CoM receives results
MATHEMATICS "LTU graduates will demonstrate their mastery of mathematics to solve real-world problems by isolating relevant factors, constructing abstract models, communicating precisely, and reasoning logically."	Cultivate critical thinking, effective communication, creative problem solving, and decision making skills	MCS University-wide math assessment	MCS must establish benchmarks	Every 3 years	As results provided to CoM

READING "LTU graduates will demonstrate proficiency in reading and interpreting complex, intellectually challenging texts and evaluating their analytical architecture from an independent point of view."	Cultivate critical thinking, effective communication, creative problem solving, and decision making skills	HSSC university-wide reading assessment	HSSC must establish benchmarks	As determined by HSSC	As results are provided to CoM

University Undergraduate Learning Outcomes	Supporting Program Objectives/Outcomes	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
SCIENTIFIC ANALYSIS "LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields."	Cultivate critical thinking, effective communication, creative problem solving, and decision making skills	Natural Science university-wide scientific analysis assessment	Nat Sci must establish benchmarks	As determined by Nat Sci	As results are provided to CoM
LEADERSHIP & ETHICS					
LEADERSHIP "LTU graduates will demonstrate civic, team, and global leadership skills by identifying a personal leadership philosophy, exhibiting entrepreneurial skills, and becoming agents of positive change."	Demonstrate leadership and entrepreneurial characteristics and skills.	Leadership Program Self-Assessment	As determined by Leadership Program	As determined by Leadership Program	As results provided to CoM
TEAMWORK "LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions."	Ability to work in interdisciplinary teams	To be determined as new Capstone Course is created	To be determined as new Capstone Course is created	Each semester the Capstone Course is offered	Every two years
PROFESSIONAL ETHICS "LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions."	Knowledge of professional ethics, global business practices and strategies	ETS Major Field Test (Business)	Assessment Committee will establish benchmarks for scoring on Legal and Social Environment portion of the test	Each semester the Capstone Course is offered	TBD

BS in Information Technology

1. Assessment Plan

The assessment plan for the BSIT program is provided in table 1 below.

2. Action Plan (Loop-Closing)

a. Report on 2011-2012 Academic Year

The action plan based on the previous year's results called for a review of the BSIT curriculum to align it with the topics covered in the ICCP exam. Due to the change in leadership and the self study for the IACBE re-accreditation visit in the Fall of 2012, the review was not completed. It was decided to collect data for one more year based on the tools already in use and to complete the curriculum review in 2012-13.

The responsibility for the review will be with the Director of the undergraduate programs, Karen Evans, along with assistance from Richard Bush (a past Director of the programs) and the Srikant Raghavan (the coordinator of Assessment activities in the College.)

Based on the close-the-loop meeting for the 2011-2012 academic year, the BSIT program assessed and evaluated the following outcome(s):

[Outcome: Assess the learning of key concepts by students in the program.]
Assessment: No students attempted the CCP exam. Of the 15 who attempted the ACP exam, 8 passed, giving a pass rate of 53%.
Evaluation: Since the goal was that at least 80% of those attempting the ACP exam will pass it, the goal was not met. Since nobody attempted the CCP exam, we could not test that goal.
Issue: Only 50% of our students are passing the test. This is too low a score for the program.
Actions: Review the curriculum to line up with the concepts examined by the ICCP exams.
Responsibility: The Undergraduate Program Director, Karen Evans and the Assessment Committee Chair, Srikant Raghavan.

[Outcome: Writing Proficiency Exam (WPE)]
Assessment: Of the 8 juniors who took the WPE, all of them passed it.
Evaluation: Since the goal was that 80% of those juniors who attempt the WPE will pass it at the first attempt, the goal was achieved.
Issue: There is no issue here as the goal was met.
Actions: The Director of the undergraduate program will consider raising the bar after consulting with the assessment committee of the College.
Responsibility: The Undergraduate Program Director, Karen Evans and the Assessment Committee Chair, Srikant Raghavan.

b. Report on Plan for 2012-2013 Academic Year

The general plan for the following academic year is two-fold. 1) To review the curriculum of the BSIT program to reflect the concepts covered in the ICCP exam. 2) To consider raising the standards in the WPE exam taken by the seniors in the program. The responsibility for this two point action plan rests on the Director of the undergraduate programs, Karen Evans. However, the assessment committee of the College will provide all the necessary assistance as needed.

Table 1: Assessment Plan for the BSIT program

University Undergraduate Learning Outcomes	Supporting Program Objectives/Outcomes	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
DISCIPLINE-SPECIFIC KNOWLEDGE					
KNOWLEDGE IN DISCIPLINE "LTU graduates will demonstrate a mastery of the knowledge base in their discipline and an expertise in solving practical and theoretical problems."	Students will apply knowledge of core information technology concepts to professional problems	ICCP Exam	80% will score 50% or higher on ACP certification; 50% will score 70% or higher on CCP certification; 80% attempting either certification will achieve passing scores	Every semester	Annually
TECHNOLOGY "LTU graduates will demonstrate the ability to apply advanced technologies to practical and theoretical problems in their disciplines."	Students will apply specialized technologies or processes to solve problems in information technology.	Instructor Course Evaluation Rubric	Rate use of technology at 8+ points out of 10 in courses where applied technology is required. In all courses where presentations are part of the course, rate proficiency of presentation technology at 4 or higher out of 5	TBD	Every two years
SUSTAINABILITY "LTU graduates will demonstrate an awareness of sustainability concepts within their discipline and their impact on the social, economic, and environmental needs of individuals and communities."	Assessment Committee, program director and CoM faculty will discuss creating supporting objectives for this new learning outcome	TBD	TBD	TBD	By end of 2012-13 academic year

University Undergraduate Learning Outcomes	Supporting Program Objectives/Outcomes	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
CRITICAL THINKING					
COMMUNICATION "LTU graduates will demonstrate professional standards in written, oral and graphical communication by mastering the fundamentals of writing mechanics and integrating evidence and analysis within a coherent structure. In their oral communication, they will organize and deliver content with poise and articulation."	Cultivate effective communication	HSSC University-wide Writing Assessment	HSSC should establish benchmarks	As determined by HSSC	As CoM receives results
MATHEMATICS "LTU graduates will demonstrate their mastery of mathematics to solve real-world problems by isolating relevant factors, constructing abstract models, communicating precisely, and reasoning logically."	Cultivate critical thinking, effective communication, creative problem solving, and decision making skills	MCS University-wide math assessment	MCS must establish benchmarks	Every 3 years	As results provided to CoM
READING "LTU graduates will demonstrate proficiency in reading and interpreting complex, intellectually challenging texts and evaluating their analytical architecture from an independent point of view."	Cultivate critical thinking, effective communication, creative problem solving, and decision making skills	HSSC university-wide reading assessment	HSSC must establish benchmarks	As determined by HSSC	As results are provided to CoM

University Undergraduate Learning Outcomes	Supporting Program Objectives/Outcomes	Assessment Tools	Metrics/ Indicators	Administration Timeline	Loop-Closing Timeline
SCIENTIFIC ANALYSIS "LTU graduates will demonstrate critical thinking and apply analytical and problem-solving skills in scientific fields."	Cultivate critical thinking, effective communication, creative problem solving, and decision making skills	Natural Science university-wide scientific analysis assessment	Nat Sci must establish benchmarks	As determined by Nat Sci	As results are provided to CoM
LEADERSHIP & ETHICS					
LEADERSHIP "LTU graduates will demonstrate civic, team, and global leadership skills by identifying a personal leadership philosophy, exhibiting entrepreneurial skills, and becoming agents of positive change."	Demonstrate leadership and entrepreneurial characteristics and skills.	Leadership Program Self-Assessment	As determined by Leadership Program	As determined by Leadership Program	As results provided to CoM
TEAMWORK "LTU graduates will demonstrate team-building and collaboration skills by making decisions, building consensus, resolving conflicts, and evaluating team members' contributions."	Ability to work in interdisciplinary teams	To be determined as new Capstone Course is created	To be determined as new Capstone Course is created	Each semester the Capstone Course is offered	Every two years
PROFESSIONAL ETHICS "LTU graduates will demonstrate an understanding of the ethical issues related to their disciplines, the ethical codes adopted by relevant professional associations, and the social consequences of their ethical decisions."	Knowledge of professional ethics in IT	TBD	TBD	TBD	TBD