

CREATING A CULTURE OF ASSESSMENT  
AT LAWRENCE TECHNOLOGICAL  
UNIVERSITY

ASSESSMENT REPORT 2001-2002

DECEMBER 2002

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# **Creating a Culture of Assessment at Lawrence Technological University**

## **Introduction**

The Student Assessment Task Force at Lawrence Technological University represents the university's commitment to adjust and improve the quality of its programs and student learning. The committee was formed in Fall 2001, and consists of fifteen members representing 44 programs from ten different departments along with four ex-officio members and an assessment program director.

The committee meets once every two weeks to exchange ideas amongst the members, and to discuss and plan future assessment techniques. Evaluation methods from different programs are presented through in-house workshops in an effort of informing and educating all members on the committee on assessment levels of implementation as carried throughout the university. Individual meetings are also planned with committee members along with their department chairs. In these meetings, the program director, the associate provost and the coordinator for institutional research and assessment discuss the specifics of each program, and agree on a strategy of assessment for the respective departments. The strategies involve the faculty of each program setting the goals and outcomes, and the assessment methods used for the year.

The university sends members of the assessment committee to conferences and workshops on assessment as a way of training them. The skills and experience gained by the members help their respective programs, as they become the mentors to assessment within their own units. In order to dedicate the necessary time to all of the activities that committee members practice, the university allows up to three credit hours per year of release time. Release time is granted by the department chair, based on the role that the faculty member will have in the overall assessment program in the department.

Program representatives within each college meet also to discuss and share ideas on assessment, and how to implement it, to satisfy and get approval of their programs from their accreditation boards. That is then coordinated with the Assessment Committee, which coordinates these efforts to have an approved overall delivery of education. A report is then written at the end of each year, showing the goals achieved for all programs, levels of implementation, and makes recommendations for next year's assessment process.

## **Student Assessment Task Force Committee (2001-2002)**

- |   |                    |
|---|--------------------|
| 1. Chair and Director of Assessment                       | Badih Jawad        |
| <b>A. College of Architecture</b>                         |                    |
| 2. Architecture   | Joongsub Kim       |
| 3. Art and Design   | Virginia North     |
| <b>B. College of Arts and Sciences</b>                    |                    |
| 4. Mathematics and Computer Science                       | David Bindschadler |
| 5. Natural Sciences                                       | Walter Dean        |
| 6. Humanities, Social Sciences and Communication          | Melinda Weinstein  |
| <b>C. College of Engineering</b>                          |                    |
| 7. Civil Engineering                                      | Don Carpenter      |
| 8. Electrical and Computer Engineering                    | Lisa Anneberg      |
| 9. Engineering Technology                                 | Don Condit         |
| 10. Mechanical Engineering                                | Laura Lisiecki     |
| <b>D. College of Management</b>                           |                    |
| 11. College of Management                                 | Patty Castelli     |
| <b>E. Ex-officio Members</b>                              |                    |
| 12. Coordinator for Institutional Research and Assessment | Mary Thomas        |
| 13. Associate Provost                                     | Maria Vaz          |
| 14. Provost   | Lewis Walker       |
| 15. Vice President for Administration and Finance         | Lee Johnson        |

# University Programs

## **A. College of Architecture**

1. Bachelor of Science in Architecture
2. Bachelor of Facilities Management
3. Bachelor of Imaging
4. Bachelor of Arts in Interior Architecture
5. Master of Architecture

## **B. College of Arts and Sciences**

### **a. Department of Mathematics and Computer Science**

6. Bachelor of Science in Mathematics
7. Bachelor of Science in Mathematics and Computer Science
8. Bachelor of Science in Computer Science
9. Master of Science in Computer Science

### **b. Department of Humanities, Social Science and Communication**

10. Bachelor of Science in Humanities
11. Bachelor of Science in Business Management
12. Bachelor of Science in Technical Communication

### **c. Department of Natural Sciences**

13. Bachelor of Science in Chemistry
14. Bachelor of Science in Environmental Chemistry
15. Associate in Chemical Technology
16. Bachelor of Science in Physics
17. Bachelor of Science in Physics and Computer Science
18. Master of Science in Education

### **d. University Studies**

19. Associate of Science in University Studies

## **C. College of Engineering**

### **a. Department of Civil Engineering**

20. Bachelor of Science in Civil Engineering
21. Master of Civil Engineering
22. Master of Science in Civil Engineering
23. Master of Construction Management

### **b. Department of Electrical Engineering**

24. Bachelor of Science in Electrical Engineering
25. Bachelor of Science in Computer Engineering
26. Master of Science in Electrical and Computer Engineering

**c. Department of Mechanical Engineering**

- 27. Bachelor of Science in Mechanical Engineering
- 28. Master of Engineering in Manufacturing Systems
- 29. Master of Automotive Engineering/Master of Science in Automotive Engineering
- 30. Master of Science in Mechanical Engineering
- 31. Doctor of Engineering in Manufacturing Systems

**d. Department of Engineering Technology**

- 32. Associate in Construction Engineering Technology
- 33. Associate in Mechanical Engineering Technology
- 34. Associate in Electrical Engineering Technology
- 35. Associate in Manufacturing Engineering Technology
- 36. Bachelor of Science in Industrial Management
- 37. Bachelor of Science in Technology Management

**D. College of Management**

- 38. Bachelor of Science in Information Technology
- 39. Master of Business Administration
- 40. Master of Science in Information Systems
- 41. Master of Science in Industrial Operations
- 42. Career Integrated Master of Business Administration (CIMBA)
- 43. Doctor of Management in Information Technology

## **Student Assessment Committee Activity for the Year 2001-2002**

1. Implementation levels of assessment were established for all university departments (see attached Matrix) following the Higher Learning Commission/NCA guidelines. Implementation levels of assessment will be revisited in 2002/2003, to observe and evaluate the improvements.
2. The committee held an in-service workshop, during which presentations were given by different committee members to educate the committee on different assessment methods practiced in different departments/programs before the Assessment Committee was formed. This process of sharing ideas helped in setting the stage to adopt assessment as a concept to pursue and make it a culture at LTU.
3. Assessment goals for spring 2002 were defined by all university programs in each department. Each program implemented methodologies to assess one or two of their educational goals. The same educational goals can be considered for next year, along with more goals that may be defined to be assessed.
4. The Student Assessment Committee at LTU attended a three day (March 19-March 21, 2002) workshop in Chicago, sponsored by the American Association for Higher Education (AAHE) and the North Central Association (NCA). Several topics on assessment were presented along with case models. The workshop served as assessment training for LTU's assessment committee members.
5. Committee members that could not attend the Chicago Workshop, attended other national conferences on assessment.
6. The committee met after the Chicago workshop to discuss the different presentations that were attended by different members in an effort to educate everyone on all topics covered by the workshop. The Chicago workshop assessment ideas are attached. It presents assessment ideas on several subjects as follows:
  1. Direct and Indirect Measures
  2. Portfolios
  3. Assessment: a Systematic Process to Learn about Student Learning
  4. Rubrics
  5. Assessment and Learning-Centered College: Roles and Responsibilities
  6. Intended Learning Outcomes
7. The Assessment Committee developed an Assessment Action Plan for two years (2002-2004) as part of a Capstone Project for The Chicago Workshop. The Assessment Plan is attached.

8. Dr. Melinda Weinstein (HSSC department) lead the preparation for of a rubric to be used as a standard for grading English papers. It is also to serve for the assessment of written communication for all university students for General Education and beyond. The rubric was approved by the Assessment Committee. The faculty of each program will be able to modify the rubric to adapt it to the professional standards in their field.
9. The LTU Assessment Committee started to look into establishing an Oral Rubric similar to the Written Rubric to establish the standards for oral communication. Based on that, the committee through its members is requesting information from all departments on courses and projects that involve oral presentations. The initial goal is to identify where in the curriculum students are required to do oral presentations.
10. The Assessment Committee has identified the third week of September and the third week of April of every year as Assessment Weeks. Friday is declared as being Assessment Day during Assessment Week. In the Fall outside speakers may be invited to speak to the LTU community about assessment practices in an effort of spreading awareness on campus on the necessity of assessment as a way of evaluating our programs and thus improve student learning at LTU.

The second week of Assessment is data collection and implementation of assessment methods.

11. An annual report is written at the end of each academic year documenting all of assessment activities implemented during the year, the analysis of the results and the action steps to be pursued for the following year.

It focused on departmental reflection of the assessment results for the programs at the departmental level, development of the Action-Plan for the year, and continuous professional development of faculty related to assessment practice



**Lawrence Tehcnological University**  
**Assessment of Student Academic Achievement**

**Levels of Implementation**  
2001-2002

Departments	I. Institutional Culture		II. Shared Responsibility			III. Institutional Support		IV. Efficacy of Assessment
	a. Collective/Shared Values	b. Mission	a. Faculty	b. Administration & Board	c. Students	a. Resources	b. Structures	
Architecture	3	3	2	3	2	2+	2	2
Art & Design	3	3	3	3	3	3	3	3
Civil Engineering	3	2	2	2	2	2	2/3	2
Electrical & Computer Engineering	2	2	2	2	1/2	1	1	2
Mechanical Engineering	2	2	1	2	1	1	1	1
Engineering Technology	1	1	1	unknown	1	unknown	unknown	1
Management	2	2	3	2	2	3	2	2
Humanities, Social Science, Communication	2	2	1	2	1	2	1	1
Natural Sciences	1	1	1	2	2	2	2	1
Math & Computer Science	2	2	1	2	1	1	1	1
LTU Overall Average	2.00	2.00	1.70	2.00	1.65	1.75	1.55	1.60

Levels: 1,2,3  
Level One: Beginning Implementation Assessment Programs  
Level Two: Making Progress in Implementing Assessment Programs  
Level Three: Maturing Stages of Continuous Improvement

## NCA/AAHE Assessment Workshop Ideas Chicago, March 2002

### Direct and Indirect Measures (Gloria Rogers)

- Understand that each assessment measure has strengths and weaknesses
- Do not use too many methods, while exploring combination of direct and indirect measures
- Knowing what you want to measure is crucial because not all assessment measures, measure the same thing
- Understand language and terms is crucial to help to arrive at common ground
- One model does not fit every case
- Start with small plans and build on them
- Super-response rate on non-enrollee survey
- Faculty survey re objectives
  - Objective specific
  - Demonstrates competence
  - Feedback (very important since no feedback-no improvement)
- A good target is ONE GOOD direct measurement
- Break apart classroom levels
  - Subject
    - topic
    - Concepts
  - Concept transfers to institutional/program
  - Objectives
    - Outcomes
    - Performance criteria/ targets
- Make any assessment measures as direct as possible. Frequently have too much data, too much irrelevance, doesn't measure outcomes, etc...

### Portfolios (Gloria Rogers)

- On-line tutorial is useful
- Process of understanding is valuable
- Portfolio is only one approach of assessment
- The development of rubrics does not happen overnight
- Create a place where faculty (who evaluate portfolios) come together both formally and informally
- Didn't just include course work. Includes also extracurricular work, (although course work is often the choice of students, because they worry about getting jobs after graduation)
- Know what you are going to do with data: performance criteria
- Who is going to evaluate the data (contents) and when? Set special date?
- Two kinds of portfolios:
  - Growth portfolio is updated information
  - Showcase portfolio is best-work which replaces old work

- Portfolios typically measure either learning objectives or program outcomes. It is problematic to do both.
- Raters could be alumni, advisory board, employers, external faculty, professionals, etc. Raters can be and perhaps should be from outside of department.
- Don't evaluate every outcome every year. Rotates outcomes and sample portfolios.

#### Assessment : a systemic process to learn about student learning ( Peggy Maki)

- Very general lecture on process of assessment
- Evaluation assessment results, interpreting assessment results, sharing assessment results – these three activities must be differentiated since each has its own unique specific goal and expectation.
- Ask student – what did you learn and how did you learn it
- The results of assessment procedures must be available to everyone (faculty and students) to chew on.
- In a learning institution we are all learners, both students and faculty
- Create awards for progress
- Pilot assessment procedures for an individual outcome/objectives then evaluate whether they worked. Did you get useful information?
- What are programs /institutions weaknesses (graduate deficiencies)?  
Work on assessing those  
Multiple techniques as necessary to assess learning
- Consider schedule of assessment  
Longitudinal  
Waiting to the end is not the best method  
Formative vs. summative
- We need baseline data of student information, especially if using direct measure
- Need open-ended qualitative assessment
- “ Knowing what students know” – Book , National Research Council. [www.nap.edu](http://www.nap.edu)

#### Rubrics Session ( Mary Huba)

- Rubrics as a feedback tool – potential for use through out the curriculum
- Use of rubrics to evaluate in subjective areas
- Rubrics as a way to educate learners about professional expectations
- In creating and implementing a rubric , the instructor moves from subjective to objective criteria of scoring
- Rubrics enable students to know from the outset what the standards of the professor and the department and the discipline
- Rubrics enable the students to see very clearly not only where they are but what they need to improve
- “ Learner-Centered Assessment on College Campuses” Mary E. Huba  
ISBN 0-205-28738-7
- students have to pay attention to rubrics

- Professors will have to objectively come up with standards
- Students do better if they have high expectations
- Use students in the development of the rubrics
- One of the reasons college students don't perform well is because in high school they have the standards defined and in college they don't. They don't know what are the professors expectations

#### **Assessment and Learning-Centered College: Roles and Responsibilities (Gail Mee)**

- Write about the Assessment Program in the university's marketing materials
- During Orientation of New Students describe the Assessment Program
- In a culture of learning, people value learning
- Assessment Week
  - 1) research to identify students
  - 2) During Assessment Week math classes can do writing assessments
  - 3) Not all students are assessed for everything
- Check the website of IUPUI

#### **Intended Learning Outcomes ( Mary Huba)**

- Hadn't thought about "what students can do part of assessment. How is this distinct from what they know ? ( lab skills, etc...)
- Idea of building into the reward system
- Opportunity to express professional ( as opposed to institutional) standards of excellence
- Make sure that the articulated outcomes are student centered rather than professor centered. (focus on the learning resulting from the instructional activity, rather than the activity)
- Characteristics of learning outcomes are general enough to capture important learning but clear and specific enough to be measurable
- Stated learning outcomes on the syllabus are very important because they inform students about the intentions of the faculty. Nothing is a mystery – students don't have to wonder what is expected of them, or find what is expected of them on the first test.

#### **Question and Answer Session - Panel**

- Dealing with students: orient them about expectations takes a lot of time: develop understanding, end of class minutes to gather students perceptions.
- Informing vs. training
- Help students understand what assessment results mean.
- How to involve board members:
  - Have the same information at all levels – strategic plans
  - Support on financial matters in terms of technology, etc
  - Culture in terms of what/how actively board members, faculty are engaged in.

- Learning communities
  - Focus on teaching and research. Make assessment part of overall learning
  - Bring assessment data regularly to the faculty, administration and staff
  - Let the departments (which are working better) share their progress with other departments
- Both academic and administrative support are needed.
- Interdisciplinary team is crucial
- Assessment director/ coordinator- Faculty take the leadership role. Also requires administrative support.
- Indicators for moving forward for mature assessment stage:
  - Infrastructure (technological)
  - More sophisticated questions
  - System put in place
  - Students interested in process and results
  - Committee/ two directors (structure formalized) – approve assessment plans, publish results, etc
  - Interwoven fabric with all programs/ administration involved
  - Having ownership of assessment
  - Budget secured
  - Measures implemented, all tested
  - Using results to look at what the weaknesses and strengths are
  - Sustainable structure needed ( if provost leave the process still continues)
- How to get students involved
  - Policy statement for students – talk about assessment program at Orientation
  - Minute paper – in classroom . It helps with other classroom situations also
  - Fee reduction for students taking assessment
  - Individual assessment scores on transcript
- Board of Trustees – Put Assessment as one of the agenda meeting items
- Workbook on Assessment
- New faculty Orientation – speak about Assessment
- Student Affairs must be included in the process – housing and student life is also important
- Research office that takes a support role and technical expertise
- Assessment Results on the web
- Assessment Day in spring – Feb 12
- Two directors of Assessment – Gen Ed and programmatic?
- Center for Teaching Excellence and Learning
- Ownership of faculty – Assessment is a means to focus on the most important of what we do – student learning. Assessment helps us to change from a culture of teaching to a culture of learning.
- Post-mortem analysis about Assessment Day ( 2 assessment days – November and February)
- Include assessment in the job description of administrators

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- Go to [www.rose-hulman.edu](http://www.rose-hulman.edu) IRPA – Gloria Rogers will post rubrics for public speaking, teaming, rest of the glossary – good start for our goals.
- World's worst survey – <http://airweb.org/publications/airpublications.htm>
- Rose-Hulman – 10 learning outcomes: 4 technical, 6 non-technical ( measures 3 one years and 3 the other)
- Education experience included “objectives” were too detailed. Main purposes of the course sometimes lost
- Characteristics Outcome
- Do curricular mapping
- Data vs. information
- Examples of “data” Checking
- Patterns of data
- Nice model for use of technology to collect and report assessment data
- Significant programming effort
- Details of how it was done

## Lawrence Technological University Action Plan 2002-2004

Goals	Strategies	Indicators
1. To have an Assessment program sustainable and on-going	<p>1. Assess the following university-wide educational goals:</p> <ul style="list-style-type: none"> <li>• <b>Written, Oral and Visual Communication</b> Interdisciplinary Committee Develop Rubrics with students Revise Time-line Implementation of methodologies Close the loop <b>2002-2003</b></li> <li>• <b>Team Work</b> Educate faculty on effective team work Identify key courses and extracurricular activities to assess team work development Develop observation methodology and rubrics Develop Time-Line Development of methodologies Close the loop <b>2002-2003</b></li> <li>• <b>Analytical Skills and Leadership</b> Develop Outcomes Identification of direct and indirect methodologies <b>2003</b> Implementation of methodologies Close the loop <b>2003-2004</b></li> </ul> <p>2. Assess one or two program specific goals <b>2003-2004</b></p> <p>3. Develop policies for membership of Assessment Committee</p> <p>4. Institutional Support</p> <ul style="list-style-type: none"> <li>• Develop a budget <b>2002-2003</b></li> <li>• Technical assistance for</li> <li>• Institutional Research and</li> <li>• Assessment Office <b>2002-2003</b></li> <li>• Financial/Release Time for faculty <b>2002-2003</b></li> </ul> <p>5. Re-evaluation of time-lines, methodologies and procedures <b>2002-</b></p>	<p>For all educational goals identified:</p> <ol style="list-style-type: none"> <li>1. Time-line implemented</li> <li>2. Annual Assessment Report developed</li> <li>3. Program level actions feedback loop documentation</li> </ol> <p>In addition:</p> <ol style="list-style-type: none"> <li>4. Dissemination of the assessment report – discussion of the feedback loop at the department level</li> <li>5. Release time for assessment implementation</li> <li>6. Additional technical support for Institutional Research and Assessment Office</li> </ol>

Goals	Strategies	Indicators
2. On-going and sustainable system of full-time and part-time faculty training on assessment procedures and implementation	<p>1. Invite External Consultants to campus <b>2002-2003</b></p> <p>2. Deliver seminars and workshops – Assessment Committee <b>Fall 2002</b></p>	<p>1. Number of training and level of attendance at training evaluation sessions as well as analysis of forms.</p> <p>2. Integrated line-items in budget for faculty training, workshops, etc</p>
3 To have a University-Wide Assessment Culture including students	<p>1. Statement of Value of Assessment on promotional materials and websites <b>2002-</b></p> <p>2.Explanation of the Assessment program and the role of students at the Orientation of New Students</p> <p>3. Discussion of purpose of and implementation of Assessment Day, Week or Month. <b>2002-2004</b></p> <p>4. Periodic articles on assessment in all internal communications newsletters, newspaper and magazines <b>2002-</b></p> <p>5. Involve students on committees</p> <p>6. Include a description of the Assessment program in the Orientation for new faculty (full-time and part-time) <b>2002-</b></p> <p>7. Identify and Develop materials in best practices of teaching and learning and assessment <b>2002-</b></p>	<p>1. A working/functioning assessment process for each academic program</p> <p>2. Assessment Day, Week or Month implemented</p> <p>3. Ability to gauge results of assessment day, week or month (assessment of assessment)</p> <p>4. 80% of full-time faculty involvement</p> <p>5. Student and Part-time faculty involvement</p> <p>6. Materials developed</p> <p>7. Involvement of Student Affairs and other offices of the university</p>



## Writing Criteria

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
	<b>Exemplary</b>	<b>Proficient</b>	<b>Marginal</b>	<b>Unacceptable</b>
<b><u>Mechanics</u></b> Punctuation and Grammar	Is free of errors in grammar, punctuation, word choice, spelling and format	There are few minimal errors in grammar, punctuation, word choice, spelling and format	The writing has numerous errors in grammar, punctuation, word choice, spelling, and format and distracts the reader	Errors in grammar, punctuation, word choice, spelling, and format are so numerous that they obscure the meaning of the passage. The reader is confused and stops reading
<b><u>Style</u></b> Effective beginning Effective Ending Unified Paragraphs Topic Sentences Effective transitions	<p>The paper begins, flows, and ends effectively. The introduction, body and conclusion of the paper are sound.</p> <p>The paper is well organized and unified with ideas and sentences that relate to the main topic. The ideas are arranged logically to support the thesis</p> <p>Uses appropriate, direct language: the writing is compelling; the sentences are well phrased and varied in length and structure. Paragraphs are well-structured, excellent use of headings, organization and flow.</p>	<p>The paper begins, flows and ends effectively. The introduction, body and conclusion of the paper are adequate.</p> <p>The paper is well organized and unified with sentences that relate to the main topic. The ideas are arranged logically to support the thesis. Paragraphs are well-structured, excellent use of headings, organization and flow.</p> <p>The sentences are well phrased and varied in length and structure. There are occasional violations in the writing, but they do not represent a major distraction or obscure meaning.</p>	<p>Has partial or inadequate introduction and conclusion</p> <p>The writing is not organized logically. Ideas fail to make sense and are not expressed clearly. Reader can figure out what writer probably intends but may not be motivated to do so.</p> <p>Some sentences are awkwardly constructed, and represent an occasional distraction for the reader. Paragraphs are unstructured, headings are missing, lacks general organization and flow.</p>	<p>The paper has an inadequate introduction and conclusion.</p> <p>The writing is not arranged logically. Frequently, ideas fail to make sense and are not expressed clearly. Reader cannot identify a line of reasoning.</p> <p>Errors in sentence structure are frequent enough to represent a major distraction to the reader. Paragraphs are unstructured, headings are missing, lacks general organization and flow.</p>

<p><b><u>Content</u></b>          Completes Assignment          Provides sufficient support          Expresses Purpose (thesis)          Defines audience          Provides insight</p>	<p>Responds fully to the assignment; information clearly and effectively supports a central purpose or thesis and displays a thoughtful, in-depth analysis of a sufficiently limited topic. The reader gains insights.</p> <p>The paper is directed towards and meets the needs of a defined audience (is persuasive, argumentative or informational)</p> <p>Provides compelling supporting arguments, evidence, examples and details. The use of supporting detail is embedded in a context of discussion.</p>	<p>Responds in a competent manner to the assignment: information provides firm support for a central purpose or thesis and displays evidence of a basic analysis of a sufficient limited topic. Demonstrates overall competency. Shows some originality, creativity, or genuine engagement with issues at hand.</p> <p>Is directed towards and meets the needs of a defined audience (is persuasive, argumentative or informational).</p> <p>Provides adequate supporting arguments, evidence, examples and details. The use of supporting detail is embedded in a context of discussion.</p>	<p>Responds adequately to the assignment. Information supports thesis at times. Analysis is basic or general. The purpose is not always clear. Completes rather than engages in the assignment.</p> <p>The rhetorical position of the paper (either persuasive, argumentative or informational) is not clear.</p> <p>Does not provide adequate supporting arguments, evidence, examples and details.</p>	<p>The paper does not adequately respond to the assignment. The paper does not successfully identify thesis. Analysis is vague or not evident. The paper has no rhetorical position.</p> <p>The paper does not provide adequate supporting arguments, evidence, examples and details. Paragraphs may “string together” quotations without a context of discussion.</p>
<p><b><u>Format</u></b>          Correctly acknowledges sources          Follows typescript specifications</p>	<p>Correctly acknowledges and documents sources in MLA style in text citations and works cited pages.</p>	<p>Correctly acknowledges and documents sources in MLA style in-text citations and works cited pages.</p>	<p>Incorrectly or partially acknowledges and documents sources in MLA style in-text citations and works cited pages. Although occasional references are provided, the writer relies on unsubstantiated statements. The reader is confused about the source of ideas.</p>	<p>Incorrectly or partially acknowledges and documents sources in MLA style in-text citations and works cited pages. Although occasional references are provided, the writer relies on unsubstantiated statements. The reader is confused about the source of ideas.</p>

## **Art and Design Department Objectives and Outcomes of Assessment Summary 2001/2002**

### **1. Program Educational Objectives, Outcomes and Accreditation Status**

The Department of Art and Design offers two degrees: The Bachelor of Interior Architecture and the Bachelor of Fine Arts in Imaging. The Educational Objectives and Outcomes for the Bachelor of Interior Architecture are established by the Foundation for Interior Design Education Research (FIDER). There are twelve Professional Standards for this program. The Bachelor of Interior Architecture is accredited by both FIDER and the National Association of Schools of Art and Design (NASAD). The Educational Objectives for the Bachelor of Fine Arts in Imaging are established by NASAD. The Bachelor of Fine Arts in Imaging is accredited by NASAD.

### **2. Assessment Activities and Assessment Results**

During the academic year of 2000-2001 NASAD visited Lawrence Tech to assess the programs in the Art and Design Department. FIDER visited during the 2001/2002 academic year, and their report was received by LTU in July of 2002.

The assessment of the programs offered by the Department of Art and Design uses the following audiences: students, alumni, faculty, employers, and external reviewers.

- During 2000 through 2002, the department prepared for both the FIDER and the NASAD accreditation process. In particular, the Department collected student work to be assessed by the accreditation teams. Both programs received the maximum accreditation period from both institutions (6 years). Although the great majority of the remarks were very positive in both reviews, one of the concerns expressed by FIDER was that our students develop very nicely through the third year of the program, but the observation of the work done in the senior year does not seem very different than the work observed for junior students. It seemed to the team that at the junior level the students reached a plateau in their development. Action is being taken by the program to increase the level of complexity in senior level studios and several other concerns are being met through this revision.
- Other concerns by both groups include issues related to inadequate facilities for the junior and senior level courses in both programs and the lack of display space for student work. Requests for updating studio and support spaces for these programs have been made annually by the Department Chairman.

### **3. Action Plan for 2002-2003**

For Interior Architecture:

- a. Review of the FIDER assessment of the program goals and Objectives.
- b. Relate the assessment activities to the University Strategic and the College Strategic Plans
- c. Gather data in the following :
  1. Student Assessment of faculty teaching
  2. Student Assessment of courses and curriculum
  3. Internship Employer assessment of students
  4. Graduating Students survey
  5. Faculty Assessment of curriculum and courses
  6. Analysis of the Noel-Levitz student satisfaction inventory

In the fall the department will analyze the data to produce new changes in the curriculum or program.

Bachelor of Fine Arts in Imaging

1. Review the NASAD assessment of the curriculum and course goals and objectives.
2. Integrate the University and the College Strategic plan into the revision of the curriculum and objectives
3. Gather Data – feedback and input from faculty
4. Input from Advisory Board
5. Course student evaluation feedback
6. Analyze the data

The emphasis of the Bachelor of Fine Arts in Imaging needs to change to meet new trends in industry. A revision of the curriculum of the program is in progress. There will be two concentrations in the program: Graphic Design and Digital Imaging.

In the fall the department's faculty will revise and create new curriculum to be presented to the advisory board for review. The timeline for the implementation of the revised program will be Fall 2003.

## **Interior Architecture Professional Standards**

### **1. Curriculum Structure**

The curriculum is structured to facilitate and advance students learning.

### **2. Professional Values**

The program leads students to develop the attitudes, traits, and values of professional responsibility, accountability, and effectiveness.

### **3. Design Fundamentals**

Students have the foundation in the fundamentals of art and design, theories of design and human behavior, and discipline-related history.

### **4. Interior Design**

Students understand and apply the *knowledge, skills*, processes, and theories of interior design.

### **5. Communication**

Students communicate effectively.

### **6. Building Systems and Interior Materials**

Students design in the context of building systems. Students use appropriate materials and Products.

### **7. Regulations**

Students apply the laws, codes, regulations, standards, and practices that protect the health, safety, and welfare of the public.

### **8. Business and Professional Practice**

Students have a foundation in business and professional practice.

## **Faculty, Facilities, Administration, and Assessment Standards 9-12**

### **9. Faculty**

Faculty members and other instructional personnel are qualified and adequate in number to implement program objectives.

### **10. Facilities**

Program facilities and resources provide an environment to stimulate thought, motivate students, and promote the exchange of ideas.

### **11. Administration**

The administration of the program is clearly defined, provides appropriate program leadership, and supports the program. The program demonstrates accountability to the public through its published documents.

### **12. Assessment**

Systematic and comprehensive assessment methods contribute to the program's ongoing development and improvement.

# Professional Standards 2002

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## Standard 1. Curriculum Structure

The curriculum is structured to facilitate and advance student learning.

### Indicators

- a) The curriculum MUST follow a logical sequence.
- b) Course content MUST increase in degree of difficulty.
- c) Significant concepts MUST be interrelated and reinforced throughout the curriculum:
- d) Projects MUST demonstrate variety and complexity in type, size, and scope.

The teaching and learning methods MUST incorporate:

- e) the experience of team approaches to design solutions.
- f) experiences that provide interaction with multiple disciplines (for example, code specialists, engineers, architects, artists, behaviorists) representing a variety of points of view and perspectives on design problems.

The program MUST provide:

- g) interaction with practicing professionals (for example, as jurors, project critics, guest lecturers, mentors).
- h) exposure to a variety of business cultures and organizational structures (for example, for-profit, non-profit, publicly or privately held, hierarchical, flat).
- i) opportunities for design work experience (for example, internship, co-op, *shadowing*, or other experiences that familiarize students with the culture and environment of the professional studio and professional practice).

**Guidance:** Use the indicators to determine whether the standard is met. Program *inputs* and *outcomes* are evaluated to determine compliance with this standard. Analyze the curriculum, syllabi, project descriptions or briefs, handouts, and blank exams. Review student work and its progression, variety, and complexity. Do not focus on the work of individual students, but look at the student work as a whole. In other words, take a broad view and seek the preponderance of evidence. If the standard has been met, student work will include a variety of project types and the work will progress in complexity and degree of difficulty.

# Professional Standards 2002

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## Standard 3. Design Fundamentals

Students have a foundation in the fundamentals of art and design, theories of design and human behavior, and discipline-related history.

### Indicators

Student work MUST demonstrate *understanding* of design fundamentals including:

- a) design elements (for example, space, line, mass, shape, texture) and principles (for example, scale, proportion, balance, rhythm, emphasis, harmony, variety).
- b) color principles, theories, and systems (for example, additive and subtractive color; color-mixing; hue, value, and intensity; the relationship of light and color).
- c) *theories of design* and *design composition* (for example, functionalism, *Gestalt*).
- d) principles of lighting design (for example, color, quality, sources, use).

Student work MUST demonstrate *understanding* of theories of *human behavior* and interior environments:

- e) human factors (for example, *ergonomics*, *anthropometry/anthropometrics*).
- f) the relationship between *human behavior* and the built environment.

Student work MUST demonstrate *understanding* of history including:

- g) art.
- h) architecture.
- i) interiors.
- j) furnishings.

**Guidance:** Use the indicators to determine whether the standard is met. Program *inputs* and *outcomes* are evaluated to determine compliance with this standard. Review the curriculum to determine where these topics are covered. Review syllabi, project descriptions, handouts, and blank exams in conjunction with applicable student work. Do not focus on the work of individual students, but look at the student work as a whole. In other words, take a broad view and seek the preponderance of evidence. If the standard has been met, student work will demonstrate the appropriate *understanding*.

## Professional Standards 2002

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- r) Student work MUST demonstrate *competent skills* in preparing drawings, schedules, and specifications as an integrated system of contract documents, appropriate to project size and scope and sufficiently extensive to show how design solutions and interior construction are related. These could include construction/demolition plans, power plans, lighting/reflected ceiling plans, finish plans, furniture, fixtures, and equipment plans, data/voice telecommunication plans, elevations, sections, and details, interior building specifications, furniture specifications, finish schedules, door schedules, etc. (The intent of this indicator is to demonstrate how contract documents are used as an integrated system. Documents should not be scattered across the curriculum, but neither do all examples need to be evidenced in a single project.)

Student work SHOULD demonstrate design development *skills*, including:

- s) appropriate selection and application of art and accessories.
- t) the ability to design custom interior elements (for example, case goods, floor patterning, textiles).
- u) *wayfinding* methods.
- v) *graphic identification*, such as signage.

**Guidance:** Use the indicators to determine whether the standard is met. Program *inputs* and *outcomes* are evaluated to determine compliance with the standard. Review syllabi, project descriptions, handouts, and blank exams for studio and other courses in which design problems are assigned. In evaluating students' skills, do not focus on the work of individual students, but look at the student work as a whole. In other words, take a broad view and seek the preponderance of evidence. Observing and interviewing students will assist in evaluating some indicators. For example, students might be asked, What is the problem your design is solving and what led you to this solution? If the standard has been met, student work will demonstrate that the students understand and can apply the knowledge, skills, processes, and theories outlined in the indicators.



# Professional Standards 2002

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## Standard 6. Building Systems and Interior Materials

Students design within the context of building systems. Students use appropriate materials and products.

### Indicators

Students MUST demonstrate *understanding* that design solutions affect and are impacted by:

- a) construction systems and methods (for example, wood-frame, steel-frame, masonry, concrete).
  - b) power distribution systems.
  - c) mechanical systems (*HVAC*, plumbing).
  - d) energy management.
  - e) data/voice telecommunications systems.
  - f) lighting systems.
  - g) ceiling systems.
  - h) flooring systems (for example, raised, heated).
  - i) security systems.
  - j) acoustics.
  - k) interface of work station furniture systems with building systems.
- l) Student work MUST demonstrate that materials and products are appropriately selected and applied on the basis of their properties and performance criteria.
- m) Students MUST demonstrate *knowledge* of sources for materials and products.
- n) Students SHOULD demonstrate *understanding* of the concept of *sustainable resources*.

Students SHOULD demonstrate *knowledge* of:

- o) installation methods (for example, carpet, resilient flooring, wallcovering).
- p) material maintenance requirements.

**Guidance:** Use the indicators to determine whether the standard is met. Program *inputs* and *outcomes* are evaluated to determine compliance with the standard. Review the curriculum to determine where these topics are covered. Review syllabi, project descriptions, handouts, and blank exams in conjunction with applicable student work. Do not focus on the work of individual students, but look at the student work as a whole. In other words, take a broad view and seek the preponderance of evidence.

Students are not expected to produce engineering drawings, but design solutions should reflect an understanding of the impact of the systems listed in the indicator. Student interviews will assist with evaluating some indicators. For example, students might be asked, What impact did the *HVAC* system have on your design solution? or How will the contractor get power to that desk location? or How will that material perform in this installation?

If the standard is met, student work will demonstrate an understanding that interiors are designed within the context of building systems and that materials and products have been selected and applied appropriately.

Italicized words are defined in the glossary

# Professional Standards 2002

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## Standard 8. Business and Professional Practice

Students have a foundation in business and professional practice.

### Indicators

Students MUST demonstrate *understanding* of project management practices:

- a) estimating (for example, project costs, fees).
- b) budget management.
- c) coordination (managing input from various members of the project team), time management, scheduling, and contract administration.
- d) information management (collecting and disseminating relevant project information).
- e) conflict resolution (facilitating solutions to conflicting objectives).
- f) assessment processes (for example, post-occupancy evaluation, productivity, square-footage ratios).

Students MUST demonstrate *knowledge* of:

- g) certification, licensing, and/or registration requirements.
- h) professional design organizations.
- i) Students SHOULD demonstrate *understanding* of basic business computer applications (for example, word processing, spreadsheets).
- j) Students SHOULD demonstrate *knowledge* of business processes (for example, marketing, strategic planning, and accounting procedures).

**Guidance:** Use the indicators to determine whether the standard is met. Program *inputs* and *outcomes* are evaluated to determine compliance with the standard. Review the curriculum to determine where these topics are covered. Review syllabi, project descriptions, handouts, and blank exams in conjunction with applicable student work (for example, papers, project management documents, budgets). Do not focus on the work of individual students, but look at the student work as a whole. In other words, take a broad view and seek the preponderance of evidence. Student interviews will assist in evaluating some of the indicators. For example, students might be asked questions related to project management practices, budgets, or schedules. If the standard has been met, students will demonstrate that they have a foundation in business and professional practice.

## Professional Standards 2002

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### Standard 10. Facilities

Program facilities and resources provide an environment to stimulate thought, motivate students, and promote the exchange of ideas.

#### Indicators

- a) Instructional facilities and workspaces support program objectives and course goals.
- b) Program objectives and course goals are supported by the appropriate equipment (for example, computers, printers, plotters, projectors, monitors/VCRs).
- c) Spaces are available for collaborative activities, such as exhibitions, critique, display, and working in teams.

Students have convenient access to a comprehensive and current range of:

- d) information about interior design and relevant disciplines (for example, bound volumes, periodicals, microfilm, video, slides, electronic).
- e) product information (bound, electronic, or on-line) and samples.

*Faculty members* and other *instructional personnel* have:

- f) facilities and equipment for course preparation, project evaluation, administrative activities, and/or conferences.
- g) sufficient technical and/or clerical support.

**Guidance:** Use the indicators to determine whether the standard is met. Tour the studios and support facilities and evaluate the resources. Interview students and faculty. If the standard has been met, the facilities and resources provide an environment that stimulates thought, motivates students, and promotes the exchange of ideas.

## Professional Standards 2002

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### Standard 12. Assessment

*Systematic and comprehensive assessment methods* contribute to the program's ongoing development and improvement.

#### Indicators

- a) The program uses input from various groups (for example, enrolled students, faculty members, employers, alumni, Advisory Board, local design organizations) in developing and implementing strategies for improvement.
- b) The program regularly monitors and evaluates professional placement of alumni.

**Guidance:** Use the indicators to determine whether the standard is met. Review *assessment methods* and results. With the indicators in mind, meet with students, faculty, alumni, employers, and members of the community. **If the standard is met, the program will demonstrate that *assessment methods* are used in program development.**

# **Architecture Department Standards and Outcomes Assessment Summary 2001 - 2002**

## **1. Program Educational Goals, Outcomes, Standards and Accreditation Status**

The National Architectural Accrediting Board (NAAB) accredits the College of Architecture and Design at Lawrence Technological University. The National Architectural Accrediting Board established in 1940 is the sole agency authorized to accredit U.S. professional degree programs in architecture. Because most state registration boards in the United States require any applicant for licensure to have graduated from a NAAB accredited program, obtaining such a degree is an essential aspect of preparing for the professional practice of architecture. The NAAB intends to establish performance criteria that assist programs in preparing students for the broad requirements of the profession, while also encouraging educational practices suited to the circumstances of particular programs. The College of Architecture at Lawrence Technological University adopts the 37 criteria set forth by NAAB as a basis of assessing the program.

Goals/Outcomes/Standards of the program are assessed based on the NAAB accreditation student performance criteria. NAAB, the chief governing accreditation agency, require that all 37 performance criteria must be met in the various core curriculum courses leading to the Professional Architecture Degree. NAAB criteria are applied across the broad spectrum of undergraduate and graduate courses that lead to the professional degree.

Professional Architecture Program Evaluation: Undergraduate and Graduate

All courses must demonstrate that they meet both the board objectives of the course as well as the specific 37 NAAB Accreditation Students Performance Goals (Criteria) assigned to the courses. According to NAAB guidelines, each core curriculum course in the course description must identify appropriate NAAB Student Performance Goals (Criteria) that are applicable. Of the 37 NAAB goals, typically, anywhere from 1-5 goals will apply to any one course.

Outcome (general):

Students in all accredited core courses of the Architecture Program will produce successful outcomes (i.e. studio design, written papers, oral presentations, tests, ...etc.) that meet the NAAB Accreditation Goals assigned to the specific course.

Standard:

At least eighty percent of participating students in course (course sequence or semester sequence) will not only obtain a "good" or better on their coursework, but will also show evidence of meeting the specific NAAB Accreditation Goals for the course.

## **2. Assessment Activities and Assessment Results**

### **(a) Assessment Standards**

For the purposes of accreditation, graduating students must demonstrate either awareness, understanding, or ability in the following areas:

1. **Verbal and Writing Skills**  
Ability to speak and write effectively on subject matter contained in the professional curriculum.
2. **Graphic Skills**  
Ability to employ appropriate representational media, including computer technology, to convey essential formal elements at each stage of the programming and design process.
3. **Research Skills**  
Ability to employ basic methods of data collection and analysis to inform all aspects of the programming and design process.
4. **Critical Thinking Skills**  
Ability to make a comprehensive analysis and evaluation of a building, building complex, or urban space.
5. **Fundamental Design Skills**  
Ability to apply basic organized, spatial, structural, and constructional principles to the conception and development of interior and exterior spaces, building elements, and components.
6. **Collaborative Skills**  
Ability to identify and assume divergent roles that maximize individual talents, and to cooperate with other students when working as members of a design team and in other settings.
7. **Human Behavior**  
Awareness of the theories and methods of inquiry that seek to clarify the relationships between human behavior and the physical environment.
8. **Human Diversity**  
Awareness of the diversity of needs, values, behavioral norms, and social and spatial patterns that characterize different cultures, and implications of this diversity for the societal roles and responsibilities of architecture.

9. Use of Precedents  
Ability to provide a coherent rationale for the programmatic and formal precedents employed in the conceptualization and development of architecture and urban design projects.
10. Western Traditions  
Understanding of the Western architectural canons and traditions in architecture, landscape, and urban design, as well as the climatic, technological, socioeconomic, and other cultural factors, that have shaped and sustained them.
11. Non-Western Traditions  
Awareness of parallel and divergent canons and traditions of architecture and urban design in the non-Western world.
12. National and Regional Traditions  
Understanding of the national traditions and the local regional heritage in architecture, landscape, and urban design, including vernacular traditions.
13. Environmental Conservation  
Understanding of the basic principles of ecology and architects' responsibilities with respect to environmental and resource conservation in architecture and urban design.
14. Accessibility  
Ability to design both site and building to accommodate individuals with varying physical abilities.
15. Site Conditions  
Ability to respond to natural and built site characteristics in the development of a program and design of a project.
16. Formal Ordering Systems  
Understanding of the fundamentals of visual perception and the principles and systems of order that inform two-and-three dimensional design, architectural composition, and urban design.
17. Structural Systems  
Understanding of the principles of structural behavior in withstanding gravity and lateral forces, and the evolution, range, and appropriate applications of contemporary structural systems.
18. Environmental Systems  
Understanding of the basic principles that inform the design of environmental systems, including acoustics, lighting and climate modification systems, and energy use.
19. Life-Safety Systems

Understanding of the basic principles that inform the design and selection of life-safety systems in buildings and other subsystems.

20. Building Envelope Systems

Understanding of the basic principles that inform the design of building envelope systems.

21. Building Service Systems

Understanding of the basic principles that inform the design of building service systems, including plumbing, electrical, vertical transportation, communication, security, and fire protection systems.

22. Building Systems Integration

Ability to Assess, select, and integrate structural systems, environmental systems, life-safety systems, building envelope systems, and building service systems into building design.

23. Legal Responsibilities

Understanding of architects' legal responsibilities with respect to public health, safety, and welfare; property rights; zoning and subdivision ordinance; building codes; accessibility and other factors affecting building design, construction, and architecture practice.

24. Building Code Compliance

Understanding of the codes, regulations, and standards applicable to a given site and building design, including occupancy classification, allowable building heights and areas, allowable construction types, separation requirements, occupancy requirements, means of egress, fire protection, and structure.

25. Building Materials and Assemblies

Understanding of the principles, conventions, standards, applications, and restrictions pertaining to the manufacture and use of construction materials, components, and assemblies.

26. Building Economics and Cost Control

Awareness of the fundamentals of development financing, building economics, and construction cost control within the framework of a design project.

27. Detailed Design Development

Ability to assess, select, configure, and detail as an integral part of the design appropriate combinations of building materials, components, and assemblies to satisfy the requirements of building programs.

28. Technical Documentation

Ability to make technically precise descriptions and documentation of a proposed design for purposes of review and construction.

29. Comprehensive Design

Ability to produce an architecture project informed by a comprehensive program, from schematic design through the detailed development of programmatic spaces, structural and



environmental systems, life-safety provisions, wall sections, and building assemblies, as may be appropriate; and to assess the completed project with respect to the program's design criteria.

30. Program Preparation

Ability to assemble a comprehensive program for an architecture project, including an assessment of client and user needs, a critical review of appropriate precedents, an inventory of space and equipment requirements, an analysis of site conditions, a review of the relevant laws and standards and an assessment of their implications for the project, and a definition of site selection and design assessment criteria.

31. The Legal Context of Architecture Practice

Awareness of the evolving legal context within which architects practice, and of the laws pertaining to professional registration, professional service contracts, and the formation of design forms and related legal entities.

32. Practice Organization and Management

Awareness of the basic principles of office organization, business planning, marketing, negotiation, financial management, and leadership, as they apply to the practice of architecture.

33. Contracts and Documentation

Awareness of the different methods of project delivery, the corresponding forms of service contracts, and the types of documentation required to render component and responsible professional service.

34. Professional Internship

Understanding of the role of internship in professional development, and the reciprocal rights and responsibilities of interns and employers.

35. Architects' Leadership Role

Awareness of architects' leadership roles from project inception, design, and design development to contract administration, including the selection and coordination of allied disciplines, post-occupancy evaluation, and facility management.

36. The Context of Architecture

Understanding of the shifts which occur and have occurred in the social, political, technological, ecological, and economic factors that shape the practice of architecture.

37. Ethics and Professional Judgement

Awareness of the ethical issues involved in the formation of professional judgements in architecture design and practice.

**(b) Assessment Activities and Assessment Results**

During the academic year of 2001 – 2002, the National Architecture Accrediting Board (NAAB) visited Lawrence Technological University to assess the professional architecture program in the college of Architecture and Design. As a result, the program was formally granted a six-year term of accreditation. The accreditation term is effective January 1, 2002. The program is scheduled for its next accreditation visit in 2008.

The assessment of the Architecture program offered by the College of Architecture and Design uses the following audiences: students, alumni, faculty and employers.

The final report of the NAAB visiting team commended the university's technological enhancements and its initiatives to provide every student with a notebook computer as an asset to the college and the student's educational experience. It also commended the university for its commitment to and the support of the college with the building of the University Technology and Learning Center, which houses a significant portion of the Architecture program. A strong collegial and supportive relationship was observed between the full-time and adjunct faculty members. The visiting team was impressed with the quality of the college's distinguished alumni and their continued support for the program. Progress since the last visit was noted in different criterions, along with confirmation of criteria well met in the following:

- a. Graphic Skills
- b. Research Skills
- c. Collaborative Skills
- d. Use of Precedents
- e. Site Conditions
- f. Technical Communication

NAAB noted that 37 criteria were met except criteria #11, the teaching of Non-Western Traditions. However, NAAB qualified their comment by noting the untimely passing of the history professor.

Annual Reports are due by June 1 and must include a response to each condition identified as not met and to each cause of concern listed in the Visiting Team Report. Report must include also changes that have been made or may be made in the accredited program, and the two-page statistical report. If an acceptable Annual Report is not submitted to the NAAB by the time of its Fall Board meeting, the NAAB may consider advancing the schedule for the program's next accreditation sequence.

### **3. Action Plan for 2002 – 2003**

#### **Architecture Assessment Committee**

Establish architecture assessment committee (established Fall term 2002). Members include Joongsub Kim (chair), Ed Orlowski, and Dale Gyure.

#### **Assessment Plan**

Two or more assessment goals will be assessed every semester. Assessment goals will be aligned with the NAAB 37 student performance criteria.

- Review of the NAAB 37 criteria (Fall 2002)
- Review of the current curriculum (Fall 2002; working with curriculum committee)
- Determine a yearly schedule as to which goals and which courses are assessed every semester for the next 6 years (Fall 2002; ongoing)
- Faculty questionnaire survey of courses on writing (Fall 2002)
- Faculty questionnaire survey of courses on oral communications (Fall 2002)
- Plan for Spring term 2003; IDS 2 studio (sophomore) is to be assessed (Fall 2002; working with IDS 2 coordinator; plan to be completed mid January)
- Plan for Fall term 2003; IDS 1 studio (sophomore) is to be assessed (Fall 2002; working with IDS 1 coordinator; plan to be completed May 2003)

For each semester, for every selected goal (i.e., performance criterion), outcomes, objectives and assessment implementation strategies need to be developed.

The results of the assessment activities are to be documented at the end of each semester.

# **Humanities, Social Sciences and Communication Department Objectives and Outcomes Assessment Summary 2001-2002**

## **1. Program Educational Objectives, Outcomes and Accreditation Status**

The Department of Humanities, Social Sciences and Communication developed the Educational Objectives and Outcomes for the Bachelor of Science in Humanities and for the Bachelor of Science in Business Management and Administration programs. The Bachelor of Science and the Master of Science in Technical Communications did not develop the Educational Objectives and Outcomes. A new director for the Technical Communications program will start in August 2002 and in the Fall of 2003 these objectives and outcomes will be developed.

There are no professional accreditation for any of the programs offered by the department. The department is accredited by the Higher Learning Commission of North Central Association as part of the university overall accreditation.

## **2. Assessment Activities and Assessment Results**

The Department of Humanities, Social Science and Communication has a major role in the assessment of the general education requirements and the Core Curriculum. Currently the department's assessment effort is on the assessment of writing skills of students through the first two years of college.

### **Fall 2001**

Dr. Gonzalo Munevar and Dr. Philip Vogt reviewed a random sample of A,B and C papers from students registered in Foundations of the American Experience and Development of the American Experience. The conclusions of these revisions was that "junior" adjunct faculty needs mentoring as they start to teach to ensure that they teach these course to the expectations of the department, including using strategies that promote active learning in the classroom.

Dr. Munavar and Dr. Vogt observed classes of the same courses and met with faculty when needed to discuss strategies that promote discussion and active learning among students in the classroom.

### **Spring 2002**

Dr. Melinda Weinstein collected a random samples of A, B and C student essays from English Composition, World Masterpieces I, and World Masterpieces II. The conclusion of this revision was that the standards of grading writing were not uniform among the instructors. Dr. Weinstein drafted grading criteria for grading writing and presented it to the department for discussion. The criteria will be used by the Fundamentals of English,

University Composition, English Composition and World Masterpieces I and World Masterpieces II courses in the Fall 2003

Dr. Weinstein, Dr. Betty Stover and Prof. Barry Knister visited the classes of the new adjunct instructors and found their level of teaching satisfactory.

### **3. Action Plan for 2002-2003**

The English faculty of the department of Humanities, Social Sciences and Communication will revise the writing standards for implementation in the Spring 2003 semester.

Dr. Weinstein plans to meet with all faculty teaching the developmental English courses and the Core Curriculum English and literature courses to:

1. Introduce a learner-centered methodology in these courses
2. Discuss the standards developed for changes and implementation in the Fall 2002
3. Collect two-A, two-B, and two-C papers for each section of each one of these courses to see if the implementation of the grading standards helped to achieve uniformity in the grading throughout the courses.
4. During the Fall semester the benchmarking mechanics for student achievement will be defined by the instructors teaching these courses.

The Technical Communications faculty will develop the Educational Objectives and Outcomes for the Bachelor of Science in Technical Communications and the Master of Science of technical Communications.

Learning Outcomes  
Degree in Humanities

Draft #1  
June 2002

Humanities majors will possess the problem-solving and critical judgment skills to be competent citizens in an ever-increasing technological society.

Humanities majors will be able to compete successfully in graduate school, or in those areas of the work place where humanities graduates are sought.

Humanities majors will be able to comprehend and analyze orally and in writing a global and societal context.

Humanities majors will be able to produce effective oral, graphic and written communication.

Humanities majors will be able to conduct original research. They will be able to gather, analyze and interpret data from print, electronic and primary sources.

Humanities majors will be able to function as part of a multi-disciplinary team.

Humanities will recognize the need for, and ability to engage in life-long learning.

## **Goals and Objectives For the Business Management Program**

All graduates of the Bachelor of Science in Business Management must meet the undergraduate General Education Requirements as identified by Lawrence Technological University in the six basic statements of the strategic plan. In addition, graduates with the degree will be able to demonstrate the following:

- Advanced knowledge of the field of business management
- Expertise in applying knowledge in various business disciplines
- Leadership skills (consensus building, decision-making, team-building ability to take risks, etc.)
- Ability to work in teams
- Effective verbal, written and visual technical communications skills
- Creative, critical thinking and problem-solving skills
- General knowledge of mathematics and science
- Entrepreneurial characteristics and skills
- Commitment to contributing to the community and society

# **Mathematics and Computer Science Department**

## **Objectives and Outcomes Assessment**

### **Summary 2001-2002**

#### **1. Program Educational Objectives, Outcomes, and Accreditation Status**

The Department of Mathematics/Computer Science developed the Educational Objectives and Outcomes for the Bachelor of Science in Computer Science, Bachelor of Science of Mathematics/Computer Science and Bachelor of Science in Mathematics programs. The faculty did not develop educational goals for the Master of Science in Computer Science. There is no professional accreditation for any of the programs offered by the department. The department is accredited by the Higher Learning Commission of North Central Association as part of the university overall accreditation.

#### **2. Assessment Activities and Assessment Results**

##### **a) Assessment Goals**

The assessment goals for the department in the 2001/2002 academic year were:

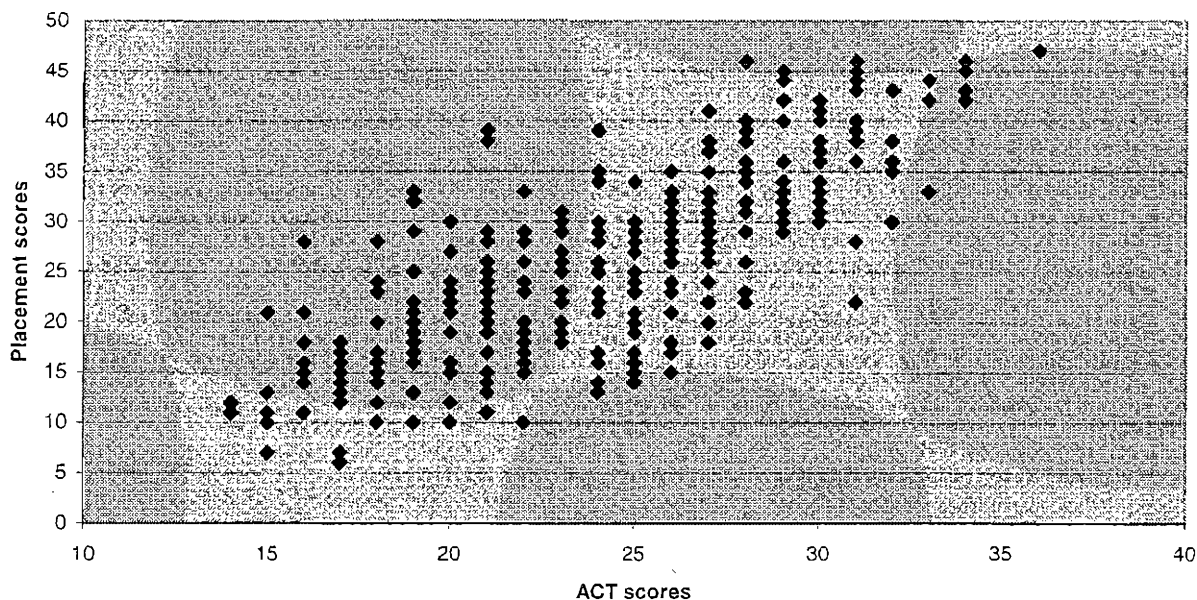
1. Find the correlation between the placement test results and the ACT results for freshmen students that entered LTU in the Fall 2001.
2. Determine if there is a correlation between mathematics grades and placement test results for the students entering their freshmen year in the Fall 2001.
3. Monitoring of mathematics courses success rate and correlation with previous years.
4. Determine if there is a correlation between course success rates and pre-requisites.

##### **b) Assessment Results**

1. Correlation between placement test results and ACT scores for Fall 2001: For entering freshman in the fall of 2001 the mathematics placement test does not correlate well with ACT. The total population of incoming freshmen with both ACT and regular mathematics placement (not mathematics B) scores was used in the analysis. The correlation coefficient was found to be 0.78, which indicates a relatively poor correlation. Plotting the ACT scores against the placement scores shows that the poor correlation is not due to any skew anomalies.



ACT vs Placement Entry Fall 01



**Result:** This lead to the conclusion that the ACT test scores cannot be used as a replacement for the current placement exam.

2. First year course correlated with placement assessment: The data collection required to perform the correlation between the placement scores and grades in the first course has not been done.

A faculty member in the department has been given the assignment of insuring progress is made in assessing the department's programs.

3. Monitoring of course success rate correlation with previous years: Reevaluating the course success rate statistic has lead to the conclusion that it has no validity in assessing student outcomes. While monitoring this statistic may be useful for administration purposes, there is little useful information concerning the program accomplishments in the success rate over time. For the administrator, if it goes up, that is a good thing. But from a student outcome perspective, there are many reasons why it might go up – some good and some not so good. Time would be much better spent collecting different results.

**Result:** Do not consider this statistic as part of student outcome assessment.

4. Correlation of course success rate and pre-requisites: It took some time to refine what was meant. It was finally decided to collect two numbers – 1. of the students that placed into a course what percentage succeeded (C or better) 2. of the students that took a course at a level above where they placed what percentage succeeded. The anticipated result is that these percentages will clearly show that students should not take the course above

where they placed. (i.e. the percentage in 1. will be much higher than the number in 2.)  
If that is not the case, then additional data analysis will be required.

**Result:** The measure has been defined. The data needs to be collected.

### **3. Action Plan for 2002-2003**

The Mathematics and Computer Science Department will identify at least one outcome for each program and develop a method for assessing those outcomes. When the timing is appropriate data will be collected and analyzed.

**Department of Mathematics**  
**Goals from the NCA visit in 1995**  
**Transcribed January 18, 2002**

1. All Mathematics/Computer Science majors in the department will possess problem-solving and modeling skills, and be able to synthesize and analyze information in abstract as well as in applied contexts.
2. All Mathematics/Computer Science majors will be able to effectively communicate mathematical and algorithmic ideas both orally and in written form.
3. All Mathematics/Computer Science majors will be able to learn new technologies.
4. All Mathematics/Computer Science majors will be able to 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.
5. All Mathematics/Computer Science majors will learn to identify the knowns, unknowns, and principles needed to solve a problem. They will be able to obtain and verify solutions using symbolic, graphical, and numerical techniques, and computer simulation, as needed.
6. All Mathematics/Computer Science majors will have a complete understanding of a computer language (syntax, semantics, terminology), be able to logically develop problem-solving algorithms, determine speed and memory requirements, and develop and debug complex code.

**Mathematics Core Goals  
derived from  
Goals from the NCA visit in 1995  
as Transcribed January 18, 2002  
(draft)**

1. All students will be placed in a mathematics course corresponding to their demonstrated skill level.
2. All students will possess mathematical problem-solving skills applicable to living in global society.
3. All students will be able to synthesize and analyze information in applied contexts.
4. All students will be able to communicate ideas using mathematics both orally and in written form.
5. All students will be able to learn new technologies.
6. All students will be able to apply mathematical principles within their chosen discipline and as responsible citizens and effective professionals.
7. All students will be able to use and understand the use of symbolic and graphical techniques within their discipline.

**Mathematics Goals**  
**Derived from**  
**Goals from the NCA visit in 1995**  
**As Transcribed January 18, 2002**

1. All Mathematics majors will possess problem-solving and modeling skills, and be able to synthesize and analyze information in abstract as well as in applied contexts.
2. All Mathematics majors will be able to effectively communicate mathematical ideas both orally and in written form.
3. All Mathematics majors will be able to learn new technologies.
4. All Mathematics majors will be able to 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.
5. All Mathematics majors will learn to identify the knowns, unknowns, and principles needed to solve a problem. They will be able to obtain and verify solutions using symbolic, graphical, and numerical techniques, and computer simulation, as needed.

**Computer Science Goals  
derived from  
Goals from the NCA visit in 1995  
as Transcribed January 18, 2002**

1. All Computer Science majors will possess problem-solving skills, and be able to synthesize and analyze information in abstract as well as in applied contexts.
2. All Computer Science majors will be able to effectively communicate mathematical and algorithmic ideas both orally and in written form.
3. All Computer Science majors will be able to learn new technologies.
4. All Computer Science majors will be able to 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.
5. All Computer Science majors will have a complete understanding of a computer language (syntax, semantics, terminology), be able to logically develop problem-solving algorithms, determine speed and memory requirements, and develop and debug complex code.

# **Natural Sciences Department Objectives and Outcomes Assessment Summary 2001 - 2002**

## **1. Program Educational Objectives, Outcomes, and Accreditation Status**

The Department of Natural Sciences offers two programs that are accredited by outside agencies. The B.S. in Chemistry (Option 1) is certified by the American Chemical Society, but this certification does not require ongoing assessment of objectives and outcomes. The Master of Science Education program is accepted by the Michigan State Board of Education. While this acceptance is periodically renewed, it again does not require ongoing assessment of objectives and outcomes. Accordingly, the Department faculty set education objectives and outcomes based on the nature of the individual programs.

## **2. Assessment Activities and Assessment Results**

Attached are the Assessment Plans for the programs offered by the Department of Natural Sciences. Goals, Strategies, Indicators, and Timeline for the Chemistry, Physics, and Master of Science Education programs are given in the form of a matrix.

### **Chemistry and Physics:**

1. Administer ETS exit exam to all chemistry and physics graduates.

The ETS exam was administered to all chemistry and physics graduating seniors. Results were received and reviewed in Fall 2002, and alignment of the curriculum with exit exam questions is now proceeding.

2. Exit interview of graduates.

The Department Chair informally interviewed each graduating senior about our programs. This interview was followed up with a formal letter asking for more structured comments.

### **Physics:**

1. 80% of students getting B<sup>+</sup> or better in physics lab courses: PHY1181, PHY3663, PHY4781.

Only PHY3661 was taught during the 2001 – 2002 academic year. Of five students, four received grades of A or A<sup>-</sup>, while one received an “Incomplete”, so this criterion was not satisfied.

2. Successful completion of Physics Project courses (PHY4912 and PHY4922).

Of four students taking these courses, three complete them successfully and one received a grade of “Incomplete”. (This was because of circumstances at work beyond the student’s control). The experimental work has since been completed and will be reported during the Spring 2003 term).

Note that the small enrollments in these courses, as well as other advanced courses in the Chemistry and Physics programs, mean that our indicators will appropriately apply to “running averages” over time, rather than to individual years. We are now compiling year-to-year results to make this possible.

### **Master of Science Education**

No assessment activities were scheduled for the 2001 – 2002 academic year.

### **3. Action Plan for 2002 - 2003**

The action plan for the Department of Natural Sciences for 2002 – 2003 consists of those items in the “Timeline” column of the attached matrix planned for that academic year.



**Department of Natural Sciences Assessment Plan: Program-Specific Goals: Chemistry**

Goals	Strategies	Indicators	Timeline
I. Graduates will demonstrate written, oral, and visual communications skills appropriate to laboratory reports, technical writing, and public presentation of scientific information.	Ia. Laboratory reports will be evaluated using a common rubric, including standards for organization, language, and visual communication (tables and graphs).	80% "satisfactory" or "superior" performance by the senior year.	Develop rubric, fall 2002 Start in selected courses, spring 2003
	Ib. Students will write a paper as part of CHM3452 (Intermediate Inorganic); evaluation by rubric.	80% "satisfactory" or "superior" performance.	Develop rubrics, fall 2002
	Ic. Students will analyze and present a paper from the chemical literature to a panel of faculty and students as part of CHM4643 (Advanced Inorganic), CHM4723 (Advanced Organic), or CHM3623 (Polymer Chemistry); evaluation by rubric.	80% "satisfactory" or "superior" performance.	Start spring 2003
II. Graduates will demonstrate skill in analytical thinking appropriate to their discipline.	IIa. (Ic above)  IIb. Selected courses will include laboratory exercises for which no instructions will be provided. Students must plan experiments and understand results unaided.		
III. Graduates will be able to work in teams, and will have opportunities to develop leadership abilities.	IIIa. On team laboratory exercises, require recording and reporting each team member's contribution; evaluation includes criteria for effective teamwork.  IIIb. Identify team leaders in team exercises.  IIIa. Opportunities to develop leadership skills will be provided in extracurricular professional activities (ACS Student Section).		

<p>Graduates will be that have effectively prepared for their professional careers.</p>	<p>a. Courses will be selected for all courses</p> <p>IVb. Students will be surveyed at the end of the term as to whether they feel these objectives have been met.</p> <p>IVc. Exit interview of graduates.</p>	<p>80% "satisfied" or "very satisfied" with their preparation.</p> <p>80% "satisfied" or "very satisfied" with their preparation.</p>	<p>102</p> <p>Annually, start fall 2002</p> <p>Annually, start spring 2002</p>
<p>V. Graduates will demonstrate knowledge in four major division of chemistry: organic/biochemistry, inorganic chemistry, analytical chemistry, and physical chemistry.</p>	<p>Va. Mid-course departmental review of students during Junior year: selected exams and reports</p> <p>Vb. Administer ETS exit exam to all chemistry graduates.</p> <p>Vc. Departmental review of exit exam results.</p> <p>Vd. Confidential employer survey.</p> <p>Ve. Performance standards in courses numbered 2000 or higher.</p>	<p>Students making satisfactory progress; intervention where appropriate</p> <p>60% of graduates score at or above 50<sup>th</sup> percentile (two-year running average)</p> <p>Alignment of curriculum with exit exam questions; identification of weak points.</p> <p>80% "satisfied" or "very satisfied" with graduates' preparation.</p> <p>C- or better in every <i>required</i> chemistry course numbered 2000 or higher. Combined GPA of 2.5 in these courses.</p>	<p>Annually, late spring (already being done).</p> <p>Biennial at August retreat. Start fall 2002</p> <p>Develop survey, 2002-3 Start spring 2003</p> <p>(Requires catalog change)</p>

<p>VI. Graduates will demonstrate competence, appropriate to their program, in:</p> <p>Use of modern laboratory instrumentation</p> <p>Chemical synthesis and analysis</p> <p>Use of the chemical literature</p>	<p>VIa. Instrumental project in CHM4632 (Instrumental Analysis): must individually and successfully use three randomly-selected instruments. Includes analysis of unknown substances, student-synthesized materials, or natural samples.</p> <p>VIb. Further analytical competence will be demonstrated in CHM4542 (Physical Analytical Laboratory II).</p> <p>VIc. (Ib above)</p> <p>VId. Employer survey includes questions about ability in these areas.</p>	<p>100% successful completion of project; 80% on first attempt.</p> <p>Satisfactory results and laboratory reports.</p>	
<p>VII. CHM1154 (Introduction to Chemical Principles). Students will be adequately prepared for CHM1213 (University Chemistry I)</p>	<p>VIIa. Align CHM1154 final exam and CHM1213 placement assessment.</p> <p>VIIb. CHM1154 grade / CHM1213 grade correlation study.</p>	<p>80% of students with C or better in CHM1154 get C or better in CHM1213.</p>	<p>Fall 2002</p> <p>Biennial Start Fall 2002</p>

**Department of Natural Sciences Assessment Plan: Program-Specific Goals: Physics**

Goals	Strategies	Indicators	Timeline
I. Graduates will demonstrate knowledge in the following areas of Physics: Optics, Quantum Mechanics, Theoretical Mechanics, Statistical Mechanics, Thermodynamics, Relativity, Electricity & Magnetism, and Radioactivity	Ia. Administer ETS exit exam to all physics graduates.  Ib. Departmental review of exit exam results.	60% of graduates score at or above 75 <sup>th</sup> percentile (two-year running average)  Alignment of curriculum with exit exam questions; identification of weak points.	Annually, late spring (already being done).  Biannually Starts Fall 2005
II. Graduates are satisfied that all areas of Physics listed in goal (I.) above have been competently taught.	II. Exit interview of graduates by Physics Faculty. (Dan Mioduszewski to Produce a list of Questions)	80% "satisfied" or "very satisfied" with their preparation. Place results in the Physics Data base.	Annually, late spring. Start Spring 2003
III. Graduates demonstrate competence in using modern laboratory instrumentation in the physics labs.	III. Take the Physics Lab courses: - PHY1181 - Radiations and Environ. Lab - PHY3661 - Contemporary Physics Lab - PHY4781 - Optics, Lasers & Micro Lab	A separate grade will be given for use of instrumentation in these labs, which will be entered into the Physics Data Base. 80% of the students will earn a B+ or better for this.	Annually, starting in Fall 2003
IV. Graduates will demonstrate skill in analytical thinking appropriate to Physics which includes data analysis.	IV. a. All Physics Lab reports in the PHY3661 and PHY4781 courses will require an analysis section where the student are expected to due a thorough analysis includes data analysis according to rubric.  IV. b. The PHY3661 and PHY4781 courses will include laboratory exercises for which no instructions will be provided. Students must plan experiments and understand results.	Give a separate grade for the analysis and enter it in the Physics Data Base. Rubrics, based on NIST standards, will be used. 80% of the Lab reports will show a B+ or better on the analysis.  80% of the students will earn a B+ or better for the lab reports where no instructions will be given. Enter the results in the Physics Data Base.	Rubric is already used Indicator will be recorded annually. Starts Fall 2003
V. Graduates will demonstrate the ability to do independent Theoretical or	V. The student will take the Physics Project courses PHY4912 & PHY4922 where the	80% of the students will earn a B+ or better for the courses including	Annually (Already being done)

Experimental Research at the undergraduate level.	student will do a project under the direction of a faculty member.	presentations of written and oral report for each course according to guidelines.	
VI. Graduates will demonstrate an ability to use the physics literature at a level appropriate for BS physicist. (Note: This goal and strategies articulate with the University goals in Communication.)	VI. The student will include a presentation of a literature research in the written reports of the Physics Project courses PHY4912 & PHY4922. Physics 3653 will give a book or literature report.	Give a separate grade for these and enter it in the Physics Data Base. 80% of the students will earn a B+ or better. This will be assessed according to rubrics consistent with the University's goals in Communication.	Annually Starts Fall 2003
VII. PHY1154 (Introduction to Physical Principles) students will be adequately prepared for PHY2413 (University Physics 1) and PHY2213 (College Physics 1).	<p>VIIa. Align PHY1154 final exam and placement assessment into PHY2213 &amp; PHY2413.</p> <p>VIIb. PHY1154 grade / PHY2413 &amp; PHY2213 grade correlation study.</p> <p>VIIc. Give pre- and post-tests to PHY2413 &amp; PHY2213 using the "Force Concept Inventory-FCI" (a test used nationally).</p>	<p>80% of students with a C or better in PHY1154 earn a C or better in PHY2213 &amp; PHY2413.</p> <p>(Same)</p> <p>The students completing the courses will achieve a gain in correct answers for the FCI (on average) at a level comparable to those achieved nationally.</p>	<p>Starts Fall 2004</p> <p>Annual Assessment being done. Biannual report will be analyzed starting with the Fall 2004 retreat.</p>

<p>VIII. Graduates will demonstrate written, oral, and visual communications skills appropriate to laboratory reports, technical writing, and public presentation of scientific information. (This goal and strategies articulate with the University goals in Communication)</p>	<p>VIIIa. Laboratory reports in the PHY3661 and PHY4781 courses will be evaluated using a common rubric, including standards for organization, language, and visual communication (tables and graphs).</p> <p>VIIIb. The student who will take the Physics Project courses PHY4912 &amp; PHY4922 where the student will write reports and make oral presentations; evaluation by rubric</p> <p>VIIIc. Use the writing Tutors in AAC</p>	<p>A separate grade will be given for use of communications in these labs that will be entered into the Physics Data Base. 80% of the students will earn a B+ or better in the lab.</p>	<p>Rubric is already used Indicator will be recorded starting in the Fall, 2003</p> <p>Guidelines are already used. Indicator will be recorded starting in the Fall, 2003</p>
<p>X Graduates will be able to work in teams, and will have opportunities to develop leadership abilities.</p>	<p>X. a. All laboratory exercises in the PHY3661 and PHY4781 courses require recording and reporting each team member's contribution; evaluation includes criteria for effective teamwork.</p> <p>X. b. Identify team leaders in team exercises.</p> <p>X. c. We will encourage students to avail themselves of the opportunities to develop leadership skills in extracurricular activities in student organizations.</p>	<p>Check lists will be used that identify the student roles in the lab. These check lists must be included in the lab reports.</p>	<p>Starts in the Fall of 2003.</p>
<p>XI. The Physics program will be guided by national norms.</p>	<p>XI. We will see how well our program corresponds to the questions asked on the ETS exit exam.</p>	<p>XI. The material covered in the Physics Curriculum should allow the students to achieve at least a 90 percentile ranking on the test. If not, endeavor to make changes in Physics Curriculum to allow them to do so.</p>	<p>XI. Start Reviewing ETS test questions in Spring 2003. Start deciding what changes to make in Physics Curriculum in Fall 2003</p>

**Department of Natural Sciences Assessment Plan: Program-Specific Goals: Science Education**

<b>Goals</b>	<b>Strategies</b>	<b>Indicators</b>	<b>Timeline</b>
I. Teachers with a weak science background will have confidence to teach science in their own classrooms.	I. Teachers without the DX endorsement will decide to take DX test from the Michigan State Department of Education.	80% of graduates who elect to take the test will pass on their first attempt.	Graduation of teachers who require the endorsement.
II. Graduates are satisfied that all areas of science have been competently taught.	IIa. Exit interview of graduates. IIb. Students will complete the assessment tool created by Moore and Associates for the F.I.P.S.E. grant.	80% "satisfied" or "very satisfied" with their preparation.	Annual, late spring. Start Spring 2003
III. Graduates demonstrate an ability to devise and apply constructivist methods in a science classroom.	III. Graduates will complete a capstone project.	75% of final project papers to be evaluated by a panel of outside consultants and judged to be satisfactory.	Every three years
IV. Graduates demonstrate a competence in the assessment of constructivist activities and methods.	IVa. Graduates will complete a capstone project using appropriate assessment tools  IVb. Students are expected to assess one another in their presentations in classes.	75% of final project papers to be evaluated by a panel of outside consultants and judged to be satisfactory.  b. 80% of the assessments will show "satisfactory" or "superior performance" on rubrics.	a. Every three years  b. Annual Starts Fall 2003

# **Civil Engineering Department Objectives and Outcomes Assessment Summary 2001-2002**

## **1. Program Educational Objectives, Outcomes and Accreditation Status**

The Department of Civil Engineering developed and revised the Educational Objectives and the Educational Outcomes for the Bachelor of Science in Civil Engineering. The degree is accredited by ABET. ABET 2000 criteria sets forth certain measures to follow when assessing engineering education.

### **A. Assessment Tools for 2001-2002**

1. FE Exam – Use the FE Exam as an assessment tool. Since this is a nationally-normed exam, it will give an opportunity to compare LTU results with those of others in the State and Nation. The objective is to achieve results from departmental-specified areas that equal or surpass similar Michigan students.
2. Survey Alumni – A survey of graduates from the past six years. The objective is to achieve satisfaction levels of 90% and to achieve registration levels of 50% (after 6 years).
3. Interviews by Practicing Engineers (Employers and Advisory Board) – Use the Advisory Board and employers to get a measurement of the Civil Engineering students through the eyes of employers. The objective is to achieve general satisfaction level through descriptive responses by an advisory panel.
4. Exit Interviews – An interview handled between graduating seniors and the Department Chair. This year will include questions relating to the Program Objectives. The objective is to have 90% of the interviewees being satisfied or very satisfied with the program, department and faculty.
5. Survey of Students – Surveys are handled at the University level, during the Spring Semester of even-numbered years. This survey may be too broad to show assessment at specific levels of Civil Engineering. However, the objective is to achieve a 90% satisfaction level, having CE students be the most satisfied students at Lawrence Tech.
6. Evaluation of Senior Projects – Invite the Advisory Board and employers to Senior Project Day to prepare written evaluations of student teams. The objective is to achieve a general satisfaction level through descriptive responses by an advisory panel.
7. Faculty/Class Evaluations – A continuing effort from past years, the instructor in every class is evaluated for performance. The form needs development in the future. The objective is to achieve high satisfaction levels of the course and instructor.
8. Assessment of Knowledge Retention – Developed as a means to test retention from one term to the next and as preparation for subsequent courses. As a beginning to this method, Curriculum Navigation guides were created in a few courses. The objective is to achieve results that verify there is retention from term to term.



9. Adjunct Meetings – The Civil Engineering Department is responsible for ensuring that adjuncts meet departmental objectives. Meetings would give an opportunity to discuss assessment procedures with adjuncts. The objective is to provide assessment of the adjuncts and by the adjuncts.
10. Meetings with Student Groups – The group meetings provide a way for fresh, timely feedback to the department. The objective will vary, depending on the particular student meeting.

#### **B. Assessment Results for 2001-2002**

1. Program Objectives - Integration of computer applications into the curriculum needs to be reviewed for effectiveness. The expectations in Senior Design need to be better communicated to students. Otherwise, the review of Program Objectives went well.
2. Exit Interviews – The overall results were excellent. Of the eight objectives, seven received outstanding ratings. The only objective receiving less than 90% satisfaction was Objective 3 (Computer Applications). This was also the most mentioned suggestion for improvement, especially AutoCAD.
3. Senior Project Presentations - Overall, the reviews from the Advisory Panel showed that the earlier design students didn't do as well as the graduating seniors.
4. Senior Interviews – The feedback from the Advisory Panel was positive. There were strong comments about the ability of our students to communicate. Some comments about evening students not having the same sense of design or practical applications as day students. Also comments regarding the graduate program distracting attention away from the undergraduate program.
5. Focus Groups – Overall, the students were satisfied except with one of the adjunct teachers. The department chair will not rehire that instructor. The other concern was the location of the hydraulics laboratory that will be taken care of during the Summer of 2002.
6. Student Satisfaction Inventory – Overall results weren't specific enough to departmental assessment use since they were reported for all Engineering students rather than by department. Will have the SSI results recalculated only for CE students and will discuss again.
7. FE Exam – At the time of this summary, results had not yet been received by the State. Updates to this item will appear in the next assessment summary for Civil Engineering.

#### **C. Incomplete or Postponed Activities for 2001-2002**

1. Adjunct Meetings – More of an information-exchange than an evaluation of students. This has not been a very effective method of assessment. However, a meeting before Fall classes begins would give an opportunity to review the new objectives and outcomes with the adjuncts.
2. Alumni Survey – Did not want to send two alumni surveys out in one year; survey will go out in Fall 2002.
3. End of Term Commentaries – This is likely to be eliminated as an Assessment Tool. Very little usable information comes from this method.

## **2. Action Plan for 2002-2003**

1. Changes made to several of the undergraduate and graduate courses.
2. Implementation of portfolios on design and communication in the Ethics and Professional Issues class in addition to student reaction to the portfolio requirement.
3. Possible format changes to several of the new assessment procedures.
4. Constituent feedback on new Objectives and Outcomes.

## **Civil Engineering Educational Objectives**

The mission of the civil Engineering Department is to offer a program directed toward a broad, high, quality, contemporary, baccalaureate educational experience in the civil engineering discipline, in parallel with the guiding principle of the university of "Theory and Practice." The objectives of the department are to offer a program.

- designed to provide students with a strong understanding of the fundamental principles of engineering;
- where students have the ability to identify the problem, formulate and analyze engineering alternatives, and solve the problem individually as well as in a team environment;
- that prepares students to apply contemporary computer based skills for the solution of civil engineering problems;
- that prepares students to effectively communicate in a professional engineering environment;
- that stresses all aspects of professionalism including the need for professional development through life-long learning and the benefits of becoming a licensed professional engineer;
- where basic and applied research are conducted to provide improved laboratory facilities, student employment opportunities, and exposure to current faculty research.

## **Civil Engineering Outcomes**

The Civil Engineering Department at Lawrence Technological University will offer a program in which our graduates have:

- (a) an ability to apply knowledge and principles of mathematics, science, and engineering in the solution of civil engineering problems
- (b) an ability to design and conduct experiments, as well as to analyze data and interpret results
- (c) an ability to design a civil engineering system, component, or process to meet desired project needs
- (d) an ability to function on multi-disciplinary teams including participation in a senior-level design project sequence
- (e) an ability to identify, formulate, analyze, and solve engineering problems
- (f) an understanding and appreciation of all aspects of professionalism including ethical responsibility, participation in professional organizations, and service
- (g) an ability to communicate effectively developed through report writing and in-class presentations
- (h) the broad education necessary to understand the impact of engineering solutions in a global, sustainable, 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 ability to apply the fundamentals of civil engineering to the analysis of an existing project component
- (m) an understanding of the benefits of passing the FE exam and becoming a licensed professional

# Electrical and Computer Engineering Department

## Objectives and Outcomes Assessment

### Summary 2001-2002

#### 1. Program Educational Objectives, Outcomes and Accreditation Status

The Department of Electrical and Computer Engineering developed and revised the Educational Objectives and the Educational Outcomes for the Bachelor Degree of Electrical Engineering and Computer Engineering.

The department is in the process of developing the Educational Goals for the Master of Science in Electrical and Computer Engineering.

The Bachelor of Science in Electrical Engineering is accredited by ABET. The Bachelor of Computer Engineering is seeking accreditation after the first students graduate as mandated by ABET.

#### 2. Assessment Activities and Assessment Results

Assessment of student learning is done using five audiences: students, alumni, industrial advisory board, faculty and employers. In 2001/2002 the following activities took place for each audience:

##### STUDENTS –

##### a) Exit Interviews

A questionnaire to be used in graduating student exit interviews was developed. The interviews were performed by the graduating seniors' advisers.

Feedback Received: Most of the students interviewed plan to work after graduation. A few plan to go to graduate school part-time. Most students participated in team projects and prepared reports and presentations as part of the team projects. None of the students took the Fundamental or Professional Engineering Exam. The majority of the students interviewed did not take part in technical or non-technical student chapter organizations events. All students reported they had experiential work as they attended LTU. Some participated in summer internships, some in coop and others worked full-time in engineering or computer related jobs. Responses to use of different types of software varied greatly from student to student.

##### b) Course Outcomes Assessment

For each course offered in the spring 2002 semester, students rated how each one of the 14 educational outcomes were emphasized in the course. A scale of 0-3 was used (3 =strong emphasis, 2=emphasis, 1= minor emphasis, 0= no emphasis) The average of student results was compared with the professor's rating for the course.

Feedback Received: The larger discrepancies appeared in the oral and written communication areas and teamwork. For some courses large discrepancies showed also in the following areas:

- Understanding professional and ethical responsibilities
- Ability to design, test and debug systems
- Recognition of the need and ability of engaging in lifelong learning.

## ALUMNI

**A survey was sent to alumni who graduated in the last five years.**

### Feedback Received (Summary)

3% of the respondents are licensed engineers

Responses related to preparation for their professional career. In this summary it is only documented the percentage of respondents that gave EXCELLENT ratings. Complete results in appendix)

	Excellent Rating
Preparation for professional career	34%
Computer hardware skills	50%
Computer software skills	55%
Engineering skills	56%
Laboratory skills	49%
Mathematics	64%
Problem solving skills	59%
Teamwork skills	37%
Interpersonal skills	16%
Oral communication skills	23%
Written communication skills	32%
Humanities (excluding literature)	17%
Literature	16%

There were a few questions with an overall impression in a scale of 1-3.

( 1-strong, 3-weak )

Overall rating for the ECE department	88% of respondents gave rating of 2
Job Placement services	18% of respondents gave rating of 1 44% of respondents gave rating of 2 38% of respondents gave rating of 3
Coop Availability	12% of respondents gave rating of 1 35% of respondents gave rating of 2 53% of respondents gave rating of 3
Lab Experience	25% of respondents gave rating of 1 72% of respondents gave rating of 2 3% of respondents gave rating of 3

The comments section of the survey could be grouped in the following categories:

- Improvement and updating of laboratory equipment and facilities.
- Suggestions for changes or additions to the curriculum, in particular several comments were on adding more real world examples and applications to the course material.

- University wide policies and concerns: tuition cost and improvement of placement services were singled out several times
- Faculty: different comments some very positive, others negative with suggestions for improvement.

#### INDUSTRIAL ADVISORY BOARD

**The ECE department has an industrial advisory board. An advisory Board meeting took place on December 4, 2001.** The minutes of the meeting are in appendix.

#### FACULTY

**Full-time faculty was asked to rate the contents of the Electrical Engineering and the Computer Engineering programs on the 12 Outcomes.** A scale of 0-3 (0=no emphasis, 1=minor emphasis, 2=emphasis, 3= major emphasis) was used. In addition faculty made suggestions for improvements of each one of the programs.

##### Feedback received:

The ratings for the 12 desired ABET outcomes are in appendix. Suggestions from individual faculty are: more emphasis on application of course material in solving engineering problems, in oral and written presentations, teamwork and designing of experiments. Increase in the computational resources. Higher emphasis on contemporary technical issues. Continued emphasis on communication, design, analysis, problem solving and construction of hardware and software. Additional team presentations on the ethical issue of cell phones.

#### EMPLOYERS

**A survey to send to employers was developed.**

### **3. Action Plan for 2002-2003**

The following changes were implemented based on the assessment results:

- Two additional outcomes were added outcomes to more properly reflect the departments mission:
  - 13. An ability to design, test, and debug systems consisting of both software and hardware, and
  - 14. An ability to design and develop programs and hardware for microcontrollers and real time computer systems and the ability to do computer program development.
- Mike Cloud- Antennas- Added voice of experience to syllabi [Len Moriconi] to respond to concerns of students related to application of material in the real world.
- Kelvin Shih- Added real world item of pricing content to Electronics lab based on results of student assessment.
- Phil Vogt- Foundations courses help us meet objectives 7-9.
- A new member for the industrial advisory board will be added: Steve Howell, the department chair of Mechanical Engineering.

- The whole department added Entrepreneurial content to all senior projects.
- The whole department added a Stretch Goal for all faculty- include at least one 'entrepreneurial' senior project in the courses they teach.
- Utilize proposed Writing Rubric, developed by Melinda Weinstein in the ECE courses. ABET feedback indicated that we should incorporate writing skills criteria.



## **Electrical Engineering Educational Objectives**

To graduate electrical engineering students who:

- (1) Possess the problem-solving and critical judgment skills required of competent citizens in an increasingly technological society.
- (2) Are able to undertake entry-level engineering projects in local industry.
- (3) Are capable of growing in competence and responsibility.
- (4) Are prepared to undertake graduate study.

## **Electrical Engineering Educational Outcomes**

All EE graduates **MUST** have:

- (1) an ability to apply knowledge of mathematics, science, and engineering;
- (2) an ability to design and conduct experiments, as well as analyzes and interprets data;
- (3) an initial ability to design an electrical system, component or process to meet predetermined design requirements;
- (4) an ability to function as a member of a multi-disciplinary team;
- (5) an ability to identify, formulate, and solve electrical engineering problems;
- (6) an understanding of professional and ethical responsibilities of electrical engineers;
- (7) an ability to produce effective oral, graphical and written communication;
- (8) a broad education necessary to understand the impact of engineering solutions in a global and societal context;
- (9) a recognition of the need for, and the ability to engage in life-long learning;
- (10) a knowledge of contemporary, technical issues;
- (11) an ability to use modern techniques, skills and tools of electrical engineering;
- (12) an ability to design, fabricate, construct, and test circuit hardware;
- (13) and an ability to design, test, and debug systems consisting of both software and hardware.

## **Computer Engineering Educational Objectives**

To graduate computer engineering students who:

- (1) Possess the problem-solving and critical judgment skills required of competent citizens in an increasingly technological society.
- (2) Are able to undertake entry-level engineering projects in local industry.
- (3) Are capable of growing in competence and responsibility.
- (4) Are prepared to undertake graduate study.

## **Computer Engineering Educational Outcomes**

All CE graduates MUST have:

- (1) an ability to apply knowledge of mathematics, science, and engineering;
- (2) an ability to design and conduct experiments, as well as analyzes and interprets data;
- (3) an initial ability to design a computer system, component or process to meet predetermined design requirements;
- (4) an ability to function as a member of a multi-disciplinary team;
- (5) an ability to identify, formulate, and solve computer engineering problems.
- (6) an understanding of professional and ethical responsibilities of computer engineers;
- (7) an ability to produce effective oral, graphical and written communication;
- (8) a broad education necessary to understand the impact of engineering solutions in a global and societal context;
- (9) a recognition of the need for, and the ability to engage in life-long learning;
- (10) a knowledge of contemporary, technical issues;
- (11) an ability to use modern techniques, skills and tools of computer engineering;
- (12) an ability to design, fabricate, construct, and test circuit hardware;
- (13) an ability to design, test, and debug systems consisting of both software and hardware;
- (14) and an ability to design and develop programs and hardware for microcontrollers and real time computer systems and the ability to do computer program development.

## Relationship between Educational Outcomes and Educational Objectives:

<b><u>CE EDUCATIONAL OUTCOMES</u></b>	<b><u>CE EDUCATIONAL OBJECTIVES</u></b>			
	<b>Problem Solving [1]</b>	<b>CE Project [2]</b>	<b>Growing [3]</b>	<b>Graduate Study [4]</b>
<i>Apply Math, Science, and Engineering [A]</i>	X	X	X	X
<b>Experimental Design [B]</b>	X	X	X	X
<b>Design of Systems and Projects [C]</b>	X	X	X	
<b>Teamwork [D]</b>	X	X	X	
<b>Identify, Formulate, and Solve Problems [E]</b>	X	X	X	X
<i>Professional and Ethical Responsibility [F]</i>	X	X	X	X
<i>Communication Skills [G]</i>	X	X	X	X
<b>Social Impact [H]</b>	X	X	X	X
<b>Life-Long Learning [I]</b>	X	X	X	X
<b>Contemporary Issues [J]</b>	X	X	X	X
<b>Updated Skills [K]</b>	X	X	X	X
<b>Design, Fabricate, Construct, and Test Hardware Circuits [L]</b>	X	X	X	X
<b>Design, Test, and Debug Systems consisting of both Hardware and Software [M]</b>				
<b>Design and Develop Programs and Hardware for Microcontrollers and Real Time Computer Systems; Computer Program Development [N]</b>				

## Relationship between Educational Outcomes and Educational Objectives:

	<i>EE EDUCATIONAL OBJECTIVES</i>			
<b><u>EE EDUCATIONAL OUTCOMES</u></b>	<b>Problem Solving [1]</b>	<b>CE Project [2]</b>	<b>Growing [3]</b>	<b>Graduate Study [4]</b>
<i>Apply Math, Science, and Engineering [A]</i>	X	X	X	X
<b>Experimental Design [B]</b>	X	X	X	X
<b>Design of Systems and Projects [C]</b>	X	X	X	
<b>Teamwork [D]</b>	X	X	X	
<b>Identify, Formulate, and Solve Problems [E]</b>	X	X	X	X
<i>Professional and Ethical Responsibility [F]</i>	X	X	X	X
<i>Communication Skills [G]</i>	X	X	X	X
<b>Social Impact [H]</b>	X	X	X	X
<b>Life-Long Learning [I]</b>	X	X	X	X
<b>Contemporary Issues [J]</b>	X	X	X	X
<b>Updated Skills [K]</b>	X	X	X	X
<b>Design, Fabricate, Construct, and Test Hardware Circuits [L]</b>	X	X	X	X
<b>Design, Test, and Debug Systems consisting of both Hardware and Software [M]</b>				

# **Mechanical Engineering Department Objectives and Outcomes Assessment Summary 2001 - 2002**

## **1. Program Educational Objectives, Outcomes, and Accreditation Status**

The Mechanical Engineering (ME) Department and the other programs in the College of Engineering at Lawrence Technological University are accredited by the Accreditation Board for Engineering and Technology (ABET). ABET 2000 criteria established in 1998 set forth new measures to assess engineering programs. The ME department adopted outcomes similar to the 11 ABET outcomes as their outcomes for the Bachelor of Science degree.

The department is in the process of developing the Educational Goals for the graduate programs.

## **2. Assessment Activities and Assessment Results**

### **(a) Assessment Objectives**

The Mechanical Engineering Department named two objectives for assessment during the Spring term of 2002.

1. The first objective was to form an Industrial Advisory Board and have its first meeting. Dr. Steve Howell (Chairman of the Mechanical Engineering Department) formed the board, and the first meeting was held on April 26, 2002. The members of the board have both academic and industrial backgrounds. This board will meet as needed during the academic year to oversee programs offered by the department and make recommendations.
2. The second objective was to develop ABET syllabi for all mechanical engineering courses using the eleven ABET outcomes, and to conduct an assessment of the ME classes for spring term 2002. The course coordinators developed the ABET syllabi for each mechanical and general engineering course in the department. These syllabi included the coordinator's assessment of how the 11 ABET Outcomes were emphasized by each course. The 11 ABET outcomes, as modified by the ME department faculty members, are currently as follows:
  - a. An ability to apply knowledge of math, engineering, and science.
  - b. An ability to design and conduct experiments, as well as to analyze and interpret data.
  - c. An entry level ability to design a mechanical component and system to meet predetermined design requirements.

- d. An ability to function on a cross-disciplinary team.
- e. An ability to identify, formulate, and solve mechanical engineering problems.
- f. An understanding of the professional and ethical responsibility of mechanical engineers.
- g. An ability to produce effective oral, graphical, and written communications.
- h. A broad education necessary to understand the impact of engineering solutions in a global and societal context.
- i. A recognition of the need for and the ability to engage in life-long learning.
- j. Knowledge of contemporary issues.
- k. An ability to use the modern techniques, skills, and tools of mechanical engineering.

The course coordinators gave each outcome a ranking of 0 to 3 in each course, where

- 0 = no emphasis
- 1 = minor emphasis
- 2 = emphasis
- 3 = strong emphasis

### **(b) Assessment Results**

During the last two weeks of the term, the students in each mechanical and general course were surveyed to discover their opinion of how the courses covered each ABET outcome. Each instructor was then asked to average the results and compare them to the numbers as determined by the course coordinators in the ABET syllabi.

This survey was done by paper. All full time faculty returned the results; however, some difficulties were encountered in getting the completed surveys from the adjunct faculty. We hope to improve this process in the fall of 2002.

A matrix was formed to compile the survey results. The matrix shows the results from each outcome for the surveys that were handed in. The average number from each survey was compared to the number determined by the course coordinator, and the instructors were asked to make comments. A "c" in the comment column indicates that such a comment was made. Comment sheets are attached or summarized below.

The ME faculty is currently meeting in the fall term of 2002 to discuss these results and perhaps alter the ME ABET outcomes and/or syllabi, thereby "completing the loop".

### 3. Action Plan for 2002 - 2003

For fall of 2002, the ME department will develop a method to conduct the outcomes survey on Blackboard in collaboration with The Veraldi Center for Educational Technology. This method was piloted in one of Dr. Yee's classes in July. The students were asked to complete the survey on Blackboard; if they did not, they received an "I" in the course. Students were informed of this in the course syllabus at the beginning of the term.

The ME department will develop criteria to assess students writing skills in writing laboratory reports. A standard format for writing laboratory reports will be established for all engineering programs and physics.

The ME department will adopt the writing criteria established by the Humanities department in assessing language and grammar. The ME department will also look into methods of assessing writing for technical purposes in the upper level classes.

The ME department will also assess oral communication skills by generating a list of courses that involve presentations, and developing criteria that will set standards for assessing oral communication skills.

The Mechanical Engineering Department named 2 goals for assessment during the spring of 2002. The first goal was to form an Industrial Advisory Board and have its first meeting. Steve Howell formed this board and first met on the day before LTU's annual Open house, April 26, 2002. The second goal was to develop ABET syllabi for all mechanical engineering courses using the 11 ABET outcomes, and conduct assessment of the ME classes for spring term 2002.

The course coordinators developed ABET syllabi for each mechanical and general engineering course in the department. These syllabi included the coordinator's assessment of how the 11 ABET outcomes were covered by the course. (Some of these syllabi have not been completed and/or are not posted on Blackboard- I am helping May consolidate on the matrix). The 11 ABET outcomes, as modified by the ME department faculty members, are currently as follows:

- a. An ability to apply knowledge of math, engineering, and science.
- b. An ability to design and conduct experiments, as well as analyze and interpret data.
- c. An entry level ability to design a mechanical component and system to meet predetermined design requirements.
- d. An ability to function on a cross disciplinary team.
- e. An ability to identify, formulate, and solve mechanical engineering problems.
- f. An understanding of the professional and ethical responsibility of mechanical engineers.
- g. An ability to produce effective oral, graphical, and written communications.
- h. A broad education necessary to understand the impact of engineering solutions in a global and societal context.

- i. A recognition of the need for and the ability to engage in life-long learning.
- j. Knowledge of contemporary issues.
- k. An ability to use the modern techniques, skills, and tools of mechanical engineering.

The course coordinators gave each outcome a ranking of 0 to 3 in each course, where

- 0 = no emphasis
- 1 = minor emphasis
- 2 = emphasis
- 3 = strong emphasis

During the last 2 weeks of the term, the students in each mechanical and general engineering course were surveyed to discover their opinion of how the course covered each ABET outcome. Each instructor was then asked to average the results and compare them to the numbers as determined by the course coordinators in the ABET syllabi.

This survey was done by paper. Results from full-time faculty were good, however, we have had difficulty in getting the completed surveys from adjunct faculty. We are hoping to gather more results from the adjuncts when they return in the fall.

The matrix shows the results from each outcome for the surveys that were handed in. The average number from each survey outcome was compared to the number determined by the course coordinator, and the instructors were asked to make comments. A "c" in the comment column indicates that such a comment was made.

Comment sheets are attached or summarized below. (Steve will let me know)

The ME faculty will meet in the fall to discuss these results and perhaps alter our ABET outcomes and/or syllabi, thereby "completing the loop".

During the summer, we have also been working with Linda Wareck to develop a method to conduct this survey on Blackboard. This method will be piloted in one of Dr. Yee's classes in July. The students will have to complete the survey on Blackboard or receive an "I" in the course.



# **Engineering Technology Department Objectives and Outcomes Assessment Summary 2001-2002**

## **1. Program Educational Objectives, Outcomes and Accreditation Status**

The Engineering Technology Department is not accredited by ABET so it does not have to follow the ABET 2000 criteria as the other Engineering departments are mandated to do. The Department developed their learning objectives in the Spring of 2002. The Department also developed their main assessment goals, to be implemented beginning with Spring, 2002.

There are some unique qualities of the Engineering Technology Department. There are no full time faculty dedicated specifically to the department. All faculty are either half time or they share their load with the College of Arts and Sciences. The schedule is made up mostly of night classes so it's difficult for them to have a full-time load. There is no common course required of all associate's students, but there is one course (Operations Management) that is required of all technology bachelor's degrees.

### **A. Learning Objectives for 2001-2002**

11. Knowledge of management and supervisory principles of planning, organizing, staffing, leading and controlling – A pre and post test is planned for the Fall of 2002. This will give a systematic measurement of this goal.
12. Knowledge of techniques of Operations Management and where to apply them – the objective is to find a way to measure this skill set since this is a common course between all of the bachelor's programs.
13. Knowledge of the importance of quality and how to measure it – the objective is to be sure all graduates have a working knowledge of quality as it applies to all aspects of work.
14. Knowledge of the ability to apply fundamental principles relating to a specific technological area – the objective is to assure that graduates are competent in the basics of their area of expertise. These specifics are detailed by major and are attached to this report.

### **B. Assessment Goals for 2001-2002**

1. Determination of a plan for computer training of adjunct faculty on laptops, BlackBoard, and various software packages.
2. Monthly departmental meetings for full time faculty to improve communications and provide an opportunity to discuss areas of concern.
3. Departmental review of course evaluations for adjunct faculty as an indicator of performance in the classroom.
4. Student Exit Interviews.

### **C. Assessment Results for 2001-2002**

2. It was the experience of the members of the department that the Instructional Technology staff would do a better job at training members of our department.
3. Meetings were held in January, April, September, October and November.
4. Adjunct faculty member's evaluations were reviewed. There are seven questions, with question #2 giving the most evidence of successful teaching. The average score was 3.27 out of 5.00, with scores ranging from 2.50 to 4.00. The Department Chairman counseled part-time faculty members who scored poorly on student evaluations.
5. Exit Interviews – Positive responses included the ability to get to know the faculty on a personal level as well as the ability to use the current and new technologies directly in the workplace. Negatives included problems with communication with faculty and students, cost of classes, the lag in up-to-date technology being taught, and the difficulty in scheduling appointments with part time faculty. In general, most students felt that classes were reasonably paced, the instructors knowledgeable, and that the department accommodated the part time student. Recommended improvements included publishing the faculty reviews, daycare for evening students, and a revision to the method of assigning team projects (due to geographic limitations).

### **2. Action Plan for 2002-2003**

1. Alumni Survey, developed by the Engineering Technology Department.
2. Using the evaluation developed for the adjunct faculty, determine the minimum scores acceptable, and then address the low results with the appropriate adjunct faculty member.
3. A Pre- and Post-Test is planned for Fall 2002 in MGT2203, Management and Supervision.
4. The Department is starting to develop course portfolios for the various courses that are offered. Course portfolios will include:
  - a. Course Syllabus
  - b. Copies of all examinations
  - c. Homework assignments
  - d. Examples of student work on examinations that are rated as excellent, average, and poor
  - e. The first course portfolio is being completed for TIE2063, Manufacturing Processes.

## **Educational Outcomes for Programs Offered in the Engineering Technology Department**

### **Associate of Science in Construction Engineering Technology**

- The student will be able to design basic structures using lumber, masonry, and stone
- The student will have a working knowledge of the construction of various buildings, including materials, excavation, mechanical systems, and laws and building codes
- The student will have a basic understanding of soils, soil conditions, and testing procedures for soils
- The student will have a working knowledge of surveying, including use of both a traditional and a laser transits
- The student will have a working knowledge of structural basics, including joining techniques, structures, and loads
- The student will have an applied knowledge of construction estimating, specifications, regulations, and project management

### **Associate of Science in Electrical Engineering Technology**

- The student will understand basics of AC and DC principles
- The student will understand solid state electronics, as used in various amplifiers, oscillators, multivibrators, etc.
- The student will have a working knowledge in graphic communication for the electrical and electronics industry.
- The student will have a working knowledge in the design and applications of logic devices
- The student will have an applied knowledge of microprocessors, hardware, structure, and programming
- The student will have a working knowledge of various motors, control devices, and feedback devices
- The student will have a working knowledge in electronic communication

### **Associate of Science in Manufacturing Engineering Technology**

- The student will have an applied knowledge of manufacturing methods, processes, and metrology methods
- The student will have knowledge of ergonomics, safety, and project management
- The student will have a working knowledge of quality methods
- The student will be versed in engineering economics
- The student will be able to work as part of a team
- The student will have a working knowledge in graphic communication, both paper and computer based

### **Associate of Science in Mechanical Engineering Technology**

- The student will have a working knowledge in graphic design using computer design software
- The student will have a working knowledge of applied forces, both static and dynamic
- The student will have a working knowledge of stresses applied to industrial materials
- The student will have a working knowledge of heat, fluid flow, and measurement of both
- The student will have a working knowledge of properties and strengths of materials
- The student will have the ability to design components and assemblies, accounting for strengths of various materials, and loads applied in their functional applications

### **Bachelor of Science in Engineering Technology**

- The student will broaden his/her technical knowledge base in areas of technical communication
- The student will be able to work in transitional positions allowing them to communicate both with technicians and engineers
- The student will have a broad background in technology, mathematics, and sciences
- The student will have a professional knowledge of engineering knowledge and skill areas required by technologists
- The student will be able to recognize technical problems and solve them using computers, instrumentation, and their own knowledge base

### **Bachelor of Science in Construction Management**

- The student will have a professional knowledge of the construction of various buildings, including materials, excavation, mechanical systems, and laws and building codes
- The student will have a professional knowledge of structural and graphic design
- The student will have a professional knowledge of business and management practices as applied to the construction industry
- The student will have a professional knowledge of construction engineering practices
- The student will have a professional knowledge of construction safety, construction estimating, and project management practices

### **Bachelor of Science in Technology Management**

- Understand and be able to apply fundamental business and organizational principles, i.e., principles relating to management, financial accounting, managerial accounting, marketing, finance, organizational behavior, information systems, business law, operations, and strategic management
- Understand and be able to apply fundamental management principles, i.e., planning, organizing, staffing, leading and controlling
- Understand and be able to apply fundamental principles relating to a specific technological area, e.g., computer technologies; one of the following engineering technologies: construction, electrical, manufacturing and mechanical; one of several other

areas in which LTU offers undergraduate degrees, and one of numerous areas in which other colleges and universities offer majors and associate degrees

- Understand and be able to apply fundamental general education principles, i.e., principles related to mathematics, statistics, physics, chemistry, computer usage, technical and professional communication, language and literature, social sciences, and economics

### **Bachelor of Science in Industrial Management**

- To learn how Operations Management relates to the other departments of an industrial organization
- To learn quantitative techniques of operations management and when to apply them
- To understand manufacturing terminology and concerns in order to effectively communicate with engineers and technologists
- To learn the principles of Planning, Organizing, Staffing, Directing and Controlling
- To understand the fundamentals of marketing and finance

**College of Management  
Objectives and Outcomes Assessment  
Summary 2001-2002**

**1. Program Educational Objectives, Outcomes and Accreditation Status**

The International Assembly of Collegiate Business Education accredits all of the graduate programs in the College of Management. In addition, the Master of Business Administration is accredited by the Association of Collegiate Business Schools and Programs.

**A. Assessment Tools for 2001-2002**

15. Graduate Surveys
16. Alumni/Student Focus Groups
17. Competitive Analysis
18. Alumni Survey
19. Employer Survey
20. Student Retention Study
21. MBA Pre/Post Knowledge Tests
22. ICCP Exam
23. CIMBA Case Studies
24. MSIO Capstone Knowledge Test Results

**B. Assessment Results for 2001-2002**

6. Graduate Surveys – The results are (using a five point scale: 1=superior, 5=unsatisfactory):
  - a. The helpfulness of your program to your work (1.83/5.00)
  - b. The knowledge and skills gained in your program (1.94/5.00)
  - c. How well your program met stated objectives (1.97/5.00)
  - d. Tuition worthwhile (2.07/5.00)
  - e. How well your program met your needs and interests (2.10/5.00)
  - f. Overall quality of the instruction you received (2.12/5.00)
7. Alumni and Student Focus Groups – all students responses are compiled in Appendix F of the College of Management Assessment Report. Results from Alumni and various class sessions are shown in that Appendix. Overall, the focus group responses were quite positive. Some suggestions include: more guest speakers, more consistency between courses, more concentrations, review of accounting and finance courses, advisors need to be more knowledgeable about the sequence of courses, tuition costs, testing consistency, and the ability to register by phone or online.
8. Competitive Analysis - Eleven competitors were analyzed in terms of coursework requirements. Similarities in the core coursework were evident and documented. These results can be found in Appendix D of the College of Management Assessment Report.

9. Alumni Survey – Alumni rated eight areas using a four point scale: (1= strongly disagree, 4=strongly agree):
  - a. Course content in degree (3.48/4.00)
  - b. Course objectives met (3.31/4.00)
  - c. Quality of teaching exceeded expectations (3.24/4.00)
  - d. Faculty knowledge in their field (3.46/4.00)
  - e. Computer support adequate (2.69/4.00)
  - f. Faculty provide feedback (3.24/4.00)
  - g. Program met my educational goals (3.41/4.00)
  - h. I would recommend this college to others (3.52/4.00)
10. Employer Survey – The employer was asked to rank the attributes they want the newly hired graduate to possess, and then to respond as to whether our graduates have those attributes. Employers rated the following skills: Oral Communication, Written Communication, Interpersonal Skills, Decision-Making, Responsibility and Accountability, Ability to Work in Teams, Creativity and Critical Thinking Skills, Presentation Skills, Time Management, Ethical Values, Computer Problem-Solving Experience, Computer/Word Processing Skills, Ability to Assimilate New Technologies, Project Management, Persuasion and Influence, and International Business. Any scores below 70% needed improvement. Those include Oral Communication, Written Communication, Interpersonal Skills, Decision-Making, and Ability to Work in Teams.
11. Student Retention Study – College of Management enrollment is up 177 students (34.7%). The applications yield for the College of Management is 86%. The retention rate for the College of Management is 93%. One-half of non-returning students are stop-outs due to family, work or monetary situations. The remainder left because of grades, tuition costs or lack of interest.
12. MBA Pre/Post Knowledge Tests – Exams were given in HRM6023, MGT6063, MIS6013, MGT6013, FIN6013, MKT6013, MGT6043, OPM6033 and MGT6053. With the exception of one section, all results showed an improvement in scores when taking the post-test.
13. ICCP Exam – 23% (7/30) of the students passed the exam. Most of the United States students were able to pass the ICCP Exam, but all of the international students failed the exam. The major cause was the inability to speak and understand English.
14. CIMBA Case Studies – Results show an average score of 87% for CIMBA students. Financial Management scores showed a need to emphasize the budgeting process and possible weaknesses in interpreting actual results.
15. MSIO Capstone Pre/Post Knowledge Test – The pre-test and post-tests were administered. Pre-test scores averaged 58%. Post-test scores averaged 72%.

### **C. Summary of Changes and Improvements based on Assessment Results of 2001-2002**

4. Graduate School Expectations – A list of expectations were developed by the College of Management, which were used as a basis for guiding necessary changes for all Program Reviews.
5. MBA Program Review – A review team was assembled to conduct the review. Information was gathered from a variety of external and internal sources and was

- analyzed. Recommendations were presented to all full-time faculty for feedback. The team met regularly to review data and to make decisions for program curriculum, course and delivery improvements. A final report was submitted to the College in May 2002. Delivery and transition phases are planned for Fall 2002 and Spring 2003.
6. MSIS Program Review – A review team was assembled to conduct the review. The initial priority was to concentrate of ways to improve the scores for the ICCP core exam. This is a direct measure which is used for both the MSIS and BSIT programs. The team recommended specific methods to help the student prepare for the exam by integrating ICCP concepts into the MSIS and BSIT coursework. Also, new incentives to increase student performance are currently being analyzed. A final report will be available in March 2003.
  7. MSIO Program Review – A review team was assembled to conduct the review. The team meets regularly to review data and to make decisions for the program curriculum, course and delivery improvements. A final report will be available in September 2002.
  8. Admission Criteria and Process Review – Admissions criteria were compared against program coursework to determine student success rates for current admission procedures. New requirements are being developed to ensure improved screening in admitting students into the College. New processes include: a more rigorous CIMBA student selection process, increased minimum TOEFL scores, and assigning faculty to students for advising.
  9. Admissions and Registration Process Review – The entire University will begin using the Banner System in April 2002. This automated system allows increased efficiencies in both the admissions and registration processes. For example, exception based advisor approvals, single system tracking of student records, ensuring consistency in data, and prerequisites programmed into the system will now occur automatically.
  10. Student Advising – All full time staff and faculty were trained in student advising in Fall 2001. The goal is to build a long-term relationship between the faculty and students through their studies. The role of the faculty advisor is to serve as mentor and coach by helping with course selection, registration, professional development and career planning. Each faculty member is responsible for 50-70 students.
  11. Create an E-Learning Infrastructure – A virtual distribution center for College of Management syllabi was created using Blackboard in December 2001. This allows students to use the Internet to view and print their syllabus three weeks prior to the start of classes. Students are prepared for a full and productive first class session. Blackboard use and training has also been implemented for both traditional and international students. By Fall 2003, all faculty will use Blackboard to enhance their coursework and instruction.
  12. Outcomes Assessment (MBA Student Learning) – Managerial Accounting needs to be a part of the MBA core curriculum. Ethics needs to be integrated into all of the core courses, not as a separate course. Human Resource Management needs to be replaced with Organizational Development. MIS and Project Management need to be integrated with Operations Management. Economics needs to be incorporated into Marketing Research.



13. Outcomes Assessment (MSIS and BSIT Student Learning) – The ICCP exams (core and specialty exams) are used for measuring outcomes assessment. Poor performance on these exams led faculty to investigate ways to ensure better student performance. The MSIS team put together an action plan to improve this process including: improving the communications about the ICCP process, incorporating content areas into specific coursework, requiring only the core exam, and imbedding the core exam into the capstone course. Changes for the International students include working with Taipei partner to raise the minimum score required for entry into the program to 60 for MSIS students and 70 for MBA students. Also, students with low scores will take only one graduate MSIS class while spending the balance of their studies on English. Students will be monitored more closely on their success in English.

## **2. Action Plan for 2002-2003**

The same ten items as listed in 'A' above will be repeated in 2002-2003.

## **3. Realized Outcomes**

The realized outcomes for the action plan will be fully addressed by August 2003. Major actions and realized outcomes for 2001-2002 include:

- a. Developing expectations for faculty and students.
- b. Conducting and completing phase one of an MBA program review.
- c. Beginning the analysis for MSIS and MSIO program reviews.
- d. Developing and increasing standards for admissions into the College of Management.
- e. Streamlining the admissions and registration processes.
- f. Implementing student advising.
- g. Developing an E-learning infrastructure.
- h. Improving measures for student learning outcomes.