ASSESSMENT AT LAWRENCE TECHNOLOGICAL UNIVERSITY

ASSESSMENT REPORT 2004-2005

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Lawrence Technological University Assessment Report

Introduction

The Student Assessment Committee at Lawrence Technological University meets once every two weeks to plan, discuss, implement and review the University Assessment Plan of the university. A spring retreat convenes in May, at the end of the academic year, to recapture the activities and results of the year and to develop broad plans for the new academic year. In addition, a fall retreat starts the activities for each new academic year. This retreat is a working day to develop the action plan for the new year, and to plan the Assessment Day, a university-wide event that takes place on the third Friday of the month of September for the faculty to reflect on the assessment results of the previous year and to plan the departmental actions for the new academic year. The goal of the committee is to use the assessment initiatives to improve the quality of all academic programs and to foster changes that will improve student learning.

Individual meetings with committee members along with their department chairs took place once a year to ensure the vitality of the assessment program within each academic program. 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.

In April of 2004, a Higher Learning Commission team visited Lawrence Tech for a focus visit on Assessment and governance. The team found that LTU had been progressed in the assessment of student learning and recommended to the commission that LTU does not have to write additional interim reports. The comprehensive visit team will again evaluate LTU's assessment program in 2011. The team addressed two important issues: 1) Lawrence Tech has a large number of educational goals and the pace at which we are assessing these goals is very slow. The team advised us to decrease the number of goals and to put together a plan to assess all the goals on a five-year cycle plan. 2) Methodologies used by some departments to assess student learning (for example grades or samples of student work with the grades showing) were not valid. These departments should change their methodologies

The initiative for improvement of student writing is implemented. Also, the recommendations of the Oral Communication Assessment Committee have been implemented. In 2004-2005 the Assessment Committee focused on the assessment of student leadership. The activities and results of this assessment are described in the body of this report. A proposal for a comprehensive program to increase the leadership skills of our students was proposed by Dr. Lewis Walker, the LTU executive vice-president and provost.

The activities of the assessment committee and the work that individual committee members have been done at the department level guides decisions made at the university and department level. There is a measurable change in the value that most faculty members give to assessment activities as seen by the change in the opinions expressed by each department of the different components of the levels of implementation matrix designed by the Higher Learning Commission. However, as a university we still have a long way to go, especially in the involvement of students as integral part of our assessment planning.

Most of the members of the Assessment Committee have three hours of release time per year to dedicate the necessary time to the assessment activities in their department.

University Student Assessment Committee
(2004-2005)

1. Chair and Director of Assessment   Badih Jawad

College of Architecture
2. Architecture   Rochelle Martin
3. Art and Design   Virginia North

College of Arts and Science
4. Mathematics and Computer Science   William Arlinghaus
5. Natural Sciences   Walter Dean
6. Humanities, Social Sciences and Communication   Barry Knister

C. College of Engineering
7. Civil Engineering   Donald Carpenter
8. Electrical and Computer Engineering   Peter Csaszar
9. Engineering Technology   Donald Carpenter
10. Mechanical Engineering   Laura Lisiecki

D. College of Management
11. College of Management   Patty Castelli

E. Ex-Officio Members
12. Coordinator of Institutional Research and Assessment   Mary Thomas
13. Associate Provost   Maria Vaz
14. Provost   Lewis Walker

Student Assessment Committee Activity for the Year 2004-2005

1. The 2004 Assessment Day

The 2004 Assessment Day was dedicated to student leadership. Colonel Arthur Athens from the Naval Academy came to LTU a few days before Assessment Day and consulted with the Assessment Committee on assessment of leadership. He also gave a presentation to all faculty on student leadership goals and objectives. On Assessment Day, Dr. Jackie Stavros conducted a workshop for all faculty to identify the following: the definition of leadership, the leadership goals for LTU students, and the activities at LTU that develop student leadership skills. The Assessment Committee collected the results.

The agenda for the 2004 Assessment Day was the following:

<u>Lear Auditorium</u>

8:30 a.m.	Registration and Continental Breakfast
8:00 a.m.	Welcome - President Chambers
	Introduction and Opening Remarks – Exec. V.P. & Provost Walker
9:30 a.m.	Announcements
	(NCA, ABET, and Honor Code Research Project)
	* Dr. Maria Vaz
	* Dr. Steve Howell
	* Dr. Don Carpenter
10:00 a.m.	Report on Oral Communication Assessment
	* Dr. Lisa Anneberg
	* Prof. Richard Bush
	* Prof. Kevin Kelch
	* Prof. Maria Sipos
10.45 a.m.	Break
11:00 a.m.	Update Report on Student Writing
	* Mr. Gary Cocozzoli
	* Dr. Brian Pedell
	* Dr. Jim Rodgers
	* Dr. Maria Vaz
11:45 a.m.	Lunch – Café Lawrence'
12:30 p.m.	Workshop on Student Leadership_ Café Lawrence
	* Dr. Jackie Stavros
3:00 p.m.	Adjournment

2. Assessment of Leadership

The following are the results of the Leadership Assessment workshop from Fall 2004. The definition of leadership and qualifications of a leader were discussed, what is currently being done at LTU to promote student leadership skills and what other initiatives and activities should be implemented to teach and instill leadership in our students.

The results are described below with numbers indicating the relative weighting of each item.

What are the characteristics of a leader?

9   Has Vision

8   Engages the group- Listens to and empowers/inspires the group
6   Honest, ethical image
5   Respects and recognizes
4   Takes responsibility-
            Get buy in = shared vision
4   Sets goals
3   Has the ability to adapt to changing times
3   Has an authentic personality- leaders are comfortable with themselves, guide without being condescending, correct without being intimidating, evaluate with fairness
3   Has the ability to help others with weaker skills
3   Is articulate/ good communicator
3   Is a mentor and guide
2   Has the ability to hear the group he/she is leading
2   Sets examples (work ethic, etc.)
2   Is creative and promotes change
2   Is a risk taker
2   Ensures productivity and contentment
       Has the appropriate technical credentials
       Sets direction and culture (more than just decision making)
       Has the ability to make the right decision, even if it's the unpopular one (make informed decisions)
       Has the ability to achieve goals, as well as to set them
       Teamwork and listening skills are paramount
       Is competitive
       Raises the quality bar
       Provides resources
       Allows sovereignty as needed
       Is a macro manager vs. micromanager
       Understands complexity
       Sacrifices self for the group
       Keeps a cool head during emergencies
       Is flexible
       Is dedicated

Makes others believe in integrity
Has self-control
Organizes
Prioritizes
Trusts others
Is accountable

What is already being done to promote leadership skills in LTU students?

10	Student project teams (leaders may be appointed, or may emerge)
3	Instruction on ethics and communication
3	Participation in student government
2	Internships and "real world" experiences
2	Student organizations- discuss leaders in your industry (guest speakers)
2	Honors program
2	Set standards
2	Simulate an industry environment in the classroom
2	Self-knowledge and reflection exercises
2	Develop confidence in them/their work
2	Encourage students to mentor other students
2	Students read about leaders and are able to explain what they read
2	Peer review/feedback
	Undergrad leadership certificated in management
	Building confidence and understanding of organization
	Rotation of lab roles
	Think globally, act locally
	Encourage competitions
	Design solutions
	Encourage students to be robofest coaches
	Read Orwell, Machiavelli, and Shakespeare
	Service learning
	Research papers
	Trust students as equals
	Listen to student opinions
	Students take risks when they feel comfortable
	Work in difficult environments
	Develop understanding and appreciation of unique talents
	Support diversity in class
	Expose to facts of culture
	Speak in front of the class

What else can be done?

5	Require at least one core leadership course
5	Offer training in core leadership skills, and the teaching of these skills
4	Competitive events
3	More group presentations in freshman and sophomore year
3	Set examples
3	Leading class discussions
3	Support student organizations
2	Encourage confidence/risk taking
2	Require Community service
2	Student Government participation
2	Encourage extracurricular activities
2	Require different students to lead class team projects
2	Peer evaluation
2	Create opportunities outside of class
	Spend more time in areas of ethical and character development (adversity training)
	Enhance existing service learning opportunities
	Encourage speaking out
	Offer time-management training
	Tutoring
	Mentoring
	Speakers/Lecturers
	Strengthen communication skills
	Self-respect
	Have students think of themselves as leaders
	Encourage self-assessment
	Consult industry leaders for leadership needs
	Internships
	Leadership seminars by students for students
	Present past successful examples of leadership
	Increase the stakes
	Voice in difficult decisions (e.g. budget)
	Educate on private and public sector roles
	Students explore roots of standards of integrity
	Special program for further development for students with superior potential
	Games and game theory
	Give responsibility

Recommendations on how to best assess leadership development:

5   Alumni follow-up
4   Use existing instruments or create instruments to measure
           Teamwork
           Critical thinking
           Ethics, etc. (i.e. student leadership inventory)
3   Peer review
3   Observe whether students' behavior and performance have improved
3   Watch for increase in student leaders-watch leaders emerge
2   Comparison to leaders
2   Employer assessment
2   Self-assessment
2   Define what type of leader we want to develop. Identify skills, measure development.
2   Don't assess leadership, teach it and encourage it
         Creating leadership opportunities
         We should be developing our own tools which are applicable to LTU
         Portfolios of self assessment
         Have students be able to define leadership and reflect their knowledge of it before they graduate
         Verification of positive results from outside parties
         Require a sustained effort to assess (do not rush it)

The results of the Leadership Assessment were used by the Assessment Committee to define the leadership goals for the university. The final version of those goals is given below.

LEADERSHIP GOALS VISION STATEMENT

Goal 1. To instill high standards of professionalism and integrity in its students, LTU will

- employ methods appropriate to each department to promote a better grasp of the implications of difficult decisions, and the personal qualities needed to make such decisions in a responsible way,

- provide educational experiences that equip graduates to conduct themselves in a professional manner,

- integrate throughout the curriculum course offerings that extend all students' skills as writers and oral communicators

Goal 2. To promote in its graduates both self-knowledge and an understanding of others, LTU will

- employ means to foster in students greater clarity regarding their goals, and a better understanding of areas of both personal strength and limitation,

- broadly educate rather than just train students, to the end of developing their ability to think critically and make effective judgments,

- provide on an ongoing basis experiences that promote greater sensitivity to differences in culture and tradition in the context of globalization,

- require active participation in projects that demand teamwork, to the end of developing interpersonal skills characteristic of those in leadership roles

Goal 3: To develop in students the sense of service and the ability to assume risk in the pursuit of worthy goals, LTU pledges to provide in its program opportunities for its students to

- make decisions and then act on them without close supervision,

- lead teams to achieve specific objectives, as well as work as members of such teams,

- confront novel situations requiring innovation and adaptation.

Goal 4: To instill in students a commitment of Life long learning and a strong resolve to master their respective fields, LTU will

- develop an appreciation of the importance to leaders of staying abreast of both current events and the ongoing changes in the world of ideas,

- emphasize the personal and professional importance of lifetime learning concepts, and introduce students to this process.

Goal 5: To develop the ability to influence others in the pursuit of common goals, LTU is committed to

- provide students with service-learning opportunities,

- promote in them a global perspective toward professional life,

- nurture a broad sense of responsibility, not just as professionals, but as citizens,

- develop educational experiences that examine both the processes and consequences of leaders'

Using the above-defined goals, a new Leadership Program for all students of the university was proposed for consideration by Dr. Lewis Walker, the Executive Vice-President. This program is outlined below.

Leadership Program Proposal

- LTU Core Curriculum
- Leadership Education:
    - Freshman Year - University Seminar/ Diversity Seminar
    - Sophomore Year – Leadership Seminar
    - Junior Year – Leadership Course
    - Senior Year – Senior Project (Leadership Component)
- Service Learning
- Leadership Experience
    - Leadership Portfolio

A task force nominated by the executive vice-president and provost will be in charge making recommendations to implement this leadership program.

1. Assessment of Writing Skills

The implementation of the proposal approved by the deans' council to improve student writing skills has been implemented.

The faculty of each program should collectively find ways to increase the quantity and the quality of writing required from students.
The faculty of each program together revised assignments and instituted new assignments that enhance student writing in the major.

The university's professional writing assessment committee lists and distributes to all faculty the type of common small mistakes found in the evaluation of student writing samples.
The professional writing assessment committee developed a list of the small mistakes common in the writing samples they evaluated. – This is called The List of Minor Errors to Avoid.

All faculty and students will receive the Banned Error list and the List of Common Small Mistakes each semester. The Banned Error List and the List of Minor Mistakes To Avoid are posted in the LTU website. In addition

every semester the provost's office sends a letter to all full-time faculty explaining the writing improvement initiative. Attached to this lette is the Banner Error List and the List of Minor Mistakes to Avoid. Adjunct faculty get the letter and the same lists with their Letter of Agreement.

In all classes for which writing is required, the syllabus should include a statement on the expected quality of writing.
This was also implemented and most professors on the syllabus have a statement on the quality of writing expected.

It is the students' responsibility to present well-written assignments
Faculty members have the responsibility of making students aware of their writing problems. However the professor is not required to correct writing. Possible actions to take include:
- Returning assignments that show substandard writing without grading
- Returning assignments ungraded, but identifying errors
- Requiring students to re-write assignments
- Taking points off for substandard writing
- Referring students with writing problems to the Academic Achievement Center for help.

This measure of accountability has also been implemented and faculty members put in place actions that will help students to turn in well written assignments.

Students will be made aware of the results found in the assessment of professional writing.
The Associate Provost and several members of the Professional Writing Assessment Committee visited one of the student government meetings to make students aware of the results found in the assessment of professional writing. Student leaders were encouraged to produce and distribute writing that other students can use as positive examples reflecting the standards described in the Writing Committee Report.

A timed essay is required of all students as they complete the first semester of their junior year (60 to 80 credit hrs.) A passing grade on the timed essay is one of the graduation requirements for all LTU students. Those who transfer to LTU with more than 75 credit hours must complete the timed essay during their first semester at LTU. Those students who fail the essay are required to take an advanced writing class during the following semester. After completing the class, they again write the timed essay.

The Writing Proficiency Exam is now a requirement for graduation for all the Lawrence Tech students. The program is under the Department of Humanities, Social Sciences and Communication and there is a director that is responsible for the operation of the program. Students are allowed to

repeat the exam twice before they are required to take a Writing Workshop course during their junior year. The Writing Proficiency Exam is the final exam of the Writing Workshop course. In addition, the junior/senior elective has now as pre-requisite, the successful completion of the Writing Proficiency Exam.

2. Assessment of Oral Communication Skills

The recommendation of the Oral Communication Assessment Committee were implemented

1. Distribution of oral communication requirement/guideline sheets to students prior to the senior-level project oral presentations.

2. All faculty requiring oral presentations in their courses reinforce and use

3. The oral presentation criteria approved by the Assessment Committee

4. Program-by-program assessment of oral communication skills
This recommendation has been implemented in a limited way.

5. Changes in the Technical and Professional Communications Course

The Technical and Professional Communication course seems to be sufficient in training students in oral presentation skills, however every effort should be made in this course to provide students with oral presentation skills that are specific to the needs of their academic major and eventual profession.

A longitudinal study of the development of oral communication skills for students that were part of the Phase One assessment project will take place in the next four years. Prof. Kelch, the leader of the Oral Communication Assessment Team, will track the ten students from Phase One of the Oral Communication Assessment Project as these students from the Phase One proceed through their remaining course work at Lawrence Technological University.

3. Student Awareness of the LTU's Assessment Program

All new students are made aware of the assessment program at Lawrence Tech. During Discovery (the welcome program for freshmen students) the first year coordinator explains to the students the assessment program at LTU and the ways students will be involved in the program. During Discovery new students take two surveys – How to get the most of college (Noel-Levitz drop-out predictor instrument) and a career development survey.

This component of the Assessment program needs to be expanded in the next few years to allow the students to be integral part of the decision making and the analysis of the results.

Lawrence Technological University
Assessment of Student Academic Achievement

Levels of Implementation
2004 - 2005

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								
Art & Design								
Civil Engineering	3	3	3	3	2	3	3	3
Electrical & Computer Engineering	3	2.5	3	3	2	2.5	2.5	2.5
Mechanical Engineering	3	3	3	3	2	2.5	2.5	2.5
Engineering Technology	2.6	2.6	3	3	2.2	2.6	2.6	2.6
Management	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Humanities, Social Science, Communication	2.5	2.5	2	2.5	1.5	2.5	2	2.5
Natural Sciences	2.8	2.6	2.8	2.5	2	2.5	2.5	2.5
Math & Computer Science	3	2.5	2.5	2.5	1	2.5	3	2.5
LTU Overall Average 2004-2005	2.8	2.7	2.7	2.8	1.9	2.6	2.6	2.6
LTU Overall Average 2003-2004	2.9	2.6	2.6+	2.6	1.9	2.6	2.7	2.4+
LTU Overall Average 2002-2003	2.6	2.6	2.4	2.5	1.8	2.4	2.5	2.2+
LTU Overall Average 2001-2002	2.0	2.0	1.7	2.0	1.7	1.8	1.6	1.6

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

Lawrence Technological University Action Plan
2004-2006

Goals	Strategies		Indicators
1. To have an assessment program sustainable and on-going	**1. Assess the following university-wide educational goals:**		For all educational goals identified:
			1. Time-line implemented
	Written Communication		
	Interdisciplinary committee	**2002-2003**	2. Annual Assessment Report developed
	Develop rubrics		
	Revise time-line		
	Implementation of methodologies		3. Program level actions feedback loop documentation
	Analysis of results	**2003-2004**	
	Proposal for actions		In addition:
	Implementation of actions	**2004-2005**	
	Close the loop	**2005-2006**	4. Dissemination of the Assessment Report - discussion of the feedback loop at the department level
	Oral Communication		
	Develop rubrics	**2002-2003**	
	Revise time-line		
	Interdisciplinary committee	**2003-2004**	5. Release time for assessment implementation
	Implementation of methodologies		
	Assessment results		6. Additional technical support for Institutional Research Assessment Office
	Implementation of actions	**2004-2005**	
	Close the loop	**2006-2007**	
	Leadership and Teamwork		
	Discussion of methodologies	**2003-2004**	
	Implementation of methodologies	**2004-2005**	
	Definition of leadership goals and objectives		
	Identify current activities for development of student leadership skills		
	Identify new activities that enhance the knowledge and development of student leadership skills		

	Educate faculty on effective teamwork and leadership	
	Identify key courses and extracurricular activities to assess teamwork development	
	Develop new observation methodology and rubrics	
	Develop time-line	
	Close the loop	**2007-2008**
	Analytical Skills	
	Develop outcomes	**2005-2006**
	Identification of direct and indirect methodologies	
	Implementation of methodologies	
	Close the loop	**2008-2009**
	2. Assessment of program specific goals	**On-going**
	3. Institutional Support	
	Budget	**On-going**
	Technical assistance for institutional research office	**2005-2006**
	Financial/Release time for faculty	**On-going**
	4. Re-evaluation of time-lines, methodologies and procedures	**2004-**
	5. Individual meetings with committee members to review departmental plans and activities	**2004-**
2. On-going and sustainable system of full-time and part-time faculty training on assessment procedures and implementation	1. Invite external consultants to campus **2004-**	1. Number of training and level of attendance at training evaluation sessions as well as analysis of forms.

	2. Deliver seminars and workshops	**2004-**	
			2. Integrated line-items in assessment budget for faculty training, workshops, etc. 3. Obligatory attendance of assessment conference for new assessment committee members.
3. To have a University-wide assessment culture including students	1. Statement of value of assessment on promotional materials and websites	**On-going**	1. A working/functioning assessment process for each academic program
	2. Explanation of assessment and the role of students at the Orientation of new students	**On-going**	2. Assessment Day implemented
	3. Discussion of purpose of and implementation of Assessment Day.	**On-going**	3. Ability to gauge results of Assessment Day (assessment of assessment)
	4. Periodic articles on assessment in all internal newsletters, newspapers, and magazines	**On-going**	4. Student and part-time faculty involvement
	5. Involve students on committees	**2004-2005**	
	6. Include a description of the Assessment program in the Orientation for new faculty	**On-going**	5. Materials developed 6. Involvement of Student Affairs and other offices of the University
	7. Identify and develop materials in best practices of teaching and learning and assessment	**On-going**	
	8. Offer external papers and seminars related to the LTU assessment program	**On-going**	

Art and Design Department
Objectives and Outcomes Assessment Summary
2004 - 2005

1. Program Educational Objectives, Outcomes and Accreditation Status

The Department of Art and Design offers four degrees: The Bachelor of Interior Architecture, the Master's in Interior Design, the Bachelor of Facility Management 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. Objectives for the Bachelor of Facility Management are based on educational criteria developed by the International Facility Management Association (IFMA) for undergraduate facility management programs.

2. Assessment Activities and Assessment Results

Interior Architecture

During the 2003- 2004 academic year, the undergraduate Interior Architecture program curriculum was changed based on FIDER recommendations from our last program review; changes in FIDER criteria that will affect the next accreditation self-study; and annual assessment of the program. Lecture material was separated from studio courses and a capstone studio course was developed that will also be connected with the capstone studio in architecture for dual degree students. The new junior level courses were taught for the first time in Fall 2004 and Spring 2005 and the new senior level courses will be taught in Spring 2006, with the first group of graduates occurring in Spring 2006.

An analysis of data from supervisors' evaluations of internship students was done to allow faculty teaching junior and senior level courses in the program to make revisions to respond to student performance in the field. (See Appendix A) Issues to address include:

- A reduction is seen in the percentage of students asked to draft in internship positions, with only 40% in 2004/2005 performing that task. All who drafted received above average ratings in that area.

- CAD tasks are higher with 80% of interns rated on CAD ability. 89% received above average ratings in CAD tasks which is down from 100% in 03/04

- Written communication has increased to 90% while only 67% received above average ratings for their written communication in the field, down from 83% in the previous two years.

- Finish specification has increased as a task while furniture selection and specification has decreased. However, above average ratings for ability to specify finishes has gone down from 78% in 03/04 to only 56% in 04/05.

- Above average ratings in technical ability have gone down from 93% in 03/04 to 70% in 04/05.

- Areas where above average ratings have gone up in 04/05 are Drafting, Presentation Boards, Renderings, Furniture Selection, Furniture Specification, Finish Selection, Resource Room Work, and Professional Appearance.

Imaging

New senior level courses were taught for the first time in the new Imaging curriculum. The new senior level thesis that extends from fall semester through spring semester was taught for the first time in 2004/2005.

Three students completed the required senior level internship. The following information was gathered from employer evaluations of those students.

- Only 1 of the 3 students did hand drawing.

- None of them did video imaging.

- The majority of ratings received by these students in all of the other areas were superior and above average.

- Students received positive comments about their abilities in computer software applications.

Four students completed a course and curriculum analysis for the new imaging program. The following observations were made.

- One student suggested that in her practice experience she made more use of courses in psychology and business than the courses in literature and mathematics required at LTU.

- Two of the students questioned the approach taken in the freshman core courses in the College (Basic Design and Visual Communication). They indicated that they did not appreciate that some of the sections exclusively focused on the application of the information for architecture students. They recommend that the courses be taught to the broader group of majors who has to take them and focus more on the design and drawing principles with a variety of applications.

- All of the students rated highly the amount and quality of instruction of hand drawing in the program.

- It was recommended that technology support and resources be improved. Imaging majors are aware that Macintosh computers are most frequently used in the jobs they are seeking in the field. Since LTU does not currently include Macintosh laptops for these students or a Macintosh computer lab, students are forced to purchase their own Macintosh computers so they are competitive for positions in the field.

- More instruction on software applications was recommended. 3-D Studio Max should be taught to all imaging majors and it is now an elective course. Software instruction needs to start sooner so that students have time to learn and apply the different software that is needed for imaging.

Facility Management

Junior level courses and the required Co-op courses were taught for the first time in 2004-2005 with the first graduates of the program in 2005/2006.

3. Action Plan for 2005-2006

Interior Architecture:

Offer senior level courses in the revised curriculum.

Write self study for NASAD accreditation – Fall 2005
Visiting team from NASAD assesses program – Spring 2006

Gather data for FIDER self study – Spring 2006

Write FIDER self-study – Spring or Summer 2006.

Bachelor of Fine Arts in Imaging

Write self study for NASAD accreditation – Fall 2005

Visiting team from NASAD assesses program – Spring 2006

<u>Bachelor of Facility Management</u>

Offer senior level courses in the new curriculum

Conduct interviews with graduates to assess courses and curriculum.

Advisory Board to assess the program and its status.

APPENDIX A

DATA FROM INTERIOR ARCHITECTURE INTERNSHIP ASSESSMENT

RATING	SUPER 02/03	SUPER 03/04	SUPER 04/05	AB AVE 02/03	AB AVE 03/04	AB AVE 04/05
Drafting	0	1	2	3	8	2
Presentation Boards	2	3	3	3	5	3
Renderings	0	2	3	2	2	2
Furniture Selection	0	2	2	4	3	3
Furniture Specification	0	0	3	3	5	0
Finish Selection	1	3	5	5	6	1
Finish Specification	2	0	4	3	7	1
CAD	3	1	5	2	10	3
Work with People	4	11	7	3	3	3
Verbal Communication	3	9	4	3	4	5
Written Communication	2	5	4	3	5	2
Resource Room Work	2	3	6	4	7	2
Professional Appearance	1	5	5	4	5	3
Level of Initiative	3	9	5	3	5	3
Accept Responsibility	3	10	7	4	4	2
Accuracy of Work	1	6	1	5	7	8
Creative Ability	2	7	5	4	5	2
Technical Ability	1	5	4	4	8	3
Overall Rating	1	6	5	5	8	4

RATING	AVE 02/03	AVE 03/04	AVE 04/05	BELOW 02/03	BELOW 03/04	BELOW 04/05
Drafting	0	2	0	0	0	0
Presentation Boards	1	3	1	0	0	0
Renderings	1	3	1	0	1	0
Furniture Selection	0	4	0	0	0	0
Furniture Specification	0	4	1	0	0	0
Finish Selection	0	2	1	0	0	0
Finish Specification	0	2	4	0	0	0
CAD	2	0	1	0	0	0
Work with People	0	0	0	0	0	0
Verbal Communication	1	1	1	0	0	0
Written Communication	1	2	3	0	0	0
Resource Room Work	1	3	0	0	0	0
Professional Appearance	2	4	2	0	0	0
Level of Initiative	1	0	2	0	0	0
Accept Responsibility	0	0	1	0	0	0
Accuracy of Work	1	1	0	0	0	1
Creative Ability	1	1	1	0	0	0
Technical Ability	1	1	3	0	0	0
Overall Rating	0	0	1	0	0	0

RATING

	N/A 02/03	N/A 03/04	N/A 04/05
Drafting			
Presentation Boards			
Renderings			
Furniture Selection			
Furniture Specification			
Finish Selection			
Finish Specification			
CAD			
Work with People			
Verbal Communication			
Written Communication			
Resource Room Work	4	3	6
Professional Appearance	1	3	3
Level of Initiative	4	6	4
Accept Responsibility	3	5	5
Accuracy of Work	4	5	5
Creative Ability	1	3	2
Technical Ability	2	5	2
Overall Rating	0	3	2
	0	0	0
	0	0	0
	1	3	1
	0	0	2
	0	0	0
	0	0	0
	0	0	0
	0	0	0
	0	1	1
	1	0	0
	0	0	0

Architecture Department
Objectives and Outcomes Assessment Summary
2004 - 2005

1. Yearly Assessment Plan

The following yearly plan was conceived during fall 2004

- As a major assessment activity, at least one assessment goal will be assessed every semester. Assessment goals will be aligned with the NAAB 37 Student Performance Criteria. The Committee will continue to coordinate a yearly schedule as to which goals and which core courses are to be assessed every semester for the next few years in preparation for the next NAAB Accreditation visit. Every selected goal (i.e., performance criterion) will include outcomes, objectives, and assessment implementation strategies.
- The committee will promote more active participation of the full-time architecture faculty in the aforementioned assessment efforts. For the last couple of years, the Architecture Assessment Committee members have volunteered to assess their classes. The committee will seek for other faculty members' assistance in assessing their courses in coming years.
- As part of the ongoing debate among ACSA member schools regarding suggested revisions/clarifications to the current NAAB student performance criteria, the Committee will continue to assess and record COAD's evaluation of NAAB's criteria.
- The Architecture Assessment Committee will continue to work in collaboration with the COAD Curriculum Committee concerning the review of the current curriculum during the academic year 2004-2005). This will include discussion of possible revisions to the Freshman studio courses, as well as the IDS3-IDS4 sequence.
- The Committee will continue to update the Architecture faculty on the ongoing and future activities of the Architecture and the University Committees. In addition, the Committee will engage the faculty in the assessment-related activities via emails, letters, and faculty meetings throughout the year.

2. Other items accomplished for the academic year 2004-2005

Fall 2004
- Developed assessment plan for History of the Designed Environment 1 for Fall 2004 term; Professor Dale Guyre (2004-2005 assessment committee member) volunteered to asses this class (see *Attachment 1-9*).
- Professor Guyre, who also serves on the University's Writing Assessment Committee, conducted an assessment of verbal and writing skills, as well as critical thinking skills in HDE1.

Spring 2005
- Updated the faculty on the activities of the assessment committee (University and Architecture agenda) during faculty meetings; faculty participated in discussion and debated on the wide range of assessment issues
- The committee informed faculty of the university assessment committee's efforts on teamwork, and leadership skills across the campus and discussed architecture department's approach to and faculty inputs on such matters.
- Professor Rochelle Martin (2004-2005 assessment committee chair) volunteered to measure teamwork and leadership among students in her senior-level Allied Design: Theory and Competitions studio. Results of her assessment are included as attachments 10-12.
- Professor Janice Means (2004-2005 assessment committee member) evaluated students in the areas of research skills and technical documentation in her section of the course Environmental Control Systems 2. Results of her assessment are included as attachments 13-16.
- Conceived the assessment plan for the academic year 2005-2006 (see *next item*)

3. Assessment Plan for the Academic Year 2005-2006

A. Assessment of two courses

- The College is gearing up for the next NAAB Accreditation Review Team's visit in 2 years and is in the process of developing a comprehensive plan for preparation this semester. Therefore, the selection and assessment of courses should be based on and developed in conjunction with such plan as soon as it becomes available.
- At the same time, the assessment committee will decide two courses (i.e., one course per term) to be assessed in consultation with full time faculty members.
- The Department of Architecture Assessment Committee will be chaired by Professor Dan Faoro during the 2005-2006 academic year.

B. Assessment of the university-wide educational goals

Decided by the University Assessment Committee

1. Leadership
2. Critical thinking
3. Teamwork
(also writing and oral communication skills and other goals to be decided by the University Assessment Committee)

Current plan under consideration at Architecture to deal with the aforementioned goals (faculty input & approval required)

- The Architecture Committee to develop a set of guidelines for each of these three goals through faculty participation and input
- Align these goals with the NAAB 37 criteria and develop a yearly assessment plan to assess the selected core courses where these criteria are applicable.
- Work with the University Assessment Committee to develop evaluation criteria for the three goals that are intended for adaptation to the specific needs of Architecture Department. However, it is recognized that assessment criteria should be tailored to the Department's uniqueness as per NAAB Accreditation Criteria.
- Reinforce the need for broader assessment participation by faculty who are not current members of the assessment committee.
- Assess one goal from the above list for each academic year (note: this would be only our secondary objective because it is recognized that assessing one course based on one assessment goal aligned with the NAAB Student Performance Criteria is a major assessment-related activity for the Architecture Department due to significance of NAAB Accreditation and given limited faculty and heavy involvement to date of faculty in other committee areas – *See #1 Yearly Assessment Plan on the previous page*).

(Attachment 1)

Student Academic Achievement Assessment – Fall 2004

Course to be assessed: <u>History of the Designed Environment I (ARC 3613)</u>

Goals

Verbal and Writing Skills: *Ability* to speak and write effectively on subject matter contained in the professional curriculum (Number 1 of the NAAB student performance criteria).

Critical Thinking Skills: *Ability* to make a comprehensive analysis and evaluation of a building, building complex, or urban space (Number 4 of the NAAB student performance criteria).

Outcome

Students will write a term paper critiquing a building/place of spiritual renewal. A draft of the paper will be turned in, graded, and returned to the students before the final version is do. A copy of the assignment is attached.

Objective

At least 75% of students in the course will be able to successfully demonstrate the ability to write an effective term paper, including a comprehensive analysis and evaluation, on building/place of spiritual renewal.

Success will be assessed as follows:
- At least 75% of the students in the course will receive a grade of C or better on the term paper requirement.

Implementation
- Three sections of History of the Designed Environment I (177 students) were studied to provide the sample for the assessment.
- Professor Dale Allen Gyure graded all of the first drafts and 70% of the final drafts (the remainder graded by Adjunct Professor Donna Voronovich).
- The papers were evaluated using the LTU standards for Banned Errors and Minor Errors.
- All papers were given an initial grade for content and organization; that grade was then reduced, if necessary, according to the amount of "major errors" (Banned Errors) and "minor errors." The grade was reduced by one level for every five minor errors or every three major errors, according to the standards created by the LTU Professional and Technical Writing Assessment Committee.

Result

A total of 70% of the students in the course were evaluated as successfully demonstrating the ability to write effectively on subject matter contained in the professional curriculum and make a comprehensive written analysis and evaluation of a building, building complex, or urban space.

(Attachment 2)

History of the Designed Environment I (ARC 3613)
Term Paper Final Results

N= 177

Grade	Number	Percentage	Cumulative Percentage
A	13	7.3%	7.3%
A-	23	13.0%	20.3%
B+	15	8.5%	28.8%
B	27	15.3%	44.1%
B-	19	10.7%	54.8%
C+	13	7.3%	62.1%
C	14	7.9%	70.0%
C-	20	11.3%	81.3%
D+	7	4.0%	85.3%
D	7	4.0%	89.3%
D-	3	1.7%	91.0%
F	16	9.0%	100.0%
Total	177	100%	100%

(Attachment 3)

STUDENT ACADEMIC ACHIEVEMENT ASSESSMENT – SPRING 2005

Course to be assessed: Allied Design, Theory and Competitions (ARC 4274)
Instructor: Dr. Rochelle Martin, Associate Professor

Course Project Description: Competition sponsored by the ACSA and the Steel Institute for the design of a student union.

Goals:
Teamwork
- Ability to work with others
- Ability to communicate ideas
- Ability to work collaboratively toward a deadline

Leadership
- Ability to coordinate activities
- Ability to encourage others in their commitment to a goal
- Ability to bring a project to completion
- Ability to set deadlines

Outcome:
1) Each team will submit a completed project to the ACSA Steel Competition addressing all the requirements of the competition brief.
2) Each team will give an oral presentation for a jury of outside architects prior to submitting their entry.
3) Each team will submit to the instructor a graphic timeline mapping their group process.
4) Each team will answer a questionnaire designed by the instructor.

Objectives:
At least 75% of the students in the course will have effectively contributed to the development and presentation of the final competition submittal in a team setting.

Success will be assessed as follows:
- At least 75% of the students in the course will receive a grade of C or better.

Implementation:
- All senior Allied Design Studio consisting of 16 students will employ teamwork as part of the design process will be studied to provide the sample for assessment.

- Each team will keep a record of the various activities participated in by the group and the individual responsibilities for these activities.
- Evaluation will be done at the end of the semester.
- Members of the Architectural Assessment committee will review the assignments and evaluation forms relating to this project's assessment.
- Each team member will complete a questionnaire assessing teamwork.

Results:
Individual responses and model form may be obtained from the instructor.

(Attachment 4)

Student Academic Achievement Assessment – Spring 2005

Course assessed: Environmental Control Systems II (ARC 4423)

Instructor: Assistant Professor Janice K. Means, PE

Course Project Description: Residential HVAC & DHW Analysis and Comparison To Actual Installed Equipment with Recommendations for Sustainable Improvements

Goal

The student will:
- gain an appreciation for the consequence of the envelope design and its direct influence on energy use/costs, ideally leading to a more conscientious effort to design sustainable structures;
- learn first hand how engineers evaluate heating and cooling loads in the selection of HVAC equipment to further enhance their appreciation of the consequence of construction material selection and placement;
- further develop analytical, writing, research, critical thinking, and graphic computer skills while working as a member of a team;
- prepare a professional descriptive and analytical report of their findings containing drawings, spreadsheets of calculations, written analysis of differences between installed equipment sizes and theoretical heat gains/losses or DHW needs and recommendations for sustainability retrofits.

This project directly addresses fourteen and indirectly addresses two of the thirty-six NAAB requirements found in Condition 12: Student Performance Criteria. Two of these criteria will be assessed in Spring 2005: **Research Skills** *and* **Technical Documentation.**

12.3 RESEARCH SKILLS –demonstrates ability to collect data through actual measurements of a structure and through paper research to discover ways to make the structure more sustainable and energy efficient.

12.28 TECHNICAL DOCUMENTATION –demonstrates the ability to measure, analyze and present quantitative information on a building's envelope. Also, provides a vehicle for students to evaluate and discuss technical changes to the structure to enhance sustainability and energy conservation. This should transfer to the ability to apply these skills to "proposed design for purposes of review and construction."

Outcome

Each of eight groups of three and one group of two selected an existing, free-standing, residential structure under 2500 square feet and then were required to:

- Measure, document, and construct ANSI size B plans for each floor and elevations for each outside orientation for an existing residential structure, clearly indicating orientation.
- Demonstrate an understanding of where heat transfer occurs by identifying building surfaces in conditioned spaces which interface with the outdoors and/or unconditioned spaces.
- Calculate heat transfer surface areas and their associated heat transfer rates for every conditioned room and basement of the structure.
- Calculate the theoretical winter design heat loss and summer design heat gain, and infiltration for each room and the structure as a whole using a spreadsheet.
- Measure and record cold water and hot water temperatures from faucets in structure.
- Investigate and record specifications of existing HVAC and DHW equipment, and compare them with calculated design loads for HVAC and recommended sizing and temperature settings for DHW for safety.
- Discuss the comparison of installed equipment capacities to theoretical design loads and indicate if the installed equipment is reasonably sized.
- Determine if the structure meets current energy codes, optionally using software, (e.g., REScheck) or comparing envelope values directly with those referenced in ASHRAE Standard 90.2.
- Recommend specific improvements to the structure for sustainability and energy conservation.

Objective

- At least 75% of the students in the course were to be evaluated as successfully demonstrating that they can: work as a contributing part of a team; analyze a structure for heat loss and heat gain using ASHRAE approved methods correctly; effectively evaluate if installed HVAC and DHW equipment is appropriately sized; critically compare envelope U-values to those required by energy codes and standards; and make appropriate recommendations for sustainability and energy conservation. The 75% successful rating was to be evaluated based upon 75% of the students receiving a "C+" grade or better on their projects.

Implementation & Results

- One section of ECS II, composed of 26 students, was assessed.
- Students were able to review outstanding reports from the Fall 04 semester for examples.
- Members of the Architectural Assessment Committee were free to review assignments and evaluation forms related to this project (see attachment).
- Preliminary evaluation was done at the end of the first two of five design project assignment segments and finally at the end of the

semester. Students were able to earn up to 50% of missed points on the first two assignments. The last three assignment segments were evaluated at the end of the semester with no opportunity to regain any more lost points. This procedure encouraged students to correct previous errors so that they were not compounded with the later assignments.

- Eight of the nine groups earned grades of C+ or higher. Individual grades were based on a combination of the group project grade and the percent of work accomplished by each student, based on input from every member of each team of how they and the other members did. This resulted in five of the twenty-six students receiving a grade under C+ (one C, two D+, and one D). Refer to the tables and graphs which follow for grade distributions.

Figure 1 shows the distribution of grades graphically This chart plots the grade percentages starting at 0% at its center with 100% at its outside ring. Note that only two of the project grade percentages show since the other seven values are coincident with some of the individual grades and are covered by them in the plot. . Table 1 (below Figure 1) lists all grades by project and individual.
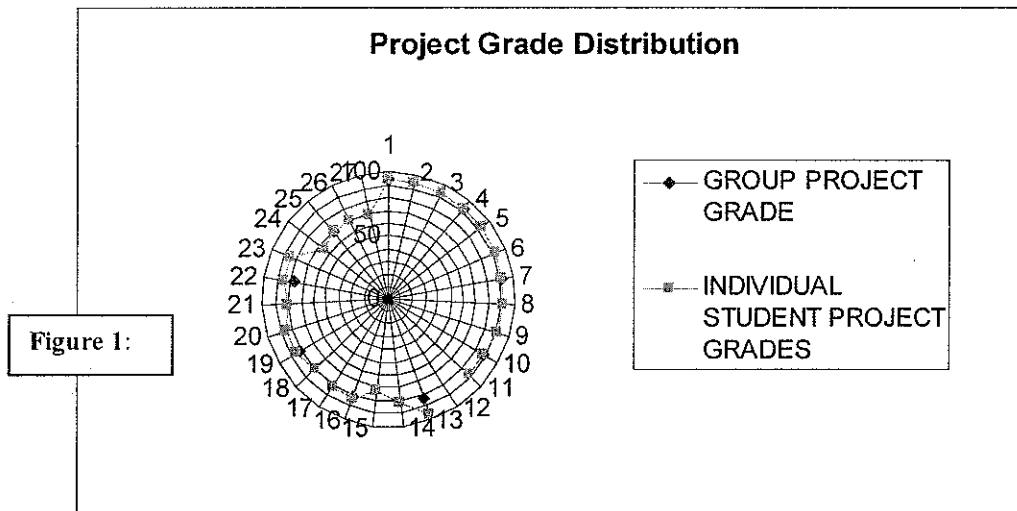

Figure 1:

Project Grade Distribution

GROUP PROJECT GRADE

INDIVIDUAL STUDENT PROJECT GRADES

GROUP PROJECT GRADE	GROUP PROJECT LETTER GRADE	INDIVIDUAL STUDENT PROJECT GRADES		GROUP PROJECT GRADE	GROUP PROJECT LETTER GRADE	INDIVIDUAL STUDENT PROJECT GRADES	
1	94	A	94	A				
			94	A				
			94	A				
2	92	A	92	A				
			92	A				
			92	A				
3	90	A-	90	A-				
			90	A-				
			90	A-				
4	88	B+	88	B				
			88	B				
5	83	B	97	A				
			81	B-				
			72	C				

GROUP PROJECT GRADE	GROUP PROJECT LETTER GRADE	INDIVIDUAL STUDENT PROJECT GRADES	
6	82	B	83	B
			82	B
			80	B-
7	82	B	84	B
			84	B
			79	B-
8	77	C+	84	B
			84	B
			64	D
9	68	D+	68	D+
			68	D+
			67	D+

35

Table 2 breaks the grades down based upon the intermediate grading of the first two parts of the project (Design Assignments 1 and 2). The apparent increase in final grades ranged from 0% to 8.8%. However, it may have increased final grades in excess of this amount since errors could have been compounded if they were not correctly early in the project. The instructor thinks that the opportunity to correct early errors greatly increases the student's final understanding and knowledge levels in this topic area.

Table 2:

INDIVIDUAL PROJECT FINAL GRADES [100% possible]		DESIGN ASSIGN 1 [10 points] [10%]	DESIGN ASSIGN 1 [make up points])	DESIGN ASSIGN 1 [30 points] [30%]	DESIGN ASSIGN 2 [make up points])
97	A	7	0	*	0
94	A	6.5	0.5	18	8.3
94	A	6.5	0.5	18	8.3
94	A	6.5	0.5	18	8.3
92	A	10	0	17	7
92	A	10	0	17	7
92	A	10	0	17	7
90	A-	8	2	27	0
90	A-	8	2	27	0
90	A-	8	2	27	0
88	B+	9	0	26	0
88	B+	9	0	26	0
84	B	9	0	22	0
84	B	9	0	22	0
84	B	5.3	2.8	21	0
84	B	5.3	2.8	21	0
83	B	5.5	1.3	19	9
82	B	5.5	1.3	19	9
81	B-	7	0	*	0
80	B-	5.5	1.3	19	9
79	B-	5.3	2.8	21	0
72	C	7	0	*	0
68	D+	3.5	1.5	20	0
68	D+	3.5	1.5	20	0
67	D+	3.5	1.5	20	0
64	D	9	0	22	0

*Design Assignment 2 was evaluated with the final submission for these three students joint project since they submitted it late. They did not have the opportunity to make up any points for this assignment.

Therefore, 77% of the students accessed earned a grade of C+ or higher, actually of B- or higher. They demonstrated the ability to collect data through actual measurement and also researched ways to make the structure more sustainable. The final presentations were, for the most part, professionally presented with spreadsheets showing their manipulation and interpretation of data in meaningful ways. Group members for all groups except one appeared to work on the projects cooperatively and equitably in their research and technical documentation.

The instructor will continue to permit students to improve their first two design assignment grades by resubmission and will encourage students to elaborate on their sustainable design recommendations.

Humanities, Social Sciences and Communication Department (HSSC)
Objectives and Outcomes Assessment Summary
2004 - 2005

1. Action Plan for 2004-05:

- Maintenance of the department's cycle of regular written-work evaluations for student writing in all Core Curriculum courses.

- Class visitations for new hires, and for full-time faculty who have yet to be visited by
the department's English courses coordinator.

- Facilitation and oversight provided by the Tech Comm section of HSSC relative to the University's new "Oral Communications Evaluative Criteria." An end-of-year
report on efforts to improve crossover of research skills from course to course.

- Report from the director of Business Management regarding assessment of the under-
graduate management program.

- If feasible, formulation of a tentative strategy for assessing the new degree program in Psychology.

In accordance with the year's Action Plan, HSSC faculty members implemented the department's approved standards for grading student written work. These standards are represented by the **Banned Error List** and the **HSSC Guidelines for Writing Papers** (see attachments to the report for 2002-03). Both documents are distributed to all Composition students, as well as to those taking other courses in the Core Curriculum where writing is emphasized.

The three-year assessment cycle in HSSC is complicated by the omnibus nature of the department. Programs include the Core Curriculum, plus majors in business management, technical and professional communication, psychology, and humanities. In the previous year, upper-division course writing had been reviewed, including the first Senior Project thesis by a humanities major. As well, development of assessment strategies for the new psychology degree program got underway.

1. In the three-year cycle, the focus this year was on English Fundamentals, COM 0094. This course is required of students whose writing proficiency needs further development before they take the Core Curriculum's first writing course, English Composition (COM 1103). The

review of representative English Fundamentals student writing was done by a committee of full-time faculty members. The committee's principal conclusion was that the key objectives of the course are being met: representative student writing at the end of the course demonstrates an understanding of correct paragraphing in essay production, as well as a reduction in the number of the basic compositional errors described and illustrated in the department's Banned Error List.

In addition, the committee determined that those teaching the course (principally adjunct faculty) should meet with the incoming department chair and the Core Curriculum coordinator to discuss the possible addition of a literature text to the course. The purpose would be to better equip students for the literary study that figures in English Comp.

Full-time faculty teaching the Core's **Technical and Professional Communication** course (COM 2103) reviewed student work in the assignments required of all who take the class: resume/cover letter, memo, collaborative instruction manual, proposal. Although the committee concluded that students do satisfactory work on these assignments, the members recommended in favor of making sophomore standing a prerequisite for the course. The committee believes the additional writing preparation resulting from such a change would lead to better performance in COM 2103.

2. Class visitations for new hires, and for full-time faculty who had yet to be visited were conducted by the department's English courses coordinator. The visits served to confirm the value and strength of instruction provided by these department members. Where instructional "fine-tuning" was required, the coordinator provided guidance.

3. Facilitation and oversight related to the University's new "Oral Communications Evaluative Criteria" took place as scheduled. The report summarizing these efforts is included at the end of this document.
Note: In light of the Tech Comm faculty and program director's belief that students would do better if sophomore standing were a prerequisite for their Core Course, the planned end-of-year report on research skills among students was seen as unnecessary.

4. Report from the director of Business Management. The untimely death of the director of the business management program postponed further development of assessment for the program. The acting director, Dr. Harold Hotelling will provide information on assessment at a later date.

5. Formulation of a tentative strategy for assessing the new degree program in psychology. Dr. Matthew L. Cole, the newly named director for the Psychology degree program and former department chair Dr. Gonzalo Munevar have formulated a plan for assessing the new degree offering. The plan is included at the end of this report.

2. Additional Assessment-Related Actions

Standards related to accuracy and honesty in student written work that makes use of secondary sources (books, articles, online sources, etc) are being reinforced in writing courses through greater emphasis being given to the "pledge" required of all who submit essays in the department. Students are required to include the following statement--taken from the Code of Student Conduct--at the beginning or end of the submission, and then to sign it: "I have neither given nor received any unauthorized help with this assignment, nor have I submitted someone else's work as my own."

Last fall, LTU's annual Assessment Day was devoted to a new initiative that focuses on **Leadership education** at the university. Dr. Arthur Athens of the U.S. Naval Academy came to campus to educate the LTU assessment committee and other interested parties on this topic. Following his visit, the committee set about to inventory all departments in all three undergraduate colleges, to the end of determining where leadership and leaders figure as part of current course offerings. The basis for this review was provided by a tentative vision statement detailing five goals for leadership education at LTU. Over the following months, all academic departments were called on to examine their programs, to the end of locating points in the curriculum where leadership education already plays a role. This inventory is summarized in the report developed by the office of the provost, titled **"Summary of Responses from Departments on Leadership Vision Statement."**

The process revealed that leadership and related areas figure prominently in HSSC. This knowledge should provide the basis on which to refine and focus leadership education in the humanities. How best to proceed will occupy members in the next academic year. Assessment Day 2005 will target the related area of Teamwork. This natural co-equal of Teamwork will also be examined to locate places and ways by which to give greater value vis a vis instruction/example in these areas.

Writing Proficiency Exam.
It is worth noting that leaders within HSSC have been among those in the forefront of an ambitious, university-wide effort to give greater emphasis to the centrality of writing and speaking skills among those taking degrees at LTU. Next fall, the first proficiency exam, now required of all students in their junior year, will be administered. Although not an HSSC department program, this test will weigh heavily in future assessment efforts within the department. (For more details, see the provost's report titled **"Policies and Procedures for the Writing Assessment Program."**)

Also worthy of note is the overall success of Lawrence Tech's assessment efforts, evidence for which came in the form of the positive NCA focused visit in late April. The committee concluded its visit with no recommendations or

plan for a return during the remaining years of LTU's current maximum period of accreditation.

3. Action Plan for 2005 – 2006

- Maintenance of the department's cycle of regular written-work evaluations for student writing. This year, English Composition and World Masterpieces I/II will be evaluated. If possible, evaluation will also be conducted for Foundations of the American Experience, and Development of the American Experience. If this is not possible, these evaluations will be made the following year.

- Finalization of the Psychology assessment plan, and its initial implementation.

- Visitation of new full-time post-doctoral instructors.

- Further exploration and development in HSSC of instructional features related to Leadership/Teamwork education.

Mathematics and Computer Science Department
Objectives and Outcomes Assessment Summary
2004 - 2005

1. Program Educational Objectives, Outcomes, and Accreditation Status
unchanged from 2002-2003 assessment report

2. Assessment Activities and Assessment Results

During the academic year 2002-2003, the Department of Mathematics and Computer Science remained active in several areas where previous assessment efforts had been made and began plans in some new areas.

a) Assessment of Placement of Students upon Entering Lawrence Tech

Activity:
Previous results had indicated a lack of correlation between placement and grades in courses. Professor Bashkem Zendeli has been working on early assessment in lower level courses to make sure students are actually in the correct course.

b) Assessment of Student Performance in Basic Studies

Activity:
The department continued common final exams in Intermediate Algebra during Fall 2004 and Spring 2005. Professor James Nanny constructed and graded these exams.

Result:
These exams still appear to indicate both that the students were successful in attaining required skills in this course and that all sections of the course seemed to be emphasizing the same skills successfully.

c) Assessment of Student Performance in Service Courses

Activity:
The department continued a common final exam in Calculus 2 during Fall 2004 and Spring 2005. Professor William Arlinghaus constructed and graded these exams.

Result:
The performance of the students on this common final exam remains consistent throughout the sections. In some areas student performance is still not considered acceptable as a whole.

d) Assessment of Student Performance in Major Areas

Activity:
The department has begun analysis of methods to evaluate the success of students in both the mathematics and computer science curricula.

e) Assessment of Writing in the Curriculum

Activity:
Writing projects continue in both Mathematical Modeling and Linear Algebra courses.

Result:
Students are able to write effectively, but they need to be encouraged to believe that writing is important as part of their mathematical performance. Too often, they still view writing as a separate activity divorced from their major work.

3. Action Plan for 2004-2005

a) Assessment of Placement of Students upon Entering Lawrence Tech

The department continues to work on a better placement exam.

b) Assessment of Student Performance in Basic Studies

Professor Zendeli is heading the effort to revise our basic studies curriculum.

c) Assessment of Student Performance in Service Courses

The presence of a common final exam in Calculus 2 appears to be established for the foreseeable future. The department will investigate revision of the order in which topics are covered in the first two courses in Calculus to help students acquire knowledge in the areas that have been identified as problems

d) Assessment of Student Performance in Major Disciplines

The department will expand on its efforts to provide an assessment plan for the curricula in Mathematics and Computer Science.

e) Assessment of Writing in the Curriculum

Serious analysis of writing will continue in the Mathematical Modeling and Linear Algebra courses. Virtually all instructors have agreed to use the new guidelines developed by the assessment committee of the university to help them guide their students toward better writing by correcting errors in

submitted written work. Major analysis of writing will be extended to senior projects. In all these areas, the department is concerned not only with the traditional view of writing but also with the process of writing mathematics cogently and effectively.

f) Assessment of Oral Communication in the Curriculum

In accord with the efforts of the assessment committee of the university, the department wishes to confirm that the students in the mathematical sciences have retained the skills they learned in oral and technical communication. As oral presentations are made in all of Mathematical Modeling, Linear Algebra, and Senior Project, those will be the areas in which first efforts will be made in 2005-2006.

Natural Sciences Department
Objectives and Outcomes Assessment Summary
2004 - 2005

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.

Beyond this, the Department participates in the general accreditation of the University by the North Central Association.

Educational Objectives and Outcomes are described in the Departmental Assessment Plan (attached).

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 Educations programs are given in the form of a matrix. This and other relevant documents have been posted to the Assessment Blackboard site.

The 2004 – 05 academic year was a year of consolidation for assessment activities in the Department of Natural Sciences. We concentrated on minor refinements of the Assessment Plans and on solidifying the implementation of procedures begun in 2002 - 03.

Physics faculty have now written course objectives for most courses, with the exception of a few early courses taught entirely be adjunct faculty. These objectives are modeled on those written for chemistry courses, and are included (usually by reference) in course syllabi, and distributed at the beginning of the term. It is not yet decided whether students will be surveyed on these objectives, as in chemistry. Otherwise, Physics assessment activities were relatively limited this year due to faculty illness and a sabbatical leave.

<u>Chemistry</u>

I. "Graduates will demonstrate written, oral, and visual communications skills appropriate to laboratory reports, technical writing, and public presentation of scientific information."

Ia. and Ib. Development of writing and lab report rubrics: Rubrics have now been developed and are in use in all courses having written assignments: Expository writing in CHM2323, CHM3383, CHM3452, CHM3463, CHM3623, CHM 2631/4632 and CHM4723, and laboratory reports in CHM2332, CHM3431, CHM3442, CHM3463, CHM4542, and CHM2631/4632. Unless courses are added or their writing requirements changed, this process is now regarded as complete.

Oral communications rubrics have been developed and are in use in all courses in which oral presentations are assigned: CHM3383, CHM4643, and CHM4673. This process is also now regarded as complete.

Chemistry faculty report the results each quarter and these reports are entered in the Chemistry Assessment Database. Results will be reported in more detail when more are available, but so far the objective of 80% satisfactory or better performance is being consistently met or exceeded in all courses.

II. "Graduates will be able to work in teams, and will have opportunities to develop leadership abilities."

After some departmental discussion, it was decided that this goal should be addressed in detail only after the University Assessment Committee has considered the questions of leadership development and teamwork at LTU. Leadership development has now been largely addressed, and teamwork is on the agenda for 2005-06.

III. "Graduates will feel that they have been effectively prepared for their professional careers."

IIIa. Course objectives have now developed for all chemistry courses, including the freshman courses.

IIIb. Students were surveyed on attainment of course objectives in twelve courses with the results listed below:

		Average	3-Yr			Average	3-Yr
Course	Term	Response	Running Avg	Course	Term	Response	Running Avg
CHM1154/CHM3434	Fa04	2.23					
3144	All	(survey not ready in time)					
CHM1213	All	(survey not ready in time)		CHM3431	Sp05	2.34	
CHM1221	All	(survey not ready in time)		CHM3441	Fa04	(not done)	

CHM1223Sp05	2.44		CHM3442	(not taught)
CHM1232Sp05	2.56		CHM3452	(not taught)
CHM2313Fa04	1.89	2.09	CHM3463	Fa04 2.56
CHM2323Sp05	(not reported as yet)		CHM3623	Sp05 (not reported as yet)
CHM2332Sp05	(not reported as yet)		CHM4522	Sp05 (not reported as yet)
CHM2342Fa04	2.53		CHM4542	Sp05 (not reported as yet)
CHM2352Fa04	2.85		CHM2631/ 4631/4632	Sp05 (not reported as yet)
CHM3383Fa04	2.63		CHM4643	(not taught)
CHM3403Fa04	2.23		CHM4723	Fa04 1.90
CHM3423Sp05	(not reported as yet)			

The indicator for this strategy (2.00) was satisfied in all but two courses, and in one of those it is satisfied over the three-year assessment period. Only one course was not surveyed, but we still have some progress to make in getting the survey results reported in a timely fashion.

The course objectives are now included in course syllabi (usually by reference) and distributed at the beginning of the term.

IIIc. The Department Chair informally interviewed each graduating senior about our programs. Nine graduates were interviewed; their comments were largely positive. Several said that they wanted more assistance in finding jobs.

Three graduates returned the anonymous written evaluation form. Their responses were overwhelmingly "A"s and "B"s. These results will be discussed at the departmental retreat in September.

IV. "Graduates will demonstrate knowledge in four major division of chemistry."

The ETS exam was administered to all chemistry graduating seniors. Results are expected in fall 2005, and the results from 2002 – 2005 will be analyzed in detail at that time. 2004 results for six students showed three scoring above the 50th percentile, vs. our objective of 60%. There appears to be no meaningful correlation with grade point average.

V. "CHM1154 (Introduction to Chemical Principles) students will be adequately prepared for CHM1213 (University Chemistry 1)."

CHM1154 grade / CHM1213 grade correlation study: Analysis of grade data in these two courses is being repeated with a larger grade database. Results so far indicate that a majority of students getting a C or better in

CHM1154 are also getting a C or better in CHM1213. The part of the new program that calculates the percentage of students meeting this objective has not been finished, so it is not yet clear whether the objective of 80% is being met.

Physics

I. "Graduates will demonstrate knowledge in the following areas of Physics..."

The ETS exam was administered to all chemistry graduating seniors. Results have been received but not yet analyzed; this will be done at the fall retreat.

II. "Graduates are satisfied that all areas of Physics listed in goal (I) above have been competently taught."

(There were no graduating seniors in physics this year.)

III. "Graduates will demonstrate the ability to do independent theoretical or experimental research..."

Successful completion of Physics Project courses (PHY4912 and PHY4922)

(There were no graduating seniors in physics this year.)

IV. "PHY1154 (Introduction to Physical Principles) students will be adequately prepared for PHY2413 (University Physics 1) and PHY2213 (College Physics 1)."

IVa. PHY1154 grade / PHY2213 & PHY2413 grade correlation study: Analysis of grade data in these two courses is being repeated with a larger grade database. Results so far indicate that a majority of students getting a C or better in PHY1154 are also getting a C or better in PHY2413, but it is not yet clear how large this majority is. A substantial number of students withdraw from PHY2413, and this has a considerable impact on how the results are interpreted. The same comments apply to PHY2213. The part of the new program that calculates the percentage of students meeting this objective has not been finished, so it is not yet clear whether the objective of 80% is being met.

IVb. PHY 2213 and PHY2413 "Force Constant Inventory" pre-post test: Analysis of the results shows an increase in average and normalized scores, with greater increases for students with low scores on the pre-test. This indicates that this objective is being met. The increases were smaller in 2004 than in 2003.

V. "Graduates will be able to work in teams, and will have opportunities to develop leadership abilities."

After some departmental discussion, it was decided that this goal should be addressed in detail only after the University Assessment Committee has considered the question of leadership development at LTU. Some preliminary work has been done to prepare checklists for evaluating leadership in PHY3661 and PHY4781.

Master of Science Education

Assessment of the MSE program continues to be a low priority while the program is being rebuilt. The program has been revitalized and we expect that assessment according to the existing plan will begin in 2005-06.

3. Action Plan for 2005 – 2006

The action plan for the Department of Natural Sciences for 2005 – 2006 will be to review and refine the Departmental Assessment Plan in the light of five years' experience, and to work on the leadership and possibly the teamwork objectives. Further efforts will be made to increase performance in administering surveys, etc.

Civil Engineering Department
Objectives and Outcomes Assessment Summary
2004 - 2005

1. Program Educational Objectives, Outcomes, and Accreditation Status

The Department of Civil Engineering revised its Objectives and Outcomes during the 2001-2002 Academic year. The degree is accredited by ABET and was visited during October of 2004. The program received a full six year accreditation cycle from ABET.

2. Assessment Tools for 2004-2005

Table I: Assessment tools, description, and performance criteria.

Assessment Tool	Description	Performance Criteria
FE Exam	The FE Exam is a nationally normed exam that provides a direct measurement of student abilities on a topic-by-topic basis. It provides a comparison between LTU examinees and the corresponding results from comparison institutions on a topic-by-topic basis. This emphasizes strong and weak points within the program.	Perform at or above the national average for comparative Carnegie Master institutions.
Exit Interview	The chair conducts exit interviews of graduating students. The exit interviews provide a summative view of what is happening in the department and gives an indication of overall student satisfaction. The exit interview includes a survey form to be filled out by students regarding their education at LTU.	Qualitative evaluation of student satisfaction and concerns. Qualitative as well as direct evidence that we are meeting our outcomes based on survey form.
Advisory Board Interviews	The Advisory Board conducts a group interview or panel discussion of 12 to 15 senior students during Senior Projects Day.	General satisfaction by the Advisory Board that the students meet the published outcomes of the department.
Professional Evaluation of Senior Projects Day	Advisory Board members (and Employers) are invited to attend Senior Projects Day (Spring Semester) to view and evaluate oral presentations of senior projects. Written evaluations of the Senior Design Projects/Presentations are requested from attendees.	General satisfaction by the Advisory Board (and/or employers). A minimum of a 3.5 on a 5 point scale.
Faculty Evaluation of Senior Projects Day	Similar to evaluation of senior projects by Advisory Board however, faculty evaluate Senior Design presentations in both semesters.	General satisfaction by the Faculty. A minimum of a 3.5 on a 5 point scale.
Course Objectives	Learning objectives have been written for each undergraduate civil engineering course. Students are surveyed on their ability to perform objectives at the conclusion of the course.	85% of the students surveyed are capable of performing the desired outcome.
Performance Appraisals	Performance appraisals are assessments of student performance in individual courses. These are opportunistic documented evaluations of student performance that present themselves, but are not included in the routine assessment program.	Case dependent.

Table II: Matrix relating assessment tool to measured Program Outcome.

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)
1.Exit Interviews & Survey						X		X	X	X			X
2. Advisory Board Senior Project Eval.	X		X	X	X		X	X		X	X		
3. Faculty Senior Project Evaluation	X		X	X	X		X	X		X	X		
4. Course Objectives	X	X	X	X	X	X	X	X	X	X	X	X	X
5. Performance Appraisals	C	A	S	E	D	E	P	E	N	D	E	N	T

3. Assessment Results for 2003-2004

During the 2004-2005 academic year, only five assessment tools were used to determine if the Program Outcomes are being achieved. This is a decrease from previous years. This is due to several circumstances; one by design (assessment timeline called from fewer measurement tools this academic year), two because of ABET visit (significant effort was focused on ABET visit in fall 2004), and three because of several incomplete activities. Many of these tools are similar to the tools utilized during previous academic years, however, in an effort to continually improve our assessment program, the format associated with each tool is reviewed annually and potentially modified. In addition to measuring student achievement of Program Outcomes, the assessment plan also considers overall student satisfaction with their education, the department, and the faculty.

Overall, assessment results for this academic year was positive with minor exceptions. Exit interviews conducted with the Department Chair indicated that students were pleased with the department and their LTU education. Students were also very pleased with the faculty. Students felt they were prepared to enter into the profession and more than half of them plan to pursue licensure and get an advanced degree. The only negative feedback was with respect to senior design. Students feel more structure and organization is needed. Additional structure and organization has been added over the last two years to address this issue and one possibility is "some" structure left them wanting more. In addition, its possible the current group of graduating seniors needed more guidance or "hand holding"

then their predecessors who didn't complain about the senior design sequence. Many of the issues mentioned in the exit interview with regards to senior design were actually part of the course in early fall. It appears they had forgotten what was explained to them in first semester. In addition, it also appears they did not refer to the syllabus which answers many of the questions/complaints.

With respect to student achievement of individual Program Outcomes, each assessment tool utilized by the department addresses multiple Program Outcomes. Additionally, multiple assessment tools are used to measure each outcome. Therefore, to determine if the Program Outcomes are being met, it is important to systematically consider the entire assessment plan. To accomplish this task, a matrix is generated that indicates the level of student attainment of an outcome based on that particular tool.

The matrix for this academic year is represented in Table III. For a given assessment tool, a number from 1 to 5 was assigned to each outcome that tool is designed to assess. A 1 indicates a low level of student attainment and a 5 a high level of student attainment. These numbers were consensually determined by the faculty based on the results and were limited to half point increments. These values were then used to determine an overall "score" for each program outcome. The overall ranking is not based on an arithmetic mean, but rather a subjective weighting based on faculty input. It is important to note these values are determined by faculty consensus. The faculty decided that any overall score higher than a 3.5 meets program criteria. A score of 3.5 meets the criteria, but with some concern and a 3.0 or lower indicates that the outcome is not obtained for the academic year. Numbers lower than 3.0 are shown in bold font in Table III.

From Table III, it can be seen every Program Outcome met faculty expectations for the given academic year, however two outcomes were of some concern to faculty. The two Outcomes that are lower than desired are Outcome (b) – "an ability to design and conduct experiments, as well as to analyze data and interpret results" and Outcome (f) – "an understanding and appreciation of all aspects of professionalism including ethical responsibility, participation in professional organizations, and service." The low score on Outcome (f) is based on students not fully understanding that professionalism is more than pride in a profession and behaving in an ethical manner (common student responses). The Department maintains active student chapters of ASCE, AGC, and Chi Epsilon and all three of those organizations conduct service projects. Therefore, the problem seems to be connecting activities associated with those organizations with professionalism. This is an easily rectifiable concern with additional verbal emphasis placed on all aspects of professionalism and not just ethical behavior. This is being addressed in the ECE4051 Ethics and Professional Issues course and several direct assessment tools (noted as performance appraisals in Table III) were included in the course. The concern associated with Outcome (b) is the lack of students designing their own experiments.

Additional opportunities for students to design their own experiments in more laboratories will be investigated this upcoming academic year with direct measurements.

One of the key features of the assessment program is the utilization of our advisory board to evaluate our senior projects and then interview a sample of our graduating students. The department has used this assessment tool for numerous years with great satisfaction with typically between 6 and 10 advisory board members participating every year. Unfortunately, due to scheduling conflicts, we only had three advisory board members present to evaluate the senior projects and none were able to participate in the interview process. The lack of interviews this year is indicated by the "I" in Table III. This has been a problem for the last two years and the remedy is uncertain.

Table III: Assessment/Outcome Matrix – 2004 – 2005 Academic Year.

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)
Exit Interviews Fall 2004						3.5		4	2	4			2
Exit Interviews Spring 2005						3.5		4	2	3			2
Advisory Board Interviews						I	I	I	I	I	I	I	I
Advisory Board Senior Project Spring 2005	3.5		3.5	4	3.5		4			4	4		
Faculty Senior Project Spring 2005	4.2		4.2	4.1	3.9		3.5			4	4.1		
Course Objectives Fall 2004	I	I	I	I	I	I	I	I	I	I	I	I	I
Course Objectives Spring 2005	4	4	4	4	4	4	4	4	4	4	4	4	4
Appraisal – Ethics & Prof Issues						5		4	4	4			5
Appraisal – CE Materials	I						I						
OVERALL	4	3.5	4.5	4.5	4.5	3.5	4.5	4	4	4	4.5	4	4

Note: the rankings are on a scale from 1 to 5 with 5 being the highest level of attainment. The numbers are assigned with faculty consensus in 0.5

increments. The OVERALL ranking is not based on an arithmetic mean but rather a subjective weighting based on faculty input.

Interpretation: 4+ meets program goals

3.5 meets program goals, but with some concern

3 or lower indicates outcome not obtained for academic year

I indicates incomplete for the given item

3. Incomplete or Postponed Activities

Advisory Board did not conduct interviews of seniors this year because of low board participation on senior project day. In addition, the FE exam was not evaluated but will be in Fall of 2005. Finally, very low student participation in end of term course objective evaluations for fall of 2004 made conclusions problematic.

4. Action Plan for 2005-2006

The Civil Engineering Department has a comprehensive Assessment Plan in place to assess student learning, graduate capability to perform published program outcomes, and overall student satisfaction with our program, our facilities, and our instruction. The Assessment Plan is reviewed and adjusted annually by the Civil Engineering faculty under the guidance of the Coordinator of the Civil Engineering Assessment Program, Dr. Donald Carpenter. A majority of the changes to the assessment plan are minor and typically involve changes in the format/questions of the assessment tools. The Advisory Board is briefed on the Assessment Plan once a year at the fall meeting and also plays an active role in the assessment of our students. Table IV is a timeline that indicates when each assessment tool is utilized. This timeline and the assessment tools utilized will be revisited in fall of 2005 for potentially significant changes.

Table IV Civil Engineering Department Assessment Timeline

Assessment Description	Fall 02	Sprg 03	Fall 03	Sprg 04	Fall 04	Sprg 05	Fall 05	Sprg 06
1) FE Exam	X		X		X		X	
2) Exit Interview	X	X	X	X	X	X	X	X
3) Exit Surveys	X	X	X	X	X	X	X	X
4) Advisory Board Interviews		X		X		X		X
5) Professional Senior Project Evaluations		X		X		X	X	X
6) Faculty Senior Project Evaluations	X	X	X	X	X	X	X	X
7) Portfolios				X				X
8) Course Objectives	X	X	X	X	X	X	X	X
9) Performance Appraisals	X	X	X	X	X	X	X	X
10) Focus Groups	X		X		X		X	

Civil Engineering Program Educational Objectives

The following italicized paragraph represents the current and published Program Educational Objectives for the Civil Engineering Department at LTU:

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 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.*

Civil Engineering Program Outcomes

The following italicized paragraph represents the published Program Outcomes for the Civil Engineering Department at LTU:

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
2004 – 2005

1. Program Educational Objectives, Outcomes and Accreditation Status

The Department of Electrical and Computer Engineering has successfully completed the major accreditation visit in Fall 2004 from ABET (Accrediting Board of Engineering and Technology). The Computer Engineering degree is relatively new [degrees granted since 2000], and being accredited by ABET for the first time. Significant time and thought has been given to this event. In fact, LTU-ECE stresses the engineering process for the department, and concentrates on the continual quality improvement of the department's process [CQI]. The Department of Electrical and Computer Engineering [LTU-ECE] assesses the following stakeholders regarding the status of the department on a regular basis:

- Students
- Faculty
- Alumni
- Industrial Advisory Board (IAB)
- Employers

The order of the stakeholders is the order of the significance of that stakeholder. Hence, students are assessed more often than employers, since they are the major stakeholders of LTU-ECE.

The Department of Electrical and Computer Engineering developed the following mission statement (also known as the "objectives of LTU-ECE") in April, 2000, which is posted on the website of the faculty, and in the catalog.

"Our mission in the Electrical & Computer Engineering Department is to graduate students, who

- *possess problem solving and critical judgment skills needed to be competent citizens in an ever increasingly technological society.*
- *are able to undertake entry-level electrical engineering projects.*
- *are capable of growing in competence and responsibility.*
- *are prepared to undertake graduate study."*

This mission statement was reviewed by a major stakeholder (the Industrial Advisory Board) on two documented occasions: September 2002 and May 2003. The mission statement was reviewed, but not altered. The biggest area of concern continues to be the word "citizen". LTU-ECE feels that "citizen" most correctly reflects our mission, and not technologist, number cruncher,

or even engineer. This philosophy is also shared by our professional society, IEEE, and the accrediting institution, ABET.

The outcomes are the items that guarantee that the LTU-ECE objectives are achieved, because they can be assessed. The outcomes are regularly revisited at stakeholder review meetings, and have changed twice significantly since 2000. Initially, LTU-ECE had twelve outcomes, but since then, multiple changes have been issued. The most important changes include the addition of a brand new outcome addressing the understanding of the entrepreneurial engineering process, and the complete separation of the outcomes for the Electrical Engineering and Computer Engineering education objectives into two sets. In conjunction with this effort, the objectives of both programs have also been revised.
The most recent outcomes and objectives are as follows.

2. Educational Outcomes

All EE graduates MUST have:

- an ability to apply knowledge of mathematics, science, and engineering;
- an ability to design and conduct experiments, as well as analyze and interpret data;
- an initial ability to design an electrical system, component or process to meet predetermined design requirements;
- an ability to function as a member of a multi-disciplinary team;
- an ability to identify, formulate, and solve electrical engineering problems;
- an understanding of professional and ethical responsibilities of electrical engineers;
- an ability to produce effective oral, graphical and written communication;
- a broad education necessary to understand the impact of engineering solutions in a global and societal context;
- a recognition of the need for, and the ability to engage in life-long learning;
- a knowledge of contemporary, technical issues;
- an ability to use modern techniques, skills and tools of electrical engineering;
- an ability to plan, design, simulate, fabricate, construct, and test circuit hardware;
- an ability to plan, design, test, and debug systems consisting of both software and hardware;
- an understanding of the entrepreneurial engineering process, which includes project management, business plan selection and construction, teamwork, and communication skills.

Electrical Engineering Educational Objectives

To graduate electrical engineering students who:

- possess the problem-solving and critical judgment skills required of competent citizens in an increasingly technological society;
- are able to undertake entry-level engineering projects in local industry;
- are capable of growing in competence and responsibility;
- are prepared to undertake graduate study.

Computer Engineering Educational Outcomes

All CE graduates MUST have:

- An ability to apply knowledge of mathematics, science, and engineering;
- an ability to design and conduct experiments, as well as analyzes and interprets data;
- an initial ability to design a computer system, component or process to meet predetermined design requirements;
- an ability to function as a member of a multi-disciplinary team;
- an ability to identify, formulate, and solve computer engineering problems;
- an understanding of professional and ethical responsibilities of computer engineers;
- an ability to produce effective oral, graphical and written communication;
- a broad education necessary to understand the impact of engineering solutions in a global and societal context;
- a recognition of the need for, and the ability to engage in life-long learning;
- a knowledge of contemporary, technical issues;
- an ability to use modern techniques, skills and tools of computer engineering;
- an ability to plan, design, simulate, fabricate, construct, and test circuit hardware;
- an ability to plan, design, test, and debug systems consisting of both software and hardware;
- an ability to design and develop programs and hardware for microcontrollers and real time computer systems, and the ability to do computer program development;
- an understanding of the entrepreneurial engineering process, which includes project management, business plan selection and construction, teamwork, and communication skills.

Computer Engineering Educational Objectives

To graduate computer engineering students who:

- possess the problem-solving and critical judgment skills required of competent citizens in an increasingly technological society;
- are able to undertake entry-level engineering projects in local industry;
- are capable of growing in competence and responsibility;
- are prepared to undertake graduate study.

LTU-ECE has received additional feedback from the alumni, IAB, faculty and students corroborating the importance of business skills and entrepreneurialism for electrical and computer engineering students. The ECE program flowcharts for electrical and computer engineering courses have been revised significantly in 2002, 2003, and again in 2004, to increase the presence of entrepreneurialism in the ECE curriculums. All students now have the following entrepreneurial items in their curriculum: updated entrepreneurial senior projects, and requirements for courses "Introduction to ECE Projects," "Business Plans" and "Project Management." As a result of the additions, one fewer math and/or ECE technical elective is required. The outcomes have been changed to reflect the new Entrepreneurial content.

3. Assessment Activities and Assessment Results

LTU-ECE assesses the five identified stakeholders on a stated calendar, which is also discussed at regular meetings with all the stakeholders.

<u>Students</u>

The students assess the mission more often. In addition, they are assessed by professors each semester for each class. This frequent feedback is a smaller loop with more chances for improvement. The students are assessed using five distinct assessment instruments, each with different missions:

- End-of-course assessment of the outcomes (a.k.a. Indirect Assessment). This has been completed since 2000, which is three full yearly cycles. Each professor analyzes the data for this evaluation each semester, and emails the spreadsheet to the student data coordinator, Dr. Lisa Anneberg. The results appear on the website and are discussed at two faculty meetings per year. The analysis involves identifying the top three deviations from the expected significance of the outcome, according to the course coordinator and entire department. The deviations are explained, with action items suggested, which are monitored by LTU-ECE. As a result of the feedback cycles based on the indirect assessment results of previous semesters, the outcome significance figures have converged to a steady state, which means that each course successfully communicates the relevance of outcomes with the student body.

- End-of-course test verifying the emphasis of outcomes in the course (a.k.a. Direct Assessment). There are two direct assessment tools actively in use; these include FE-style exams given in select courses, and the direct evaluation of the senior project capstone project design sequence. The FE-style direct assessment tool has been designed so that almost all of the outcomes are directly addressed by one or more of the exams in the tool. Since most outcomes are covered, this assessment tool is considered to be the major assessment tool in the program. For each of the core courses, course coordinators make up an FE-type exam of three multiple-choice questions. (For courses taught outside the ECE department, exams are made up by a designated faculty member and administered and graded by the course instructors.) Each question is carefully constructed so that it directly addresses one or more specific outcomes. Rather than testing students, each exam is testing specific outcomes. A high score means that most students in all sections of the course answered the question correctly. This means that the outcomes addressed by the question have been demonstrated. A low score implies the outcome has not been achieved, and corrective action of some sort is indicated. These tests are administered at the end of each term, and as of this writing, two cycles of testing have been completed. Like the indirect assessment, the direct assessment is also used to ensure that the individual program outcomes are represented in the courses at an appropriate level, and that all outcomes are sufficiently covered by the program.

- End-of-course assessment of the professor and course. This assessment has been ongoing for twenty years, is on reserve in the LTU library, and is not based on the stated mission of LTU-ECE. Two primary questions are typically scrutinized: how well does the instructor know the material, and how well does the faculty member impart the material. The scale is 0-4. Numbers over two are considered 'good', and numbers under one are considered 'bad'. The numbers between 1 and 2 are considered average. This tool is primarily utilized to screen new faculty members by the chairman to identify potential problems before they expand. The numbers are also utilized in the official form for COE for raises for full time faculty.

- Exit interview just prior to graduation for LTU-ECE. This has been completed a total of three times. This assessment instrument is one page long, in electronic format, and based on the outcomes and objectives. Dr. Anneberg is the student stakeholder coordinator, and is in the process of compiling a histogram of the comments for improvement for LTU-ECE.

- Exit interview just prior to graduation for the College of Engineering. This assessment instrument is 10 pages, and detailed information is gathered. The questions were not based on the outcomes or objectives, but very useful information is gleaned from this instrument each year. The faculty of the department reviews these results at one department meeting per year. Since the Alumni survey is taken shortly after this assessment, care was given by Dr. Kolasa to not give identical surveys. The numbers appear to be similar to the Alumni survey, where 88% of respondents gave LTU-ECE a satisfactory or better rating.

Faculty

Each LTU-ECE professor has an assignment for the LTU-ECE CQI process:

- Prof. Ron Foster - department chairman, CQI meeting coordinator.
- Dr. Lisa Anneberg - coordinator of computer engineering CQI effort.
- Dr. Michael Cloud - coordinator of entire department CQI effort.
- Dr. Peter Csaszar - responsible for maintaining the archive and the semi-official website of the entire CQI effort.
- Dr. Robert Farrah - coordinator of self-study document CQI effort.
- Dr. Hassan Hassan - coordinator of alumni stakeholder CQI effort.
- Dr. Richard Johnston - coordinator of graduate program CQI efforts.
- Dr. William Kolasa - coordinator of alumni stakeholder CQI effort.
- Prof. Kelvin Shih - coordinator of faculty stakeholder CQI effort, and direct assessment coordinator.
- Dr. Joseph Asik - coordinator of action item: laboratory improvement.

The faculty has had three assessment instruments:

- Comments on the Student Outcomes assessment - faculty can easily see the student assessment. They comment, present action items, and these numbers are reviewed at faculty meetings twice a year for each course.

- Comments on the CQI form - faculty can give non-course related suggestions, assessments, and action items.

- Yearly 'Suggestion Contest' conducted on Blackboard. Nine pages of detailed suggestions, answers, and short comments were compiled. Nearly all faculty participated, and the most surprising outcome is that professors were able to answer other professor concerns directly.

Alumni

The most recent alumni survey was sent out to electrical engineering alumni in 2003 to obtain data covering job satisfaction, job performance, perception of the quality of the LTU education, and other factors. The survey had approximately a forty percent return rate, with 41 respondents. This survey was intended to be a more focused survey then the 2002 survey, covering the EE and CE program outcomes 6, 8, 9, and 11. The main results of the 2003 survey are:

- 33% of the respondents had taken the FE exam. This relatively low percentage is likely due to the fact that there are few electrical engineering jobs that require state licensure. Given this interpretation, the above percentage is a fair indication that our alumni understand to some degree the need for life-long learning and the need for a broad education (outcomes 8 and 9).
- 76% of our alumni are involved in professional or career development activities. This indirectly substantiates outcomes 6 and 8.

- 39% attended or are attending graduate school. This is consistent with the 2002 survey, and is another indication that outcome 9 is being addressed.

- 28% participate or had participated in community service or civic activities. This low percentage indicates a potential problem in achieving outcome 6, dealing with the professional and ethical responsibilities of electrical engineers.

- The main concerns identified by the respondents in the 2003 survey are that laboratory equipment and laboratory manuals need to be upgraded, more simulation needs to be incorporated, and project management skills need to be taught. This is consistent with the 2002 survey and amplifies the need for corrective action.

In response to the 2002 and 2003 survey concerns (and other indicators), the ECE Department has taken the following continuous improvement steps:

- The curriculum has been upgraded to include an entrepreneurial segment (see Section 1).

- The laboratories have been supplied with new equipment, including digital oscilloscopes, multimeters and signal generators.

- Multiple lab manuals have been rewritten (Circuits Lab and Control Systems Lab), and even more are in the process of being rewritten (Digital Lab, Electronics Lab and Microprocessors Lab).

The number of contact hours for the Circuits 1 course has been increased in order to incorporate simulation.

Industrial Advisory Board

The industrial advisor board meets regularly twice per year, in May and in October, and the year 2004 was no exception. An IAB meeting of crucial importance took place on October 16, 2004, just before the upcoming ABET visit. This time the primary topic was the assembly of a proposal for the ECE Department's Five Year Plan. Once again, the participants have been divided into focus groups for carrying out the discussions; at the end, the results were presented in front of all groups. Following is the list of the groups, and the vision of each group concerning the next five years.

Focus Group I (Hassan, Maslowski, Zorka, Potochick, Asik, and Bayham)

- No Ph.D./D. SC

- Masters of Science in Control Engineering

- Graduate Certificate Programs
  o Optical Engineering
  o Communication Systems
  o Control Systems
  o Embedded Systems
  o Signal Processing
  o Automotive Engineering

- Undergraduate Concentrations
  o Alternative Energy
  o Embedded Systems
  o Communication Systems
  o Automotive Engineering

- Applied Research
  o Industry sponsorship for undergraduate Senior Projects
  o New projects (no overlap or repetition)

- Interdisciplinary Programs
  o B.S. in Mechatronics (ECE & ME)

- Offsite (Graduate & Undergraduate)
  o Offering degree at any possible location (company or school) – Plymouth/Traverse City

- On-Line Degree
  o MSECE (Exams on site)
  o BSEE (Labs and exams on site)

Focus Group II (Anneberg, Boyse, Doede, Shih, Kolasa, and Dragon)

- Top Priority: Enrollment
  - o Graduate: Certificates (Networks, Security, Mechatronics) – Develop marketing study on enrollment needs
  - o Undergraduate: Recruiting
    - Teach Intro to ECE to high school students
    - Concentrate on international students
    - Release time to coordinate high school/community college visits
    - Increase community college visits with Admissions Department
    - LTU students should go on recruiting visits
    - See why there is a decrease in enrollment (call or visit students)
    - More applied research–need facilities and develop new labs
    - Faculty should be able to teach at Community Colleges
    - Guidance counselors should be on first name basis

Focus Group III (Cloud, Wilcher, Farrah, Gagnier, Csaszar, Moriconi, and Dean Johnston)

- Certificate Programs
  - o "Systems" Areas/Tools
    - PDM for global development projects
    - CAD specific tools needed in industry
    - Cross-functional programs – more mechanical-type subjects for EE's
      - a) Thermal design for electronic systems
      - b) Statics/dynamics (Mechatronics)

      Make vs. buy decision (know what you are buying)
    - Product Development – electrical and mechanical elements that go into
    - systems–level engineering
  - o New materials – migration due to environmental requirements/industry driven

- Sponsoring technical competitions at high schools
- Increase sense of community at LTU

Based on the above discussion results, the participants isolated four high-priority recommendations for the ECE Department to implement in the next five years.

- Stabilize enrollment
- Bachelor of Science in Mechatronics (ECE and ME collaboration)
- Certificate programs (Marketing Survey and Training)

- Master of Science in Control Engineering

<u>Employers</u>

An interview is typically arranged with high level personnel in several companies that hire LTU electrical engineering graduates. The objective is to determine how well-trained the LTU engineers are compared to engineers from other universities. In the first interview high level personnel in twenty-one companies were surveyed, covering a three-year period from 2002 to 2004. A total of ten questions are included in the survey, covering outcomes 1 through 7, 9 and 14. The response to the survey was very positive. All questions are ranked from 0 (not satisfactory), 1 (Satisfactory), 2 (Above Average), and 3 (Exceptional). Summarizing the results, all respondents rated each survey question on average between 2 and 3, indicating they are very satisfied with the overall performance of the LTU graduates. The average ratings ranged from 2.25 to 2.75, an overall good response. In one of the early surveys the respondent indicated that LTU graduates were weak in management and program skills. This was an important observation, and was used together with other similar indications from other assessment tools to incorporate entrepreneurial courses into the curriculum (see Section 1). This survey is scheduled to be repeated every two years, with the next one scheduled for the spring of 2005.

4. Conclusion and Future Plan

The LTU-ECE department will continuously improve, and has a detailed plan outlined above for accomplishing this task. Assessment of the outcomes is a part of the plan, and must continuously be undertaken in order to ensure that the mission, the stakeholders, and LTU-ECE remain responsive to the changing environment. With the completion of the Fall 2004 ABET visit, an important milestone has been passed. The outlook for the success of future process improvement based on the continuous feedback from the assessment of constituencies remains positive.

Mechanical Engineering Department
Objectives and Outcomes Assessment Summary
2004 - 2005

1.Program Education Objectives, Outcomes and Accreditation Status

Following their July 2004 report and an October 2004 visit, the Mechanical Engineering (ME) Department was granted NGR (next general review in 6 years) status in August 2005 by the Accreditation Board for Engineering and Technology (ABET), using ABET 2000 criteria, which were established in 1998 to set forth new measures to assess engineering programs.

The current and published education objectives for the mechanical engineering program at Lawrence Technological University are to:

- Produce graduates capable of applying fundamental science, math, and engineering principles, in conjunction with modern technology, in an interdisciplinary engineering work environment.
- Produce graduates who are competent to pursue advanced degrees in engineering.
- Produce graduates capable of working in global technical locations as well as in the automotive related industries of southeast Michigan.
- Produce graduates capable of working in teams while utilizing ethical judgment and strong communication and leadership skills.
- Produce graduates capable of understanding contemporary global engineering issues and recognizing the importance of lifelong learning.
- Provide equivalent day and evening engineering degree programs for both full-time and part-time or working students.

The graduates of the program in mechanical engineering at Lawrence Technological University have:

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

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

2. Assessment Activities and Assessment Results

The ABET Draft Statement, dated 19 November 2004, cited a single program weakness for the Mechanical Engineering Department:

"The program lacks an assessment process that has quantitative metrics to measure satisfying the developed program outcomes. Currently, the only measurement tools used are course grades and surveys. No numerical measurement tools are used to determine if significant numbers of students are achieving the program outcomes. It also is unclear what are metrics and how weighting factors for metrics are being assigned. For program outcomes, it is not clear whether the 'assessment of pertinent course reports' metric is done individually or by the assessment group and how they are judged."

This weakness was discussed at length with the Program Evaluator during the visit and through e-mail communications between the program Evaluator and ME Department Chair after the visit. Based on this feedback, the Mechanical Engineering Department Faculty had several meetings after the visit to address the issue of including "quantitative metrics" in our assessment process. The revised assessment plan was included in the 30 Day Response to the ABET Draft Statement on 17 December 2004. The revised assessment plan follows and describes the metrics and numerical measurement tools that were used in the Fall 2004 and Spring 2005 semesters and will continue to be used in the 2005-2006 assessment year. Rubrics, survey questions, and direct assessment tools are available upon request.

Revised Assessment Plan:

Outcome a. An ability to apply knowledge of mathematics, science, and engineering.

A team of faculty members consisting of Dr. Vantsevich, Dr. Bhonsle and Dr. Riedel chose FE-type questions with several multiple choice answers to be administered with the final exams in Engineering Numerical Methods, Kinematics, and Dynamics. These questions involve the use of calculus and differential equations to solve engineering problems. The questions counted for 10 % of the final exam grade, in order that the students take them seriously. Target: 70 % of students answering each multiple part question will achieve a score of 60 % or above.

Outcome b. An ability to design and conduct experiments, as well as analyze and interpret data.

Since the Thermal Science Lab is our capstone laboratory course, Professor Frasch and Dr. Gerhart decided to assess this course by making slight alterations to five questions on an existing final exam, in order to determine the students' ability to design and conduct experiments, as well as analyze and interpret data. Target: 70 % of students will achieve a score of 60 % or better on five selected final exam questions in Thermal Science Lab.

Outcome c. An entry level ability to design a mechanical component and/or system to meet predetermined design requirements.

A team of faculty members consisting of Dr. Shamamy, Professor Feierfeil and Professor Frasch devised two additional assessment metrics for our design sequence. First, the team decided to invite both faculty members and members of the Advisory Board to the senior project presentations, including Formula SAE and Mini-Baja. The faculty members are required to answer a short list of questions, written by Professors Frasch and Feierfeil, to determine whether the project has met the design objectives. In the future, students will be assessed using this method twice in the senior projects sequence, once at the beginning of Projects 1 and again at the end of Projects 2. Targets are as follows:

- Projects 1   70 % of students will achieve a score of 80 % or above
- Projects   70 % of students will achieve a score of 87 % or above

In addition, Dr. Shamamy devised a ten question true/false quiz on design technique, to be administered to students in Intro to Engineering, Intro to Projects, Projects 1 and Projects 2 at the end of each semester. Since the students are progressing through the curriculum, different targets were set for these four courses:

- Intro to Engineering   70 % of students will achieve a score of 50 % or above
- Intro to Projects   70 % of students will achieve a score of 70 % or above
- Projects 1   70 % of students will achieve a score of 80 % or above
- Projects 2   70 % of students will achieve a score of 90 % or above

Outcome d. An ability to function on a cross disciplinary team.

Dr. Shamamy, Dr. Fletcher, Dr. Yee and Professor Feierfeil revised and expanded the use of the existing peer evaluation form used in the senior

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projects sequence, which was shown in the self study of July 2004. In addition to being used in Projects 1 and Projects 2, the form will be used to assess teamwork in the three person design project assigned in Intro to Engineering. This form will only be used to assess teamwork in senior project groups of 3 or more, since it is not felt that a 2 person group would give meaningful data. As the students progress through the curriculum, different targets were set for the courses involving teamwork, since their teamwork skills should be improving.

- Intro to Engineering   70 % of students will achieve a score of 68 % or above
- Projects 1   70 % of students will achieve a score of 78 % or above
- Projects 2   70 % of students will achieve a score of 89 % or above

Outcome e. An ability to identify, formulate, and solve mechanical engineering problems.

A team consisting of Dr. Lisiecki, Dr. S. Taraman, Dr. Riedel, Dr. Gerhart, Dr. Jawad and Professor Frasch decided to include a problem on the first page of the final exam in Statics, Mechanics of Materials, Design of Machine Elements, Thermodynamics, Fluid Mechanics and Heat Transfer. The problems will be included in the final exam score as graded by each individual instructor, but they will also be team graded to a standard involving the use of the problem solving rubric shown in the self study of July 2004 for the mechanics course sequence, and a modified rubric created by Dr. Gerhart and Professor Frasch in November 2004 for the thermal science sequence. In each course, a target of 50 % of students achieving a score of 70 % or better will be used. In addition, 10 students in Statics and 10 students in Thermodynamics will be identified for tracking in their future mechanics and thermal science courses, as stated in the self study of July 2004.

Outcome f. An understanding of the professional and ethical responsibility of mechanical engineers.

Dr. Shamamy wrote a series of 10 true-false questions based on the NSPE Code of Ethics for Engineers. This short quiz will be administered in the Intro to Engineering course, in Intro to Projects and again in Projects 2, after handing out the NSPE Code of Ethics. Targets for these three courses are as follows:

- Intro to Engineering   70 % of students will achieve a score of 70 % or above
- Intro to Projects   70 % of students will achieve a score of 80 % or above

- Projects 2   70 % of students will achieve a score of 90 % or above

In addition, Dr. Lisiecki and Dr. Bansal, together with a team of faculty members, wrote a series of 10 multiple choice ethics questions. These questions will be administered in the Intro to Engineering course and in Projects 2, and will also be used to promote a discussion of ethics in these courses. Targets for these two courses will be as follows:

- Intro to Engineering   50 % of students will achieve a score of 50 % or above
- Projects 2   70 % of students will achieve a score of 70 % or above

Outcome g. An ability to produce effective oral and written communications.

Dr. Gerhart modified the evaluation forms suggested by the University's Oral Communications Team (chaired by Professor Kelch of the Technical Communications Department) for use with the individual oral presentations that are required in Thermal Science Lab. Target: 60 % of students will achieve a score of 67 % or above.

Assessment of written communication will be carried out as per the University-wide plan outlined in the self study of July 2004. The plan outlines the use of a timed essay to assess student writing at the end of their sophomore year. All students will need to pass the essay exam to graduate, and they will be able to take the exam twice. The students who fail both attempts will be required to take a course called "Writing for the Professions" in the second semester of their junior year. Two pilots have been completed, and based on the results the following targets have been set for the students' first attempt to pass the essay:

- 65 % of students will pass the exam in their first attempt in Fall 2005
- 70 % of students will pass the exam in their first attempt in Fall 2006
- 75 % of students will pass the exam in their first attempt in Fall 2007
- 80 % of students will pass the exam in their first attempt in Fall 2008

Outcome h. A recognition of the need for, and an ability to engage in life-long learning.

Dr. Lisiecki added targets for the data presented in the self study of July 2004 for the recognition of our students of the need and ability to engage in life-long learning, and will monitor the results each year. As discussed in the self study, the next alumni survey will include a question on short courses and seminars.

- Target for ME alumni subsequently enrolled in graduate school at LTU (as determined from data from the Registrar's office)   15 %

- Target for alumni survey respondants indicating that they have enrolled
  in a graduate degree program   (any institution)   30 %

- Target for alumni survey respondants indicating participation in a
  short course, workshop or seminar in the past 2 years   80 %

<u>Outcome i. An ability to use the modern techniques, skills, and tools of mechanical engineering.</u>

LTU has provided laptops to all of its undergraduate students since 2001. These laptops have the latest versions of CAD, Office, programming and CAE software installed on them and the use of laptops has been integrated into all LTU classes.

As discussed in the self study, the courses involving the use of standard engineering software were revised for the Fall 2003 semester. The following courses are based on the use of these software products; students cannot pass the courses without having to use the software. Hence, by taking the courses, they have demonstrated the ability to use these modern tools of mechanical engineering. In addition, as discussed in the self study, the use of these software programs is reinforced in other courses.

- EGE 1012   Intro to Engineering
             Powerpoint, Outlook Express, Excel, Word, Solid
             Edge/Think3
- EGE 1101   Engineering Computer Applications Lab – Excel
- EGE 1201   Engineering Computer Applications Lab - MathCAD
- EGE 1301   Engineering Computer Applications Lab - MatLab
- EME 2012   Mechanical Engineering Graphics – Solid Edge
- EME 3033   Engineering Numerical Methods – MatLab
- EME 3034   Kinematics and Dynamics of Machined – ADAMS

An updated report was sent to the ABET Team Chair on 31 May 2005. This report compiled and summarized the assessment results for both Fall 2004 and Spring 2005 semesters.

Updated report:

The following is a summary of the results from the metrics and targets added to the assessment plan of the Mechanical Engineering Department at Lawrence Technological University, following the review of the Draft Statement sent to the Department after the 24-26 October 2004 visit. The details of the actual assessment instruments are included as attachments to the 17 December 2004 30 Day Response.

Outcome a. An ability to apply knowledge of mathematics, science and engineering.

A team of faculty members developed a "FE-type question" supplement with several multiple choice answers to be administered with the final exams in Engineering Numerical Methods, Kinematics, and Dynamics. These questions involve the use of calculus and differential equations to solve engineering problems. Target: 70 % of students answering each multiple part question will achieve a score of 60 % or above.

For the Fall 2004 semester, results were as follows:

- Engineering Numerical Methods 50 % of students received a score of 60 % or above
- Kinematics 88 % of students received a score of 60 % or above
- Dynamics 70 % of students received a score of 60 % or above

For the Spring 2005 semester, results were as follows:

- Engineering Numerical Methods 66 % of students received a score of 60 % or above
- Kinematics 84 % of students received a score of 60 % or above
- Dynamics 46 % of students received a score of 60 % or above

Outcome b. An ability to design and conduct experiments, as well as analyze and interpret data.

Since the Thermal Science Lab is our capstone laboratory course, a team of faculty members created five supplemental questions for the existing final exam, in order to determine the students' ability to design and conduct experiments, as well as analyze and interpret data. Target: 70 % of students will achieve a score of 60 % or above on five supplemental final exam questions that gauge student's ability to design experiments in Thermal Science Lab.

Results are as follows.

- Fall 2004 semester:

  100 % of students received a score of 60 % or above

- Spring 2005 semester:

  100 % of students received a score of 60 % or above

<u>Outcome c. An entry level ability to design a mechanical component and/or system to meet predetermined design requirements.</u>

A team of faculty members developed two additional assessment metrics for our three semester design sequence. First, the team decided to invite both faculty members and members of the Advisory Board to the senior project presentations, including Formula SAE and Mini-Baja. The faculty members are required to answer a short list of questions to determine whether the project has met the design objectives. In the future, students will be assessed using this method during the 2nd and 3rd course in the senior projects sequence. Targets are as follows:

- Projects 1(2nd course)   70 % of students will achieve a score of 80 % or above
- Projects 2 (3rd and final course)   70 % of students will achieve a score of 87 % or above

Note: The targets for this assessment measure were changed to measure the performance of project "groups" instead of students, since the faculty members assessed each group rather than each student.

Results were as follows:

Fall 2004 semester:

- Projects 1   See explanation below
- Projects 2   80 % of the groups received a score of 87 % or above

Spring 2005 semester:

- Projects 1   See explanation below
- Projects 2   100 % of the groups received a score of 87 % or above

Initial review of the data from Projects 1 (the second course in the three semester sequence) did not yield consistent and meaningful interpretations of student's ability to design a mechanical system or device. After considerable discussion and review of Projects 1 assessment by the design faculty team, they determined that the final course (Projects 2) would be the best place to have a meaningful assessment of student's design experience, since this is the semester that the projects reach realization.

In addition, the design faculty team devised a ten question true/false quiz on design technique, to be administered to students in the ME design courses at the end of each semester. Since the students are progressing through the curriculum, different targets were set for these four courses:

- Intro to Engineering   70 % of students will achieve a score of 50 % or above

- Intro to Projects

  70 % of students will achieve a score of 70 % or above
- Projects 2

  70 % of students will achieve a score of 90 % or above

Results were as follows:

Fall 2004:

- Intro to Engineering

  98 % of students received a score of 50 % or above
- Intro to Projects

  100 % of students received a score of 70 % or above

Spring 2005:

- Intro to Projects

  97 % of students received a score of 70 % or above
- Projects 2

  89 % of students received a score of 90 % or above

Outcome d. An ability to function on a cross disciplinary team.

A team of ME faculty revised and expanded the use of the existing peer evaluation form used in the senior projects sequence, which was shown in the self study of July 2004. The form is also used to assess teamwork in the team design project assigned in Intro to Engineering. These forms were distributed to the instructors for the courses which require team projects. As the students progress through the curriculum, different targets were set for the courses involving team projects, since their teamwork skills should be improving. Targets are as follows:

- Intro to Engineering

  70 % of students will achieve a score of 68 % or above
- Projects 2

  70 % of students will achieve a score or 89 % or above

Results are as follows:

Fall 2004 semester:

- Intro to Engineering

  96 % of students received a score of 68 % or above
- Projects 2

  89 % of students received a score of 89 % or above

Spring 2005 semester:

- Intro to Engineering
100 % of students received a score of 68 % or above

- Projects 2
40 % of students received a score of 89 % or above

Outcome e. An ability to identify, formulate, and solve mechanical engineering problems.

The ME Department decided to include a problem on the first page of the final exams in Statics, Mechanics of Materials, Design of Machine Elements, Thermodynamics, Fluid Mechanics and Heat Transfer. These problems were developed by relevant faculty. The problems are included in the final exam score as graded by each individual instructor, but are also team graded at the end of the semester to a standard involving the use of the problem solving rubrics shown in the self study of July 2004. In each course, a target of 50 % of students achieving a score of 70 % or above will be used.

Results from the assessment of these problems are as follows:

Fall 2004 semester:

- Statics
67 % of students received a score of 70 % or above

- Mechanics of Materials
56 % of students received a score of 70 % or above

- Design of Machine Elements
68 % of students received a score of 70 % or above

- Thermodynamics
74 % of students received a score of 70 % or above

- Fluid Mechanics
17 % of students received a score of 70 % or above

- Heat Transfer
72 % of students received a score or 70 % or above

Spring 2005 semester:

- Statics
60 % of students received a score of 70 % or above

- Mechanics of Materials
54 % of students received a score of 70 % or above

- Design of Machine Elements
60 % of students received a score of 70 % or above

- Thermodynamics
72 % of students received a score of 70 % or above

- Fluid Mechanics
50 % of students received a score of 70 % or above

- Heat Transfer 51 % of students received a score of 70 % or above

Outcome f. An understanding of the professional and ethical responsibilities of mechanical engineers.

A faculty team has written a series of 10 true-false questions based on the NSPE Code of Ethics for Engineers. This short quiz was administered to the students after handing out the NSPE Code of Ethics. Targets for the courses are as follows:

- Intro to Engineering 70 % of students will achieve a score of 70 % or above
- Intro to Projects 70 % of students will achieve a score of 80 % or above
- Projects 2 70 % of students will achieve a score of 90 % or above

Results were as follows:

Fall 2004:

- Intro to Engineering 98 % of students received a score of 70 % or above
- Intro to Projects 89 % of students received a score of 80 % or above
- Projects 2 91 % of students received a score of 90 % or above

Spring 2005:

- Intro to Projects 94 % of students received a score of 80 % or above
- Projects 2 89 % of students received a score of 90 % or above

In addition, a team of faculty members, have written a series of 10 multiple choice ethics questions. These questions were also used to promote a discussion of ethics. Targets for the courses were as follows:

- Intro to Engineering 50 % of students will achieve a score of 50 % or above
- Projects 2 70 % of students will achieve a score of 70 % or above

Results were as follows:

Fall 2004:

- Intro to Engineering   88 % of students received a score of 50 % or above
- Projects 2   91 % of students received a score of 70 % or above

Spring 2005:

- Projects 2   85 % of students received a score of 70 % or above

Outcome g. An ability to produce effective oral and written communications.

A faculty team modified the evaluation forms suggested by the University's Oral Communications Team (chaired by Professor Kelch of the Technical Communications Department) for use with the individual oral presentations that are required in Thermal Science Lab. Target: 60 % of students will achieve a score of 67 % or above.

Results are as follows:

Fall 2004 semester:

- 76 % of students received a score of 67 % or above

Spring 2005 semester:

- 100 % of students received a score of 67 % or above

Assessment of written communication will be carried out as per the University-wide plan outlined in the self study of July 2004. The plan outlines the use of a timed essay to assess student writing at the end of their sophomore year. All students will need to pass the essay exam to graduate, and they will be able to take the exam twice. The students who fail both attempts will be required to take a course called "Writing for the Professions" in the second semester of their junior year. Two pilots have been completed, and based on the results the following targets have been set for the students' first attempt to pass the essay:

- 65 % of students will pass the exam in their first attempt in Fall 2005
- 70 % of students will pass the exam in their first attempt in Fall 2006
- 75 % of students will pass the exam in their first attempt in Fall 2007
- 80 % of students will pass the exam in their first attempt in Fall 2008

The Associate Provost has been contacted and this assessment is proceeding as scheduled. Library personnel are in charge of administering the timed essay.

Outcome h. A recognition of the need for, and an ability to engage in life-long learning.

Assistant ME Chair, Dr. Lisiecki, has added targets for the data presented in the self study of July 2004 for the recognition of our students of the need and ability to engage in life-long learning, and will monitor the results every two years. As discussed in the self study, the next alumni survey will include a question on short courses and seminars.

- Target for ME alumni subsequently enrolled in graduate school at LTU (as determined from data from the Registrar's office)   15 %
- Target for alumni survey respondents indicating that they have enrolled in a graduate degree program (any institution)   30 %
- Target for alumni survey respondents indicating participation in a short course, workshop or seminar in the past 2 years   80 %

In the June 2004 self study, data from the Registrar's offices showed that the percentage of LTU graduates who subsequently enrolled in graduate degree programs at LTU from 1985 to 2004 has been steadily increasing, up to a maximum of 21 % in 2002. Also, results from an alumni survey conducted in late 2003 were presented.   Forty-one percent of the respondents to this survey had obtained or were in the processes of obtaining a graduate degree. These results will continue to be monitored every two years by the Assistant ME Chair.

Outcome i. An ability to use the modern techniques, skills, and tools of mechanical engineering.

LTU has provided laptops to all of its undergraduate students since 2001. These laptops have the latest versions of CAD, Office, programming and CAE software installed on them and the use of laptops has been integrated into all LTU classes.

As discussed in the self study, the courses involving the use of standard engineering software were revised for the Fall 2003 semester. The following courses are based on the use of these software products; students cannot pass the courses without having to use the software. Hence, by successfully completing the courses they have demonstrated the ability to use these modern tools of mechanical engineering. As discussed in the self study, the use of these software programs is reinforced in other courses.

- EGE 1012   Intro to Engineering
                         Powerpoint, Outlook Express, Excel, Word, Solid
                         Edge/Think3
- EGE 1101   Engineering Computer Applications Lab – Excel
- EGE 1201   Engineering Computer Applications Lab - MathCAD
- EGE 1301   Engineering Computer Applications Lab - MatLab
- EME 2012   Mechanical Engineering Graphics – Solid Edge
- EME 3033   Engineering Numerical Methods – MatLab
- EME 3034   Kinematics and Dynamics of Machined – ADAMS

3. Action Plan for 2005-2006

Results from the Revised Plan, which was implemented in the Fall 2004 and Spring 2005 semesters, will be evaluated during the Fall 2005 semester. Modifications to targets, assessment measures and rubrics will be made. With these modifications, the ME Department will continue to follow the assessment practices outlined in the July 2004 Self Study. In addition, the ME Department will continue working with the University Assessment Committee on "Teamwork" and "Leadership".

Engineering Technology Department
Objectives and Outcomes Assessment Summary
2004 - 2005

1. Program Educational Objectives, Outcomes and Accreditation Status

The Engineering Technology Department is in a stage of transition. The department has been responsible for four bachelor degree programs and four associate degree programs. The four associate degree programs are;
- Associate of Science in Mechanical Engineering Technology
- Associate of Science in Manufacturing Engineering Technology
- Associate of Science in Construction Engineering Technology
- Associate of Electrical Contracting Technology

The four bachelor degrees are:
- Bachelor of Science in Engineering Technology
- Bachelor of Science in Construction Management
- Bachelor of Science in Industrial Management
- Bachelor of Science in Technology Management

The University is doing some restructuring which includes moving the Bachelor of Science in Industrial Management and Bachelor of Science in Technology Management to the College of Arts and Sciences. Initial reaction to this move was one of shock, however it is also an opportunity to improve the existing programs within the department. This also includes the addition of an Associate of Science in Communications Engineering Technology. We are offering one new associate degree program and maintaining four others. We are also maintaining two bachelor degree programs. The whole department is recovering from the shock caused by moving Industrial Management and Technology Management. This move has caused us "regroup" and improve. With this in mind, all of our programs are being included in the assessment program. The fall semester 2005 will be started with every faculty member, both fulltime and adjunct, writing a brief (Pre-test) examination to act as a baseline for assessment. The final (Post-test) examination will be compared to the baseline. The intent is to bring every class into the process.

During the Fall 2004 semester the department continued to get syllabi written with educational objectives.

2. Assessment Activities and Results

Assessment Objectives

During the 2003-2004 school year the Engineering Technology Department identified four objectives. They were:

- Alumni Survey form, to be developed by the Engineering Technology Department.

- Using the evaluation developed for adjunct faculty members, determine minimum acceptable scores, followed by addressing the low results with the faculty members in question.

- The Department is starting to develop course portfolios for various courses that are offered. Portfolios with include:

  - Course Syllabi
  - Copies of examinations
  - Homework assignments

Portfolios are to contain examples of student work that is rated as excellent, average, and poor.

The objectives were listed and recorded, with some success. The exception to that was the use of portfolios. The intent was noble but the time to do it wasn't available.

Assessment objectives for the 2004-2005 school year have been directed at measuring writing content skills and examining leadership skills. Writing, as well as oral skills were examined in the following classes.

- TIE2063   Manufacturing Processes 1
- TIE2153   Manufacturing Processes 2
- TIE2013   Productivity and Work Measurement
- TOM3113   Operations Management.

Dr. White continues to require that all students in TIE2063, Manufacturing Processes 1 and TIE2153, Manufacturing Processes 2, participate in the group presentations. Both group writing and group presentations are difficult to assess because the finished work may not accurately represent the work that was undertaken by each of the team members. A peer evaluation instrument has been developed that requires that all team members to evaluate themselves as well as their team colleagues.

3. Action Plan for 2005-2006

- New part-time faculty members are being asked to write intended outcomes for the instructional objectives they developed last year. These will follow the format presented in How to Write and Use Instructional Objectives, by Norman Gronlund. Support for the writing of these objectives will be from the secretary in the Engineering Technology Department.

- A copy of Classroom Assessment Techniques: A Handbook for College Teachers, by Angel and Cross will be available to all adjunct faculty who would like to use it.

- Heaviest of the action activities will be the implementation of Pre and Post Test questions for baseline assessment and measurement of progress.

The use of Pre and Post testing will be challenging but once implemented, it will give each instructor a better chance to measure success.

College of Management
Objectives and Outcomes of Assessment Summary
2004 - 2005

1. Program Educational Objective, Strategies and Accreditation Status

College of Management Objective:

Align COM resources, programs, and strategies around the needs of our constituents—students, faculty, staff, alumni, and industry. Strategies: Develop distinctive academic programs and provide enhanced student services.

Accreditation:

Lawrence Technological University is accredited by The Higher Learning Commission and a member of the North Central Association. The International Assembly of Collegiate Business Education (IACBE) accredits all of the graduate programs in the College of Management. In addition, the Association of Collegiate Business Schools and Programs (ACBSP) accredits all business programs.

2. Assessment Tools for 2004-2005

- Noel-Levitz Student Satisfaction Survey
- Culture Survey
- Advisory Board Focus Groups
- Enrollment Data
- MBA Pre/Post Knowledge Tests
- Student Focus Groups
- BSIT ICCP Exam
- MSIS ICCP Exam
- CIMBA Case Studies
- Online Assessments
- MSOM Capstone Knowledge Test
- MSOM Program Review (Alumni/Student Focus Groups)
- MSIS Program Review (Alumni/Student Focus Groups)
- DMIT Pre/Post Knowledge Tests and Student Focus Groups
- DBA Course Evaluation and Student Focus Groups

3. Assessment Results for 2004-2005

Graduate Survey

The analysis of the Graduate Survey show overall high satisfaction with their learning experience at LTU's College of Management. The results of the survey follow.

Graduate Survey 2005

Program Content:

Q1. How well your program met stated objectives?	No. of Responses	Percentage
Superior	17	34.00%
High Satisfactory	24	48.00%
Satisfactory	9	18.00%
Low Satisfactory	0	0.00%
Unsatisfactory	0	0.00%
No Answer	0	0.00%
Total	50	100%

Q2. How well your program met your needs and interests?	No. of Responses	Percentage
Superior	22	44.00%
High Satisfactory	19	38.00%
Satisfactory	9	18.00%
Low Satisfactory	0	0.00%
Unsatisfactory	0	0.00%
No Answer	0	0.00%
Total	50	100%

Q3. The helpfulness of your program to your work?	No. of Responses	Percentage
Superior	18	36.00%
High Satisfactory	20	40.00%
Satisfactory	10	20.00%
Low Satisfactory	1	2.00%
Unsatisfactory	0	0.00%
No Answer	1	2.00%
Total	50	100%

Q4. The knowledge and skills gained in your program?	No. of Responses	Percentage
Superior	20	40.00%
High Satisfactory	22	44.00%
Satisfactory	7	14.00%
Low Satisfactory	1	2.00%
Unsatisfactory	0	0.00%
No Answer	0	0.00%
Total	50	100%

Q5. The materials / books used?	No. of Responses	Percentage
Superior	9	18.00%
High Satisfactory	25	50.00%
Satisfactory	15	30.00%
Low Satisfactory	1	2.00%
Unsatisfactory	0	0.00%
No Answer	0	0.00%
Total	50	100%

Q6. The content of the courses taken?	No. of Responses	Percentage
Superior	11	22.00%
High Satisfactory	27	54.00%
Satisfactory	12	24.00%
Low Satisfactory	0	0.00%
Unsatisfactory	0	0.00%
No Answer	0	0.00%
Total	50	100%

Instructional Effectiveness:

Q7. Faculty's knowledge in their field?	No. of Responses	Percentage
Superior	24	48.00%
High Satisfactory	18	36.00%
Satisfactory	6	12.00%
Low Satisfactory	1	2.00%
Unsatisfactory	0	0.00%
No Answer	1	2.00%
Total	50	100%

Q8. Faculty preparation and organization?	No. of Responses	Percentage
Superior	16	32.00%
High Satisfactory	17	34.00%
Satisfactory	12	24.00%
Low Satisfactory	3	6.00%
Unsatisfactory	1	2.00%
No Answer	1	2.00%
Total	50	100%

Q9. Faculty responsiveness and timely feedback?	No. of Responses	Percentage
Superior	17	34.00%
High Satisfactory	15	30.00%
Satisfactory	15	30.00%
Low Satisfactory	2	4.00%
Unsatisfactory	0	0.00%
No Answer	1	2.00%
Total	50	100%

Q10. Faculty interest in teaching?	No. of Responses	Percentage
Superior	25	50.00%
High Satisfactory	17	34.00%
Satisfactory	5	10.00%
Low Satisfactory	2	4.00%
Unsatisfactory	0	0.00%
No Answer	1	2.00%
Total	50	100%

Q11. Faculty's clarity in presenting concepts?	No. of Responses	Percentage
Superior	16	32.00%
High Satisfactory	20	40.00%
Satisfactory	10	20.00%
Low Satisfactory	3	6.00%
Unsatisfactory	0	0.00%
No Answer	1	2.00%
Total	50	100%

Q12. Faculty's effect on student motivation?	No. of Responses	Percentage
Superior	15	30.00%
High Satisfactory	17	34.00%
Satisfactory	15	30.00%
Low Satisfactory	2	4.00%
Unsatisfactory	0	0.00%
No Answer	1	2.00%
Total	50	100%

Q13. Overall quality of the instruction you received?	No. of Responses	Percentage
Superior	16	32.00%
High Satisfactory	19	38.00%
Satisfactory	12	24.00%
Low Satisfactory	2	4.00%
Unsatisfactory	0	0.00%
No Answer	1	2.00%
Total	50	100%

MBA Program

MBA Pre/Post Knowledge Tests Assessment for:

- MIS 6013:   Management Information Systems
- HRM 6023:   Human Resource Management
- MGT 6013:   Leadership and Management
- MGT 6053:   Perspectives in International Business
- MGT 6063:   Strategic Capstone
- MKT6013:   Strategic Marketing Management
- ACC 6013   Accounting for Decision Making

Assessment Tools Used

Multiple Choice Tests of 30 to 50 questions were administered before and after each course.

Assessment Results

See Appendix for COM Annual Report on Outcomes Assessment and Summary Sheets per course.

Analysis of Results

In examining the data of the pre-post tests, there was an overall increase in average tests scores in comparison to last year. Over the academic year,

many questions were rewritten and the accounting test completely revamped. Please refer to detail Summary Sheets.

Action Plans

During the academic year 2004-2005, the College of Management has developed a new format for reporting results for each outcomes assessment initiative. In order to better report the COM findings and create meaningful action plans based on specific courses, programs and services, a new format was created this year that is tied directly to the College of Management's mission, objectives and strategies. The tables that follow illustrate the unit's objectives, desired outcome/result, means of assessment, actual outcome/result and the use of results.

The tables in the COM Appendix describe the survey instruments, methods used to execute the plan, the analysis of survey results, and the action plans devised for the changes and improvements based on the evidence of assessment findings.

BSIT Program

ICCP Exam Results

Frequencies

Statistics

		Gender	Total Score	Certification
N	Valid	9	9	9
	Missing	0	0	0

Frequency Table

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	5	55.6	55.6	55.6
	Female	4	44.4	44.4	100.0
	Total	9	100.0	100.0	

Representing the last year, only 9 students sat for the ICCP exam. This is approximately 15% of the total number of students in the program (approximately 60 students).

Total Score

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 47	1	11.1	11.1	11.1
53	1	11.1	11.1	22.2
56	1	11.1	11.1	33.3
65	1	11.1	11.1	44.4
71	1	11.1	11.1	55.6
72	3	33.3	33.3	88.9
78	1	11.1	11.1	100.0
Total	9	100.0	100.0	

Certification

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid ACP	3	33.3	33.3	33.3
CCP	4	44.4	44.4	77.8
Failed	2	22.2	22.2	100.0
Total	9	100.0	100.0	

Seven students were awarded one of the two certifications or 78% completed the exams satisfactorily at or above the level required for the certification on the first try. Two students repeated their exams and eventually passed, receiving their Certification.

Further review of the results indicates a need to improve the 1.00 Human & Organizational Framework; 2.00 Systems Concepts; 4.00 Systems Development; and 6.00 Associated Disciplines. B.S. Information Technology continues to evaluate and refine our instruction in 2.00 Systems Concepts and 4.00 Systems Development. We are working with the College of Arts and Sciences programs to improve 1.00 Human & Organizational Framework and 6.00 Associated Disciplines. Our goal, through continuous evaluation and improvement, is to improve all measured areas under the ICCP exam, reduce instruction overlap, and provide greater focus on each subject. Ultimately our goal is 100% certification of students on the first attempt of the ACP or CCP examinations.

Course Evaluations (Mid-Term and Final)

These two instruments are used to help fine tune the instruction for each subject area, identify opportunities for further training and mentorship, and synchronize the learning objectives to avoid excessive overlap of subject material from course to course within the program.

Additionally, instructors share generalized data from mid-term and final exams with colleagues to identify areas through out the program needing improvement. An example would be a student in a database class is expected to have a basic knowledge of databases prior; therefore, an introduction to databases would be essential in the IT Inaugural course with

specific objectives to set the student up for success in the later database course.

When combined with the ICCP exam results as well as the Noel-Levitz Survey the picture of student needs becomes slightly clearer, identifying new opportunities for program development and improvement.

MSIS Program

As part of the MSIS Program Review process, it is proposed that the ICCP examination requirement was eliminated in favor of a broader outcome assessment approach that will include course-based assessments, student and instructor evaluations, and external assessments. These assessments will be reported in the COM Annual Report 2005-2006.

CIMBA Program

Career Integrated - MBA

Means of Assessment *(Evaluation Tool)*	Actual Outcome/Result *(Cite Data Findings)*	Use of Results *(Strategies to Improve or Continue Success)*
Pre / Post Test for CI-MBA modules Reflection papers	Module 3 • *Identifies and Understands Lean Concepts (85% of the students were able to identify and understand the concepts)* • *Demonstrates Application (85%)* • *Improved Pre to Post Test (90%)* *Module 5* • *20 students completed the pre/post test* • *Scores improved by 38%* *Module 6* • *18 of 20 students completed the pre/post test; overall scores improved by 20%* • *Knowledge areas for the pre/post included Project Management and Negotiation skills.* • *Reflection paper assessment demonstrated increased skills in presentations and research skills.*	Module 3 20 students were enrolled in the course; 20 students completed the pre/post test. • *Develop the module based on lean thinking. Utilizing this mindset and incorporating some of the tools will allow us to not only improve the efficiency and effectiveness of the module, but will also provide another real world example for the students on how lean thinking can be applied.* *Module 6 incorporates the use of a Reflection paper to capture student comments for: How knowledge was enhanced as a result of course; How did course assignment and content stretch capabilities; What did the course do that was important to you. Comments included: Gained writing skills for business plan, valued honest and prompt feedback, assignments supported practical development of final project assignment, course involved real everyday scenarios, knowledge of project management and negotiation techniques enhanced greatly.*

MSIO – Capstone Knowledge Test

Desired Outcome/Result (Cite Measurable Criteria for Success)	Means of Assessment (Evaluation Tool)	Use of Results (Strategies to Improve or Continue Success)
Get a benchmark	Pre/Post test Pre-test = 33.2 Post-test = 41.6	While there is improvement from pre-test to post-test, the absolute values, in future, must also increase. Modest goal is over 50%.

DMIT Program

DMIT Comprehensive Examinations were conducted during the academic year:

- 6 students passed the Major Track Comprehensive Examination
- 4 students passed the Research Methods Track Comprehensive Examination

In addition, as part of DMIT doctoral requirements, students wrote 13 papers during the academic year with Dr. Steenkamp.

Table 2. Research Papers 2004/2005: A.L. Steenkamp with DMIT Students

1. With Konda, D., Information Technology, the Key Enabler for Knowledge Management, a Methodological Approach, International Journal of Knowledge, Culture and Change Management, Vol. 3, Monograph MC03-0070-2003, (Ed.M. Kalantzis and B. Cope), 2003.

2. With Li, Z., Strategic Planning for Small IT Business, Proceedings of AMCIS2004 Conference, New York, August 2004.

3. With Konda, D., Knowledge Perspectives and Integrated Knowledge Management Framework, Proceedings of International Conference on Knowledge, Culture and Change Management, United Kingdom, August 2004. (*Paper accepted for International Journal of Knowledge, Culture and Change Management*).

4. With Van, D., An Approach to Teaching Information Technology Life Cycle Processes, Proceedings of ISECON2004, Rhode Island, November, 2004. To be published in the Information Systems Education Journal. (*Outstanding Paper Award*)

5. Steenkamp, A.L. and Kakish, K. An Approach to Developing Information Technology Architectures, Proceedings of ICIER2004, Washington DC, December 2004.

6. Steenkamp, A.L., Kakish, K., Buchheidt, M., Li, Z., Rajabion, L. and Van, D., A Team Project on an Information Technology Application Architecture, Proceedings of ICIER2004, Washington DC, December 2004.

7. Steenkamp, A.L., Kakish, K., Basal, A., Dawwas, M., Konda, D. Shulaiba, R., A Team Project on Information Technology Infrastructure Architecture, Proceedings of ICIER2004, Washington DC, December 2004.

8. Steenkamp, A.L., Kakish ,K., Warner, D., Foster, R. and Chen, G., A Team Project on the Data Architecture of an Enterprise Information Portal, Proceedings of ICIER2004, Washington DC, December 2004.

9. With Van, D., An Approach to Teaching Information Technology Life Cycle Processes, Information Systems Journal, 2005 Volume. http://isedj.org/isecon/2004/2443/index.html.

10. Steenkamp, A.L. and Kakish, K. An Approach to Developing Information Technology Architectures, Proceedings of ICIER2004, International Academy for Information Management, Washington DC, December 2004.

11. Steenkamp, A.L., Kakish, K., Buchheidt, M., Li, Z., Rajabion, L. and Van, D., A Team Project on an Information Technology Application Architecture, Proceedings of ICIER2004, International Academy for Information Management, Washington DC, December 2004.

12. Kakish, K., Steenkamp, A.L., Basal, A., Dawwas, M., Konda, and D. Shulaiba, R., A Team Project on Information Technology Infrastructure Architecture, Proceedings of ICIER2004, International Academy for Information Management, Washington DC, December 2004.

13. Steenkamp, A.L., Kakish ,K., Warner, D., Foster, R. and Chen, G., A Team Project on the Data Architecture of an Enterprise Information Portal, Proceedings of ICIER2004, International Academy for Information Management, Washington DC, December 2004.

DBA Program

DBA 8013 Focus Group Results:

- **Move Required Text to Recommended Text:** Schein, E. (1999). *The Corporate Culture Survival Guide: Sense and Nonsense About Culture Change.* Jossey-Bass. ISBN: 0-7879-4699-0. **Add to Required Text**: Spears, L. (1998). *Insights on Leadership: Service, Stewardship, Spirit, and Servant-Leadership.* John Wiley & Sons, Inc. ISBN: 0-471-17634-6.
  Rationale: Servant leadership offers a variety of actual leadership experiences, Schein work will be used in the organization development course.

- **Guest Speakers**: Utilize two versus three guest speakers during the term.
  Rationale: Three speakers demanded too much time and class sessions were rushed. Use guest speakers in the second and third weekend only. Ensure speakers are value-added and that they specifically focus their sessions on leadership experiences.

- **Leadership Interviews:** Allow students the flexibility to interview leaders outside of their organization. A previous criterion was limited to within their organization.

Rationale: Some students were not satisfied with the top management in their   organization and would have preferred to use leaders in other companies.

- **360 Evaluation:** Move deadline up one week for completion of project. Too much is due at the end of the term.
  Rationale: More time is needed to work on and complete the capstone essay project: *What Do We Need in a Leader?*

- **What Do We Need in a Leader?** Provide more detailed instructions of the requirements for this essay.
  Rationale: Students were confused about the expectations of this project. Provide examples of prior student's work to illustrate expectations.

- **APA Guidelines:** Use the prepared handout on APA guidelines to fully discuss this style of writing the first night of class.
  Rationale: Most students were not aware of this style of writing that is required at the doctoral level.

- **Bass Presentations:** Shorten the length of these presentations to 1.5 hours to ensure professor involvement and class discussion of major learnings.
  Rationale: Ensure consistency in knowledge and application of principles.

General Comments:

Overall the students found the class to be a very positive learning experience and highly valuable in their professional careers. They felt it was an excellent introduction to the DBA program as evidenced in their end-of-the-term evaluations.

Here are some general comments made by the students: The class provided more self-knowledge and self-awareness of my current leadership skills and a better understanding of others; the class expanded my leadership skill-set; the class energized me and provided a renewed passion for my work.

MIS 8063 Focus Group Results:

- Restructure the Blackboard "Course Documents" folders into "Weekly Folders" (completed in mid-semester)

- "Push down" weekly folders after the week has ended to simplify navigation (completed in mid-semester)

- Move additional documents into "Weekly Folders" from "Course Information" (some documents migrated during the semester, others will be migrated prior to Spring 2006)

- Identify "what is not included" in specific folders and point students to other locations where more information can be found (this review and update will be completed prior to Spring 2006)

- Note that discussion forum participation can span across multiple weeks (completed in mid-semester)

- Maintain the practice of sending out weekly "guidance e-mails" (this practice has been adopted by the instructor for all of his classes and students universally believe this to be a valuable practice)

- Conduct a midterm contribution check for Blackboard discussion forums (this has been done for the instructor's other classes, and will be adopted for DBA8063 in Spring 2006)

- Develop a more formal rubric regarding Blackboard participation (accepted, and the instructor will collaborate with COM colleagues to develop a benchmark participation rubric)

- Improve guidelines for in-class presentation materials (accepted, and the instructor will collaborate with COM colleagues to develop guidelines for posting on the COM web site)

<u>DBA 8073 Focus Group Results:</u>

- A student focus group was conducted the last weekend of class (December 18, 2004) to discuss in detail the general learnings of the class and how to make improvements for the next cohort. An extensive evaluation was posted on Blackboard and completed prior to the focus group (see attached) so students would come prepared as to the content of the session. Students also completed term end evaluations.

- **Syllabus designed with learning options:** The syllabus offered students the opportunity to choose individual and/or team deliverables based on their areas of interest that connected with the learning objectives of the course. It was the student's responsibility to stay organized and on a timeline that he or she suggested within the course syllabus guidelines for the first weekend. This was a very rewarding and unique "teaching and learning" methodology – keep it! **Rationale:** This is a risk for the student and the instructor; however, the students appreciated the options and took full advantage to enhance the learning experience. This gives the student the opportunity to explore his/her areas of interest and integrate the

assignments when possible. The instructor also stressed the importance of teamwork and the team approach. This has proven to be important and enhanced the sense of partnership and camaraderie among the cohort!

- Evaluation on Guest Speakers:

  o Keep **DBA ABD Panel** with a focus on the content of the course so we are leveraging our learnings! **Rationale:** The selected candidates were very helpful and help us to understand the next year's path we must take.

  o **Build in events** that connect to the course objectives and work to further the professional and personal growth of students. Consider offering the students the opportunity to suggest the possibility of attending a conference that aligns with the OD Course in lieu of another assignment if one is available especially if Bb is used to keep the group connected. Keep the options and the flexibility for student choice. **Rationale:** Spontaneity of the **Berrett – Koehler Positively Making A Difference experience** made it an adventure and a great learning experience and it tied directly to the learning objectives for Weekend #2.

  o **Cheri Torres, President, Mobile Team Challenge – Excellent –** bring it into your MBA programs because it encourages a more collaborative versus a competitive environment! **Rationale:** We liked the physical "real time" experience of teamwork, innovation, creativity, and trust in action when leading change with the integration of learning and apply Appreciative Inquiry in real time strategic change. She tied the experiential learning to learning objectives from both **Dr. Castelli's** and **Dr. Stavros'** coursework. Direct tie into several research agendas and work.

  o **Dr. Regina Bowden** – She offered real value for those interested in the consulting field and it coordinated well with our last assignment for the class. **Rationale:** She spoke from experience from a consultant's perspective in the field.

Overall Comments:

Keep the guest speakers. The ABD panel was excellent. Speakers were very well versed in their areas and how their work connected to our learning objectives.

Noel-Levitz Student Satisfaction Survey

Once again, in 2005, the College of Management has exceeded its prior exceptional rankings of student satisfaction conducted in 2003. Please refer to the COM Report on Outcomes Assessment Appendix for data findings by question.

4. Realized Outcomes for 2004-2005

Major actions and realized outcomes for 2004-2005 include:

- Redesigned and refined courses to better meet the needs of the students

- Curriculum changes to improve student knowledge and skills

- Quantified assessment results are used as a benchmark for next academic year

- Planning occurs based on feedback and test results

- Continued high satisfaction with the value of learning experience, faculty, and COM overall effectiveness

5. Action Plans for 2004-2005

- MBA Pre/Post Knowledge Tests – Revise instruments as needed and consider incentives for improving posttest results

- MSIS – Determine and implement a value-added alternative to the ICCP exam

- BSIT – Continue to exceed last year's actual results.

- MSIO Capstone Pre/Post Knowledge Test – Consider revising existing knowledge test and create an essay-based case study; compare results against grades and determine an ongoing assessment for the program

- CIMBA - The new CIMBA Director will coordinate and communicate outcomes assessment in all modules; report results and site overall changes and improvements for the program

- DMIT and DBA - Directors will report findings for individual courses and incorporate changes and improvements for future courses

- Improve the effectiveness of COM operations by continuing to incorporate technology into a variety of existing procedures

Refer to the COM Annual Report on Outcomes Assessment Appendix for individual action plans by course/program.