DRAFT REVISED ASSESSMENT PLAN OF THE MTU SCHOOL OF TECHNOLOGY

Submitted to: MTU Assessment Council
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Prepared by: The School of Technology Assessment Committee

Committee Members:

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These materials are drafts of the final plan. Where materials of certain programs are not present, they are in the process of being written and will follow the same format as the material presented.

Restated University Mission Statement for the School of Technology

Michigan Technological University will benefit the State of Michigan and society as a whole through a balance of quality education.... the University will continue to build upon its unique tradition of education in engineering, science, and related disciplines, and to provide the state and its industries with highly qualified graduates. In addition, the University will strive to promote diversity, creativity, leadership, and teamwork, and to educate all of its students to meet the changing needs of a global, technological, diverse, and environmentally sensitive society.

Restated University Goal Statement for the School of Technology

Michigan Technological University will be a nationally and internationally recognized leader in meeting challenges of the future through undergraduate... education... in *applied* sciences and engineering. At the undergraduate level, we will have comprehensive, forward-looking curricula in sciences and engineering that educates technically competent, intellectually vital graduates who are at the same time effective communicators and aware of the social, economic, and cultural context of their work.... At each educational level and within each segment of the University community, we will increase the proportion of individuals from under-represented racial and gender groups.

Intended Outcomes/Objectives

GOAL 1:

Students enrolled in School of Technology programs will master the fundamentals of the program in which they are enrolled.

GOAL 2:

Students will have a reasonable ability to communicate their thoughts and ideas.

GOAL 3:

Alumni 3 to 5 years after graduation will have demonstrated that their education meets the needs of industry.

Assessment Criteria & Procedures

Goal 1.

a. Exams in selected courses will contain a set of core questions covering the fundamentals of the field.

b. Performance appraisals will be completed for group projects and reports in keystone courses which cover the principals of the field.

Goal 2.

a. Reports written for Keystone courses will be reviewed for communication style and technique.

b. Oral reports prepared in selected courses will be reviewed for communication style and technique.

Goal 3.

a. Responses of past graduates will be monitored to evaluate how well their education prepared them for the career in their field of study.

b. Responses of employers surveyed will be monitored to evaluate how well employees who are graduates of the MTU School of Technology have demonstrated competency in their profession.

Implementation Plan and Schedule

Since it is expected that the results of the assessment process will be used in evaluating and updating the curriculum along with other planning processes, obtaining results will be attempted at the earliest possible date. Most of the assessment processes will commence with the beginning of the fall 1996 quarter.

Goal/Objective	Anticipated Date	Activity
1a.	Fall '96	Choose the courses in which student results will be monitored, and design fundamental "core" questions.
	Winter/Spring '96/'97	Collect results where appropriate courses are offered.

Goal/Objective	Anticipated Date	Activity
1b.	Fall ‘96	Choose “keystone” courses in which performance appraisals will look at student group projects.
	Winter/Spring ‘96/’97	Collect samples of group projects to be used for review.
2a.	Fall ‘96	Establish techniques to determine how best to review the results.
	Winter/Spring ‘96/’97	Collect selected examples of student written work for review.
2b.	Fall ‘96	Determine what techniques could best be used to evaluate student oral presentations.
	Winter/Spring ‘96/’97	Collect videotapes of presentations for review.
3a.	Fall ‘96	Begin preparation of survey instruments for graduates completing their degrees starting in ‘91 through ‘93. Responses are expected to be received during winter or spring quarter.
3b.	Spring ‘97	Send survey material for employers along with grad survey material and request grads to ask their supervisors to fill in survey and return to MTU.

Measure of Principal Traits for the AAS Civil Engineering Technology Program

CET250 - Structures I

This course is designed to take the fundamentals taught in EMT130 and EMT243 to a more practical level (i.e., it is the last required course in this series). The major items to be measured are the student's ability to perform:

- Analysis and design of structural steel tension members
- Analysis and design of structural steel columns
- Analysis and design of structural steel beams
- Analysis and design of bolted connections
- Flexural analysis and design of steel-reinforced concrete beams

The assessment will be evaluated through the review of examination problems and small laboratory design projects.

CET251 - Soil Technology

This "sophomore" course introduces students to the basic physical properties of soils. The ability of students to solve problems and perform lab work in the following geotechnical areas is expected:

- Soil composition
- Particle size analysis
- Classifying soils
- Soil compaction
- Permeability
- The concept of effective stresses
- Shear and normal stresses in soils
- Soil compressibility/consolidation

Assessment obtained by review and evaluation of exam questions and laboratory reports.

CET252 - Water and Wastewater Technology

This "sophomore" course taken by students during their last quarter, is designed to teach and evaluate the student's knowledge of hydraulics and hydrology from a practical perspective. Performance in the following areas is evaluated:

- Water quality measurements (chemical, physical and biological)
- Fluid flow in pipes (under pressure and due to gravity), including energy losses

· Sizing Pipe
· Pumps
· Flow measuring devices
· Runoff calculations
· Groundwater flow and wells
· Municipal water distribution systems
· Wastewater flows and collection systems

Assessment achieved through the review of student performance on collected homework and examination questions.

CET265 - Construction Cost Estimating

This "sophomore" course taken by students during their last quarter, is designed to discuss and evaluate students ability to read "blueprints" and compile quantity/cost estimates for actual construction projects. Major items examined include:

· Sitework/Earthwork
· Concrete (including formwork and reinforcing)
· Masonry
· Wood
· Moisture controls

The measures for assessment include: evaluation of examination questions, review of group projects, and peer performance evaluations.

LS263 - Surveying Technology

This "sophomore" course builds upon basics of surveying covered in LS249 by introducing route alignment. Students ability to perform calculations in the following areas are evaluated:

· Use of EDM's and theodolites
· Circular curves
· Spiral curves
· Vertical curves
· Profiles and cross-sections
· End areas
· Slope staking
· Radial stakeout
· Software applications

Assessment made by the evaluation of examination questions and the design project.

Measure of Principal Traits for the AAS Electrical Engineering Technology Program

EET248/EET253 - Electrical Measurements/Electrical Machinery

The final exam questions in these courses will contain questions to measure the students ability to:

· Apply electrical circuit laws

1) Kirchhoff's Voltage Law
2) Kirchhoff's Current Law
3) Ohms Law

· Measure

1) Voltage
2) Current
3) Resistance with analogy meters and digital meters
4) Time changing voltage and current with an oscilloscope

EET241/EET259 - Semiconductors I Lab/Electronic Project Development and Fabrication

Written and oral laboratory course reports will be evaluated to determine the students ability to communicate technical aspects of these courses. Traits include:

1) Form
2) Clarity
3) English usage
4) Technical content

Measure of Principal Traits for the BS Electrical Engineering Technology Program

EET253 - Electrical Machinery

The final exam questions in these courses will contain core questions to measure the students ability to:

· Apply electrical circuit laws in the solution of electrical circuits

· Understand the limitations of linear circuit models used

EET480 - Senior Project Development and Fabrication

All project courses require written and oral reports of the work accomplished. A meaningful sample of these reports will be evaluated to measure the students ability to communicate the technical material. The traits to be measured are:

1) Clarity
2) Usage
3) Technical content

Measure of Principal Traits for the AAS Forest Technology Program

TFR247 - Forest Inventory is used to evaluate the students mastery of forest measurements since it is the terminal course in a three quarter sequence. Specific items to be measured include:

- Basic forest measurement terminology
- Forest statistics
- Tree volume and grade determination

TFR262 - Forest Treatments III is used to evaluate the students mastery of forest treatment (silviculture) since it is the terminal course in a three quarter sequence. Specific items to measure include:

- Basic silvicultural terminology
- Application of various treatments
- Understanding of various intermediate treatments
- Understanding of various reproduction methods

Reports in TFR241, 242, 244, 245, and 247 are included as a part of the fall camp final project. Thus this project can be used to evaluate the students understanding of general forestry principles learned in all forestry courses taught during the first four quarters of the forest technology program. In addition, the fall camp final project will serve as a vehicle to evaluate the students ability in written communications.

TFR255 - Project Supervision and **TFR260 - Forest Protection** can be used to evaluate the students oral communication skills. Each course requires the student to make an oral presentation or lead a class discussion on topics pertaining to courses.

Measure of Principal Traits for AAS Degree in Mechanical Design Engineering Technology
vs.
Course Selection

MET134 - Machine Drawing
Prior to this course, students are expected to have completed MET111, MET123, and MET165 which comprise the technical graphics series. All of these courses are normally completed during the freshman year. Students are expected to learn the fundamental concepts and be able to apply them to unique problems from the topics of:

1. Orthographic projection
2. Dimensioning
3. Sectioning
4. Auxiliary view projection
5. Applications of computer software for performing basic drawing functions
6. Applications of computer software for performing advanced drawing functions
7. Applications of computer software for performing 3-D modeling
8. Applying projection techniques to determine spatial relationships of 3-D objects by means of 2-D methods
9. Assembly drawing
10. Cam drawing
11. Gear drawing
12. Jig and fixture drawing
13. Process piping drawing

Portfolios of students work will be collected in MET134 and reviewed by a group of faculty.

MET261 - Fluid Power Systems
Prior to this course, students are expected to have completed MET131 and PH201. These courses are a precursor to thermal science courses taken in the junior year. Sophomore students are expected to learn the fundamental concepts and be able to apply them to unique problems from the topics of:

1. Physical principles to measure pressure viscosity, fluid flow, humidity, temperature
2. Understanding units and mechanical instruments
3. Fluids, components, circuits, industrial fluid power systems, power transmission and control
4. Concepts of conservation of energy, conservation of mass.
5. Fluid flow and pressure losses

These topics will be evaluated through the use of core questions on the final exam of the course.

Measure of Principal Traits for the BS Degree in Mechanical Engineering Technology
vs.
Course Selection

MET361 - Applied Heat Transfer
Prior to this course, students are expected to have completed MET131, MET261, MET351, MAT211, and PH201. These courses are precursors to this thermal science course. Junior students are expected to learn the fundamental concepts and be able to apply them to unique problems from the topics of:

1. Understanding units and instruments
2. Physical principals needed to measure pressure, temperature, torque, RPM, and force
3. Concepts of conservation of energy and conservation of mass
4. Conductive, convective, and radiant heat transfer
5. Heat transfer devices

MET467 - Senior Project
This is the final course all students take as seniors. Students should understand the concepts from all areas in the Mechanical Engineering Technology area and be able to apply them to complete the course project. This will be demonstrated through a written report which will be the final product of the course.

Fields can include:

1. Technical Graphics
2. Strength of Materials
3. Manufacturing and Process Controls
4. Fluid Power and Thermal Science

Measure of Principal Traits for the BS Surveying Program

LS352 - Advanced Surveying Field Techniques

1. Fundamentals of the Surveying program:

This is the second of a two course sequence, taught by a team of two faculty members. In the first course, the students learn the skills of using survey instruments as well as basic field techniques and related calculations. In this course, these skills will be used to perform survey projects which are very similar to real world projects. Following items will be used to measure the success of students.

a. Use of Equipment

- Setting up and care of instruments
- Turning angles
- Distance measurements
- Use of level

b. Field Survey Techniques

- Traversing
- Leveling
- Astronomic observations to determine directions
- Topographic mapping

c. Office Calculations

- Survey calculations including coordinate geometry calculations needed for land subdivision
- Highway curve calculations
- Calculations necessary to obtain directions from astronomic observations

Students work in groups of three which helps them to learn teamwork.

2. Communication skills to be demonstrated:

This course does not require any written reports. Only the final maps or survey drawings will be available for evaluation.

LS426 - Boundary Law Principles

1. Fundamentals of the Surveying program:

This course is designed to teach the fundamentals of boundary surveying, both retracement of old boundaries and establishment of new boundaries. Specific items to be measured include:

a. Knowledge of technical retracement rules such as:

· proration of error in simultaneous surveys
· allocation of error in sequential surveys

b. Knowledge of interpretation rules for legal descriptions

c. Knowledge of specific rules for subdivision of and retracement of the public land survey system.

d. Knowledge of legal doctrines for moving boundaries by unwritten means.

e. Knowledge of state statutes affecting survey practices such as 1970 PA 132 and 1970 PA 74.

f. Ability to apply the above knowledge to specific fact situations and to explain and defend the decisions that are made.

2. Communication skills to be demonstrated by:

a. Open ended exam formats will be employed in which students will be expected to explain the reasoning for their decisions.

b. Students will be assigned a project in which they are to write a legal description. A project in which they are to write a survey report may be assigned as well.

LS437 - Survey Research and Evidence

1. Fundamentals of the Surveying program:

This course is designed to teach the fundamentals of collecting and analyzing various forms of survey evidence.

Specific items to be measured include:

· Knowledge of the many sources of survey evidence and techniques for collecting each

type.

· Knowledge of the litigation system as it usually is applied to survey matters.

· Ability to retrieve evidence from local governmental agencies.

· Ability to organize and prioritize collected evidence.

· Ability to defend decisions made by referring to legal doctrines and evidence collected.

2. Communication skills to be demonstrated by:

· Open ended exam formats will be employed in which students will be expected to explain their decisions.

· A research project will be assigned in which students will work in groups to collect evidence, but will organize their evidence and prepare a report/recommendation individually.

· A mock deposition may be conducted to give students the opportunity to explain and defend the results of their research orally.

LS438 - Subdivision Design and Planning

1. Fundamentals of the Surveying program:

This course is designed to acquaint students with basic land development design and planning principles. It teaches what to look for in a zoning ordinance. The details of the subdivision platting process are covered as well as the basics of other land development forms, such as condominiums, mobile home parks and cemeteries.

Specific items to be measured include:

· Knowledge of and ability to apply basic land development design and planning principles to a particular parcel of land.

· Knowledge of the basic components of zoning ordinances and the normal procedures for obtaining a change in zoning.

· Knowledge of the advantages and disadvantages of the various land development techniques, with a special emphasis on subdivision plats and condominiums.

· Ability to prepare a subdivision map which complies with the technical requirements of

the subdivision control act as well as quality drafting practices.

2. Communication skills to be demonstrated by:

- Preparing a formal memo to a hypothetical employer asking for company resources needed to design a land development project.

- Preparing a formal letter to a prospective client describing a specific proposal for a land development project.

LS439 - Survey Office Practices

1. Fundamentals of the Surveying program:

This course is designed to acquaint students with the professional and economic side of the surveying field. Economics, ethics, occupational regulation, professional and contractual liability will be issues to be addressed. Relations with clients, colleagues and other real estate professionals will be covered as well.

Specific items to be measured include:

- Knowledge of cost and income factors involved in operating a private professional practice in general, and a surveying practice in particular.

- Ability to assess ethical and human relations issues from a variety of perspectives, considering all the perspectives, yet selecting a position which best fits the existing situation.

- Knowledge of the procedure and statutes by which surveyors are licensed to practice, and by which licensure can be lost.

- Knowledge of the elements of professional and contractual liability and ability to apply that knowledge to survey specific situations.

2. Communication skills

- Open ended exam formats will be employed in which the student's ability to communicate their thoughts and their thought processes will be included in the grading process.

- A project may be assigned in which students will prepare a business plan for a start up surveying practice.

· 6-8 class periods will be reserved for round table class dialogs of various ethical and other opinionated issues affecting the surveying profession. Active participation, depth and breadth of thinking, and respect for the opinions of others will be emphasized in this oral communication exercise.

LS443 - Introduction to Geodesy

1. Fundamentals of the Surveying program:

This course covers the advanced concepts of surveying. The following will be used for evaluations:

a. Geodetic Control Surveys

· Datum
· Geoid and reference ellipsoid
· Reference coordinate systems
· Reduction of lengths and directions to the reference ellipsoid
· Gravity field of the earth
· Geodetic heights and orthometric heights

b. State Plane Coordinate Systems

· Basic projections
· Scale factor and elevation factor
· Geodetic azimuths and grid azimuths
· Traverse calculations using state plane coordinates

2. Communication Skills:

This class does not have a lab component, and therefore, it is not possible to measure the communication skills.

LS447 - Construction Surveying

1. Fundamentals of the Surveying program:

This course is structured to teach the fundamentals of construction surveying with emphasis on highway curve stakeout. Specific items to be measured include:

a. Knowledge of highway curve stakeout:

· Simple Circular Curves (arc def.)
· Simple Circular Curves (chord def.)
· Passing a Circular Curve through a Fixed Point
· Spiral Curves
· Compound Curves
· Reverse Curves
· Straight Line Tangent Grade
· Equal-Tangent Vertical Curves
· Unequal-Tangent Vertical Curves

b. Knowledge of Electronic Equipment:

· E.D.M. Theory and Procedures
· Topcon GTS-302D Total Station
· Data Collectors

c. Knowledge of Equipment Calibration:

· Calibration of E.D.M.'s
· Calibration of Tri-bracs
· Calibration of Optical Plumbs

d. Knowledge of Slope Staking:

· Slope Staking Geometry
· Slope Staking Field Procedures

e. Knowledge of Misc. Computations:

· Radial Stakeout
· Volume Calculations
· Use of the Prismoidal Formula

2. Communication Skills:

· Open ended exam formats will be used in which students will be expected to explain the reasoning for some of the problems.

· Three of the six lab assignments involve hands-on equipment work in which the students demonstrate their knowledge of the subject material while they interact with myself and their peers.

Proposed Process for Reviewing Written Reports for Communication Ability

The following are the criteria on which written reports or other written group activities will be judged for ability to communicate.

1. Does the material demonstrate that acceptable writing mechanics has been used (grammar, punctuation, 3rd person)?

   Yes Partly No

2. Does the material demonstrate the appropriate technical level for the subject matter?

   Yes Partly No

3. Does the the appearance, layout, and format demonstrate a professional quality?

   Yes Partly No

Proposed Process for Reviewing Oral Reports for Communication Ability

The following are the criteria on which oral reports or presentations will be judged for ability to communicate orally.

1. Do the presenters have an appropriate appearance for the audience?

   Yes Partly No

2. Is the presentation well organized and systematic?

   Yes Partly No

3. The presentation demonstrates an appropriate technical level for the subject matter, and technical terms are used correctly.

   Yes Partly No

Proposed Questions to be Added to Surveys of Graduates

1. Did the training/education provided to you by your department at MTU allow you to complete assignments given you by your employer?

   Yes Most of the time Sometimes No

2. Were your supervisor's expectations of your educational ability met?

   My education exceeded my supervisor's expectations

   My education met my supervisor's expectations

   My education was below my supervisor's expectations

3. Which subject areas or job areas did you find you were best prepared in? (Please be as specific as possible.)

4. Which subject areas or job areas did you find you were least prepared in? (Please be as specific as possible.)

Document Handling Procedure

1. **Collection:** Faculty teaching selected courses will collect written work from students.

   Twenty percent of papers will be randomly selected and bundled by course.

2. **Identification Removal:** Faculty will give bundled papers to designated departmental clerical staff.

   Clerical staff will photocopy materials and return originals to faculty members.

   Photocopied material will have student names or other easily recognized identification removed and a code number added so material may be referred back to student.

3. **Storage:** Cleansed photocopied material will be filed by course until review procedures can be carried out.

MTU Departmental Assessment Chart

Department School of Technology **Level: Associate** X **Bachelors** _____ **Masters** _____ **Doctoral** _____
Program Civil Engineering Technology **Prepared by** Ronald M. Mauno **Date** October 30, 1996

Intended Student Outcomes	Assessment Measures	Need to Find/ Develop	From Whom will data be collected	Which courses will produce data	When will data be collected/ How will data be collected
1. Will master the fundamentals of the Civil Engineering Technology program	a. Incorporate "fundamental" problems into course exams b. Internal and External Review of student work	· Fundamental problems · External reviewers	Sophomore students in the Civil Engineering Technology program	· CET250 · LS263 · CET251 · CET252 · CET265	· Exams · Exams · Exams · Exams · Exams/Group Projects
2. Reasonable ability to communicate	a. Require laboratory reports to be written by each student b. Require students to work in groups on projects		Freshmen (in their last quarter) and Sophomore students in the TCE program	· EMT242 · CET251 · CET141 · CET265	· Portfolio of Written Reports · Portfolio of Written Reports · Portfolio of Written Reports · Portfolio of Student Projects
3. Graduates demonstrate that their education meets the needs of industry	a. Survey graduates 3 to 5 years after graduation b. Survey employers of the graduates c. Review NICET and ACI exam results		· Graduates who have been out 3-5 years · Employers · NICET and ACI personnel (if possible)		· Surveys will be mailed out to graduates 3 years after graduation · Annual or bi-annual surveys will be mailed out to employers · Annual analysis of national exam results (i.e. NICET, ACI)
4.					

Revised and Adapted from Dr. Patricia Murphy, North Dakota State University

MTU Departmental Assessment Chart

Department School of Technology **Level: Associate** X **Bachelors** _____ **Masters** _____ **Doctoral** _____
Program Electrical Engineering Technology **Prepared by** Warren O. Weingarten **Date** October 30, 1996

Intended Student Outcomes	Assessment Measures	Need to Find/ Develop	From Whom will data be collected	Which courses will produce data	When will data be collected/ How will data be collected
1. Will master the fundamentals of the Electrical Engineering Technology program	a. Use of core questions in selected course exams b. Performance appraisals of projects	· Core questions	Sophomore students in Electrical Engineering Technology	· EET248 · EET253	· Final Exams - Fall/Winter Quarters
2. Demonstrate ability to communicate	a. Evaluate laboratory reports b. Oral lab reports	· Format for evaluation · Oral report requirements	Sophomore students in Electrical Engineering Technology	· EET259 · EET241	During the quarter, students take this course - Fall/Winter Quarters
3. Graduates demonstrate that their education meets the needs of their employers	a. Direct survey to alumni b. Employers	Survey	· Recruit graduates 2-3 years out · Employers of students 2-3 years		· 3 years after graduation · Continuing yearly
4.					

Revised and Adapted from Dr. Patricia Murphy, North Dakota State University

MTU Departmental Assessment Chart

Department School of Technology **Level: Associate** _____ **Bachelors** X **Masters** _____ **Doctoral** _____
Program Electrical Engineering Technology **Prepared by** Warren O. Weingarten **Date** October 30, 1996

Intended Student Outcomes	Assessment Measures	Need to Find/ Develop	From Whom will data be collected	Which courses will produce data	When will data be collected/ How will data be collected
1. Master the fundamentals of the Electrical Engineering Technology program	a. Use of core questions in selected course exams b. Performance appraisals of projects	· Core questions	Sophomore and Senior students in Electrical Engineering Technology	· EET253 · EET480	· Final Exams · Project Presentations
2. Demonstrate ability to communicate	a. Evaluate laboratory reports b. Oral lab reports	· Format for evaluation · Oral report requirements	Sophomore and Senior students in Electrical Engineering Technology	· EET253 · EET480	· Fall/Winter Quarters · Fall/Spring Quarters
3. Graduates demonstrate that their education meets the needs of their employers	a. Direct survey to alumni b. Employers	Survey	· Recruit graduates 2-3 years out · Employers of students 2-3 years		· 3 years after graduation · Continuing yearly
4.					

Revised and Adapted from Dr. Patricia Murphy, North Dakota State University

MTU Departmental Assessment Chart

Department School of Technology **Level: Associate** X **Bachelors** _____ **Masters** _____ **Doctoral** _____
Program Electromechanical Engineering Technology **Prepared by** Warren O. Weingarten **Date** October 30, 1996

Intended Student Outcomes	Assessment Measures	Need to Find/ Develop	From Whom will data be collected	Which courses will produce data	When will data be collected/ How will data be collected
1. Will master the fundamentals of the Electrical Engineering Technology program	a. Use of core questions in selected course exams b. Performance appraisals of projects	· Core questions	Sophomore students in Electrical Engineering Technology	· EET253 · MET261	· Final Exams - Fall/Winter Quarters · Final Exams - Winter/Spring Quarters
2. Demonstrate ability to communicate	a. Evaluate laboratory reports b. Oral lab reports	· Format for evaluation · Oral report requirements	Sophomore students in Electrical Engineering Technology	· EET241 · MET261	· Lab Reports · Lab Reports
3. Graduates demonstrate that their education meets the needs of their employers	a. Direct survey to alumni b. Employers	Survey	· Recruit graduates 2-3 years out · Employers of students 2-3 years		· 3 years after graduation · Continuing yearly
4.					

Revised and Adapted from Dr. Patricia Murphy, North Dakota State University

MTU Departmental Assessment Chart

Department School of Technology **Level: Associate** X **Bachelors** _____ **Masters** _____ **Doctoral** _____

Program Forest Technology **Prepared by** Bernard W. Carr **Date** October 30, 1996

Intended Student Outcomes	Assessment Measures	Need to Find/ Develop	From Whom will data be collected	Which courses will produce data	When will data be collected/ How will data be collected
1. Master the fundamentals of Forest Measurements, Forest Treatments, and general forestry field applications	a. Use of core questions in selected course exams b. Performance appraisal of fall camp final field project	· Core questions for exams · Appraisal format for final field project	Sophomore students in Forest Technology program	· TFR247 · TFR262 · TFR241 TFR242 TFR244 TFR245 TFR247	· Final Exam/ Fall Quarter · Final Exam/Spring Quarter · Fall Camp Final Field Project/Fall Quarter
2. Demonstrated ability to communicate	a. Evaluation of Fall Camp Final Field Project Report b. Oral reports reviewed for style and technique	· Format for evaluation · Format for evaluation	Sophomore students in Forest Technology program	· TFR241 TFR242 TFR244 TFR245 TFR247 · TFR255 TFR260	· Fall Camp Final Field Project/Fall Quarter · Evaluation of Student Oral Reports/Winter Quarter · Evaluation of Student Oral Reports/Spring Quarter
3. Graduates demonstrate that their education meets the needs of industry	a. Directed survey of graduates 3-5 years out b. Directed survey of employers of recent graduates	· Utilize parts of student survey form · Develop employer survey form	· Past Forest Technology graduates · Selected employers of Forest Technology graduates	Based upon total curriculum	· Three years after graduation survey sent to alumni · Three years after graduation survey sent to employers of past graduates
4.					

Revised and Adapted from Dr. Patricia Murphy, North Dakota State University

MTU Departmental Assessment Chart

Department School of Technology **Level: Associate** X **Bachelors** _____ **Masters** _____ **Doctoral** _____
Program Mechanical Design Engineering Technology **Prepared by** David B. Sprague **Date** October 30, 1996

Intended Student Outcomes	Assessment Measures	Need to Find/ Develop	From Whom will data be collected	Which courses will produce data	When will data be collected/ How will data be collected
1. Will master the fundamentals of the Mechanical Design Engineering Technology program	a. Use core questions in course exams b. Performance appraisals of group projects	· Core questions for exams · Methods for evaluation	Sophomore students in Mechanical Design Engineering Technology program	· MET134 · MET261 · MET266 · MET267	· Portfolios of Drawings/Spring Quarter · Final Exams/Winter & Spring Quarters · Final Exam · Final Exam
2. Will have a reasonable ability to communicate	a. Written reports to be reviewed b. Oral reports reviewed for style and technique	Format for evaluation	Sophomore students in Mechanical Design Engineering Technology program	· MET261 · MET266 · MET267	· Portfolios of lab reports or other reports · Videotapes of groups reports
3. Grads demonstrate that education meets the needs of industry	a. Directed survey to grads 3-5 years out b. Directed survey to employers of grads c. Use National Engineering Technology Certif. Exam?	· Develop portions of questions to be added to grad survey · Develop survey	· Grads 3-5 years out · Employers of recent grads		· Surveys will be mailed to 3 year out grads on an annual basis · Surveys will be mailed to grads to pass on to multiple grads every year - 2 years
4.					

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MTU Departmental Assessment Chart

Department School of Technology **Level: Associate** _____ **Bachelors** X **Masters** _____ **Doctoral** _____
Program Mechanical Engineering Technology **Prepared by** David B. Sprague **Date** October 30, 1996

Intended Student Outcomes	**Assessment Measures**	**Need to Find/ Develop**	**From Whom will data be collected**	**Which courses will produce data**	**When will data be collected/ How will data be collected**
1. Will master the fundamentals of the Mechanical Engineering Technology program	a. Use core questions in course exams b. Performance appraisals of group projects	· Core questions for exams · Methods for evaluation	· Junior level students/ · Senior level students	· MET361 · MET463	· Final Exam and Lab Reports/Winter Quarter · Group Reports
2. Will have a reasonable ability to communicate	a. Written reports to be reviewed b. Oral reports reviewed for style and technique	Format for evaluation	· Junior level students/ · Senior level students		· Use lab/group reports · Videotape group reports
3. Grads demonstrate that education meets the needs of industry	a. Directed survey to grads 3-5 years out b. Directed survey to employers of grads c. Use National Manufacturing Certif. Exam?	· Develop portions of questions to be added to grad survey · Develop survey			Surveys to be mailed to grads 3 years out on an annual basis
4.					

Revised and Adapted from Dr. Patricia Murphy, North Dakota State University

MTU Departmental Assessment Chart

Department School of Technology **Level: Associate** ____ **Bachelors** X **Masters** ____ **Doctoral** ____
Program Surveying **Prepared by** Indrajith D. Wijayratne **Date** October 30, 1996

Intended Student Outcomes	Assessment Measures	Need to Find/ Develop	From Whom will data be collected	Which courses will produce data	When will data be collected/ How will data be collected
1. Will master the fundamentals of the Surveying program	a. Use core questions in course exams b. Performance appraisals of group projects	· Core questions for exams	Junior and Senior students in Surveying	· LS352 · LS426 · LS437 · LS447	· Final Exam data collected annually
2. Will have a reasonable ability to communicate	a. Written reports to be reviewed b. Oral reports reviewed for style and technique	· Methodology for collecting data · Projects which require oral presentation		· LS438 · LS439	· Data collected annually when the course is offered
3. Graduates demonstrate that their education meets the needs of industry	a. Directed survey to graduates 3 to 5 years after graduation b. Directed survey of employers of graduates c. Use licensing exam results	· Method to keep statistics for graduates taking Surveying exam	· Graduates of program · Employers of recent graduates · Licensing Board results of Surveying students		· Surveys sent to graduates on an annual basis · Surveys sent to employers annually · Results will be collected annually
4.					

Revised and Adapted from Dr. Patricia Murphy, North Dakota State University