

**Industrial Technology** (BS/IT & MS/IT progs.) – SECTION IV DRAFT (July 6, 2011)

**Section IV – Assessment: Undergraduate and Graduate**

**Student Learning Outcomes (SLOs)**

- Include a statement by the chair (reflecting actual practice) that syllabi for all courses identified in the department's assessment plan either
- currently include SLOs or
  - will include them in the fall.

*Syllabi for all BS and MS Industrial Technology (IT) courses will be updated to include SLOs for the fall 2011 semester; this work is currently underway.*

**Undergraduate Program Assessment:** Departments should have an assessment plan for each undergraduate program (major).

- Identify each student learning outcome listed in the assessment plan for assessment during the report year.

*Attached is a spreadsheet indicating SLO (competencies) identified for each course in the undergraduate major. (see attach: Matrix\_competencies.xlsx). Note that this matrix was approved as part of the BS/IT program accreditation process.*

- If a learning outcome was not assessed as scheduled, indicate the reason.

*Competency questionnaires (assessment instrument) were administered in Spring 2011 for those courses offered during the term. At the end of the Fall 2011 term (and on-going) assessment instrument will be administered and evaluated.*

- For each learning outcome that was assessed, explain the method used for this assessment.

*For each SLO (see competency matrix), the assessment method was centered on administration of a student survey, correlating to the competency assessment matrix. Follow-up evaluation of survey results is provided to each instructor to inform continuous improvement efforts that instructors are encouraged to undertake on a regular basis.*

Indicate the number of majors assessed.

*The number of majors assessed correlates strongly with the enrollment in classes each semester. Barring student absence during administration of the assessment instrument, we expect that over 95% of active majors are assessed each term.*

Report major findings, with relevant data.

*The assessment data collected from the survey instruments for Spring 2011 has not yet been compiled. Compilation and analysis will be completed over the summer 2011 term and shared back with instructors and the program advisory board in early fall 2011.*

Indicate action your department is taking or planning to address findings.

*Based on past competency assessment survey data collected, combined with input from our Industrial Advisory Board, the BS/IT program faculty have formulated goals and objectives for the program. These goals, together with current course assessment input, inform the continuous improvement of courses in the major. Below are the Program Assessment and Evaluation Goals and Objectives:*

### Program Assessment and Evaluation

**GOAL#1: To impart a high quality educational exposure to the principles and practices of Industrial Technology.**

Objective 1-A: Our graduates will be able to apply knowledge of mathematics, science, and technical management to identify, formulate and solve intermediate and complex industrial technology problems.

#### TO MEET THIS OBJECTIVE, GRADUATES WILL BE ABLE TO:

- Apply the fundamental quantitative techniques to industrial technology problem solving,
  - Formulate and solve analytical models to analyze and evaluate the performance of industrial systems.
  - Apply concepts and governing equations from the physical and materials sciences to industrial technology problem solving.
  - Apply concepts and accepted best practice from the management sciences to industrial technology problem solving.
  - Demonstrate knowledge and use of effective techniques for solving closed-ended and open-ended industrial technology problems.
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Objective 1-B: Our graduates will be able to apply knowledge of materials and processes, management methods, and quality to the solution of contemporary technology management problems.

TO MEET THIS OBJECTIVE, GRADUATES WILL BE ABLE TO:

- Formulate and solve analytical models to analyze and evaluate the performance of industrial systems.
  - Apply concepts and governing equations from the physical and materials sciences to industrial technology problem solving.
  - Apply concepts and accepted best practice from the management sciences to industrial technology problem solving.
  - Demonstrate knowledge and use of effective techniques for solving closed-ended and open-ended industrial technology problems.
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Objective 1-C: Our graduates will demonstrate the ability to use the computational techniques, skills, and tools necessary to perform effectively in the practice of industrial technology.

TO MEET THIS OBJECTIVE, GRADUATES WILL BE ABLE TO:

- Use software packages such as word processing and presentation graphics packages to prepare professional quality documents and presentations.
  - Use computational software packages such as spreadsheets to solve analytical problems.
  - Use computer reference tools in technical libraries and databases, and the World Wide Web, to locate reference materials necessary for professional practice.
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Objective 1-D: Our graduates will be able to apply the fundamental principles of economic analysis to contemporary technology management situations.

TO MEET THIS OBJECTIVE, GRADUATES WILL BE ABLE TO:

- Apply "time value of money" principles to evaluate economic decisions.
  - Identify the optimal economic decision based on the identification and analysis of relevant economic analysis data.
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**GOAL #2: To develop in our students the ability to apply fundamentals of theory and practice to the analysis, synthesis and evaluation of industrial technology problems.**

Objective 2-A: Our graduates will be able to collect, analyze and interpret process control (and quality control) data in the manufacturing and service sectors.

TO MEET THIS OBJECTIVE, GRADUATES WILL BE ABLE TO:

- Analyze data to obtain process parameters and correlations of interest in the work setting.
  - Evaluate the quality of results / performance by comparison with accepted standards and methods.
  - Apply methods of statistical inference and regression analysis to develop process correlations and interpret correlation parameters.
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Objective 2-B: Our graduates will be able to evaluate the productivity and economic efficiency of a process or system.

TO MEET THIS OBJECTIVE, GRADUATES WILL BE ABLE TO:

- Determine specific project objectives based on general project and client requirements.
  - Gather and organize relevant background information about a process or system.
  - Generate or evaluate alternative solutions by applying appropriate knowledge of technology and management.
  - Identify the optimal solution based on evaluation of technical and economic criteria.
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Objective 2-C: Our graduates will be able to function effectively as a member or leader of a multi-disciplinary team.

TO MEET THIS OBJECTIVE, GRADUATES WILL BE ABLE TO:

- Demonstrate experience as team member during the academic program.
  - Apply team leadership and team management skills.
  - Apply concepts in the development and maintenance of effective teams.
  - Apply concepts in performance-based team development.
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**GOAL #3: To encourage in our students the development of a personal goal to pursue on-going, life-long education, and an appreciation for the ethical and social responsibilities of an industrial technologist.**

Objective 3-A: Our graduates will demonstrate an awareness of professional and ethical responsibility.

TO MEET THIS OBJECTIVE, GRADUATES WILL BE ABLE TO:

- Identify sources of ethical standards and professional codes of conduct.
  - Demonstrate an understanding of ethics in professional practice, including strategies for dealing with ethical dilemmas.
  - Demonstrate professional excellence in performance, punctuality, collegiality, and service to the profession.
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Objective 3-B: Our graduates will demonstrate an ability to communicate in oral and written formats.

TO MEET THIS OBJECTIVE, GRADUATES WILL BE ABLE TO:

- Produce professional quality documents (memos, reports, proposals) that present, analyze, and interpret technical information and results in a logical, easy-to-read manner.
  - Produce professional quality oral presentations that present, analyze, and interpret technical information and results in a logical, well-organized manner.
  - Use professional quality graphics and media to present technical and management information in a variety of contexts to a variety of audiences.
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Objective 3-C: Our graduates will demonstrate an awareness of the impact of industrial technology solutions in a global and societal context.

TO MEET THIS OBJECTIVE, GRADUATES WILL BE ABLE TO:

- Recognize global, economic, environmental, cultural, societal and/or political issues and describe how technology interacts with and impacts these issues.
  - Recognize the impact of decisions on the local and global economy and on the environment.
  - Consider global and societal constraints when evaluating, controlling, and planning systems in the manufacturing and service sectors.
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Objective 3-D: Our graduates will demonstrate an ability to engage in life-long learning and self-education.

TO MEET THIS OBJECTIVE, GRADUATES WILL BE ABLE TO:

- Apply strategies for learning about a new subject in a professionally relevant area, without formal guidance or external motivation.
- Effectively use a variety of informational media including print, electronic search engines, and communications networks.

- Use professional resources including professional organizations and technical societies, continuing education programs, and professional registration to maintain professional competence.

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Objective 3-E: Our graduates will demonstrate an awareness of contemporary issues in industrial technology / technology management.

TO MEET THIS OBJECTIVE, GRADUATES WILL BE ABLE TO:

- Describe and analyze current issues (e.g.: economic, environmental, political, societal) in the profession.
- Recognize the impact of design decisions on current issues at the local, national, and international levels.

**Note the date of the next scheduled assessment of this SLO.**

*The next scheduled assessment will occur near the end of the fall 2011 term.*

Include a summary of all data collected and analyzed as part of this year's assessment plan.

*The assessment data collected from the survey instruments for Spring 2011 has not yet been compiled. Compilation and analysis will be completed over the summer 2011 term and shared back with instructors and the program advisory board in early fall 2011.*

Include a copy of the data-collection instrument or forms.

*A copy of the data collection instrument is attached.*

Note action/improvement steps taken or planned by the department in response to the findings, such as course/program revision, prerequisite change, course sequencing, change in entrance/exit procedures, course redesign, request for additional faculty/resources, change in course-related technology, other. Provide a brief explanation of each action step.

*Action/Improvement #1 (Still In Progress) – Comprehensive updating and revision of the major course sequence has been underway for several years. The faculty are prepared now to submit revisions for curriculum review, contemplating institutional approval. Program revision and updating has been accomplished in collaboration with community “feeder” colleges, and using input from external reviewers (industry experts).*

***Action/Improvement #2 (Still In Progress) – Development and deployment of on-line program option for the major. There has been increasing demand for on-line access to the major in IT. Course development and deployment has begun in collaboration with a learning cohort of 18 USAF students stationed in Niagara Falls, NY. Remaining tasks include: development of a course sequence plan, course content development, and student recruitment. Growth of the on-line initiative holds considerable promise for growth of the program. It should be noted that in several instances, creative course re-design is planned - to accommodate the special requirements of teaching laboratory courses. It is expected that on-line courses requiring labs will follow a hybrid format (i.e.: a combination of on-line learning and intensive hands-on lab work – example: students meet 4x per semester on weekends to conduct lab work).***

***Action/Improvement #3 (Still In Progress) – Articulation Agreements. There is an identified need to formalize articulation agreements with a number of our feeder institutions (2-year college programs). Collectively, the faculty are actively pursuing articulation agreements with NCCC, JCC, and ECC – in each case, articulation agreements have been drafted and await institutional approval. We expect formalization of these agreements in fall 2011.***

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**Graduate Program Assessment:** The department should have an assessment plan for each graduate program, including certificates, post-baccalaureate programs, masters, CAS, etc.

***Syllabi for all MS Industrial Technology (MSIT) courses will be updated to include SLOs for the fall 2011 semester; this work is currently underway.***

Identify each student learning outcome listed in the assessment plan for assessment during the report year.

***A rubric for SLO outcome assessment is now being formulated for the graduate program.***

If a learning outcome was not assessed as scheduled, indicate the reason.

***The MS/IT program is currently developing an SLO assessment program. Thus far, the only assessment data collected is from the standard departmental teacher evaluation forms.***

For each learning outcome that was assessed, explain the method used for this assessment.

*See comment, immediately above.*

Indicate the number of majors assessed.

*The number of majors assessed correlates strongly with the enrollment in classes each semester. Barring student absence during administration of the assessment instrument, we expect that over 95% of active majors are assessed each term.*

Report major findings, with relevant data.

*The MS/IT program is currently developing an SLO assessment program. Thus far, the only assessment data collected is from the standard departmental teacher evaluation forms.*

Indicate action your department is taking or planning to address findings.

*The MS/IT program is currently developing an SLO assessment program. Thus far, the only assessment data collected is from the standard departmental teacher evaluation forms.*

Note the date of the next scheduled assessment of this SLO.

*The MS/IT program is currently developing an SLO assessment program. The next scheduled assessment of the MS/IT program (focusing on SLOs) will be at the end of the fall 2011 term.*

Include a summary of all data collected and analyzed as part of this year's assessment plan.

*The MS/IT program is currently developing an SLO assessment program.*

Include a copy of the data-collection instrument or forms.

*The MS/IT program is currently developing an SLO assessment program.*

Note action/improvement steps taken or planned by the department in response to the findings.



**The MS/IT program is currently developing an SLO assessment program.  
Improvement steps will be prepared following collection of the fall 2011  
assessment data.**