

2008 PROGRAM OUTCOMES ASSESSMENT SUMMARY REPORT

PROGRAM: PROGRAMMING - AAS-T DEGREE AND CERTIFICATE

DATE: 10 DECEMBER 2007

DEMONSTRATION OF LEARNING: *What assignments or projects demonstrate student learning outcomes are achieved?*

[Note: evidence of learning contained in Assessment methods and Findings sections.]

Individual course pre- and post-surveys gain information about student's knowledge and abilities before and after each course. Projects are assessed for learning outcomes. Students self-assess for skill level and at the end of the course; they are asked to rate their improvement in skills and confidence.

Course Assignments are attached to outcomes, and include design, implement, modify and administer databases and their interfaces. Most courses have final projects or assignments that address all the outcomes for a course.

These learning outcomes are integrated developmentally into individual course assignments that develop skills and culminate in Capstone Project. The following courses have major assessment pieces.

- BUS 140 (Customer relations): requires and assesses both written and oral communication. For students completing the AAS-T degree this outcome is further practiced and assessed in ENG 101 (composition) and HUM 105 (Intercultural Communications).
- ITC 110 (Programming Fundamentals): entry level basics skills and concepts are introduced and developed and tested through exams and hands-on application.
- ITC 172 (Visual Basic with ASP): individual assignments and a group project. Students develop a set of deliverables and assessed for timeliness, complexity (how many elements used), presented to class description, most difficult and what they are most proud of, and project demonstration, questions & answers.
- ITC 255 (Systems Analysis) - group project, students develop a project do the analysis. The deliverables include a timeline (assessed for timeliness) are assessed for participation, minutes for their meetings, timesheets
- ITC 280 (WEB Databases) - this project-driven course focuses on open source technologies such as PHP and MySQL and building strong basic skills.
- ITC 285 (Capstone) - This final project includes creating a website and web databases using HTML, open source and proprietary languages and databases. Student projects are evaluated for completeness, complexity, presentation and

EXTERNAL EVIDENCE? *Alumni, employer, Curriculum Review, Technical Advisory Committee feedback?*

- Post graduate (alumni) surveys and anecdotal alumni feedback demonstrate learning to program outcomes as they detail how the skills they learned at Central are being applied in the work place.

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- Technical Advisory Committee offers feedback on current course offerings and program learning outcomes, making recommendations of changes needed. Committee members stress modeling real world experience and professional certifications. In 2005 the TAC prepared a white paper on "The Future of IT to build a case for IT program support.
- Curriculum Review Committee: The IT Programs were reviewed collectively in Fall 2007. They were commended for the collaborative relationships between the programs and for frequent curriculum revisions to reflect changes in hardware and software.
- Colleges & university programs, such as UW, provide benchmarks for transfer requirements.
- Anecdotal evidence can be retrieved from LinkedIn.com. Students post resume and ask faculty for references. Faculty can see current employment status and contact information for former students. <http://www.linkedin.com/>

FINDINGS: *What have you learned from your outcomes assessment activities?*

- Industry expectations for four-year bachelor degree in computer science indicate a need for articulation agreements to universities. Industry expectations in this programming prefer four-year bachelor degree and industry certification.
- Pre- and post-testing in program courses and student self-assessment preliminary results suggest that student skills improve over the course of a quarter but confidence at the end of the quarter is still lower than faculty will like. Students need to develop more confidence in their skills.
- 4 year programs in colleges & universities generally require higher level math classes for transfer so raising the math requirement would help students who want to transfer.
- The Curriculum Review report documents that faculty substantially rewrote the curriculum over the last year in response to the TAC's "White Paper on the Future of IT." The curriculum is frequently updated to reflect changes in standard software, hardware and protocols.
- Many database jobs are combined with web interfaces and most employees start as a programmer and then move to Database Management positions.
- While some students excel in performance most students only meet the requirements.
- More students are exiting program early because of employment than in the past.

ACTIONS TAKEN: *What program changes have you made in the last three years? -- WHAT WAS THE IMPETUS FOR CHANGE?*

- Requirement changes have been made due to student feedback and evolution of technology (as dictated by TAC white paper - "Future of IT") and include server database programming and gearing a 'capstone' class toward specific industry

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certification tests.

- 2006-2007 moved MAT 119 (Math Behind IT) requirement to prerequisite level due to math requirements of introductory programming courses, and expectations of university transfers to computer science degrees.
- Summer 2007 implemented Special Topic requirement ITC 298 -(Special Topics in Programming) to add flexibility of course content depending on changing industry trends. Requirement changes have been made due to student feedback and evolution of technology in advanced web database concepts (as dictated by TAC white paper - "Future of IT") and include server database programming and gearing a 'capstone' class toward specific industry certification tests.
- 2007: Previously, we required 2-3 courses specifically ITC 134/140/136 but found many students had vast work experience in one or more of the courses and we'd do many substitutions. We implemented a "core" set of courses to replace the prior where students can choose from 5 courses ITC 134 Operating Systems/136 Unix/140 Intro to Hardware/150 Intro to Security or NET 120 Network Essentials knowing students are aware of their own knowledge gaps and can choose which need filling. This core is called "Restricted IT Elective" and programs vary from requiring 1-3 of those electives.
- Introduced pre- and post-surveys of students for database classes to get student feedback on course outcomes and to measure student self confidence.

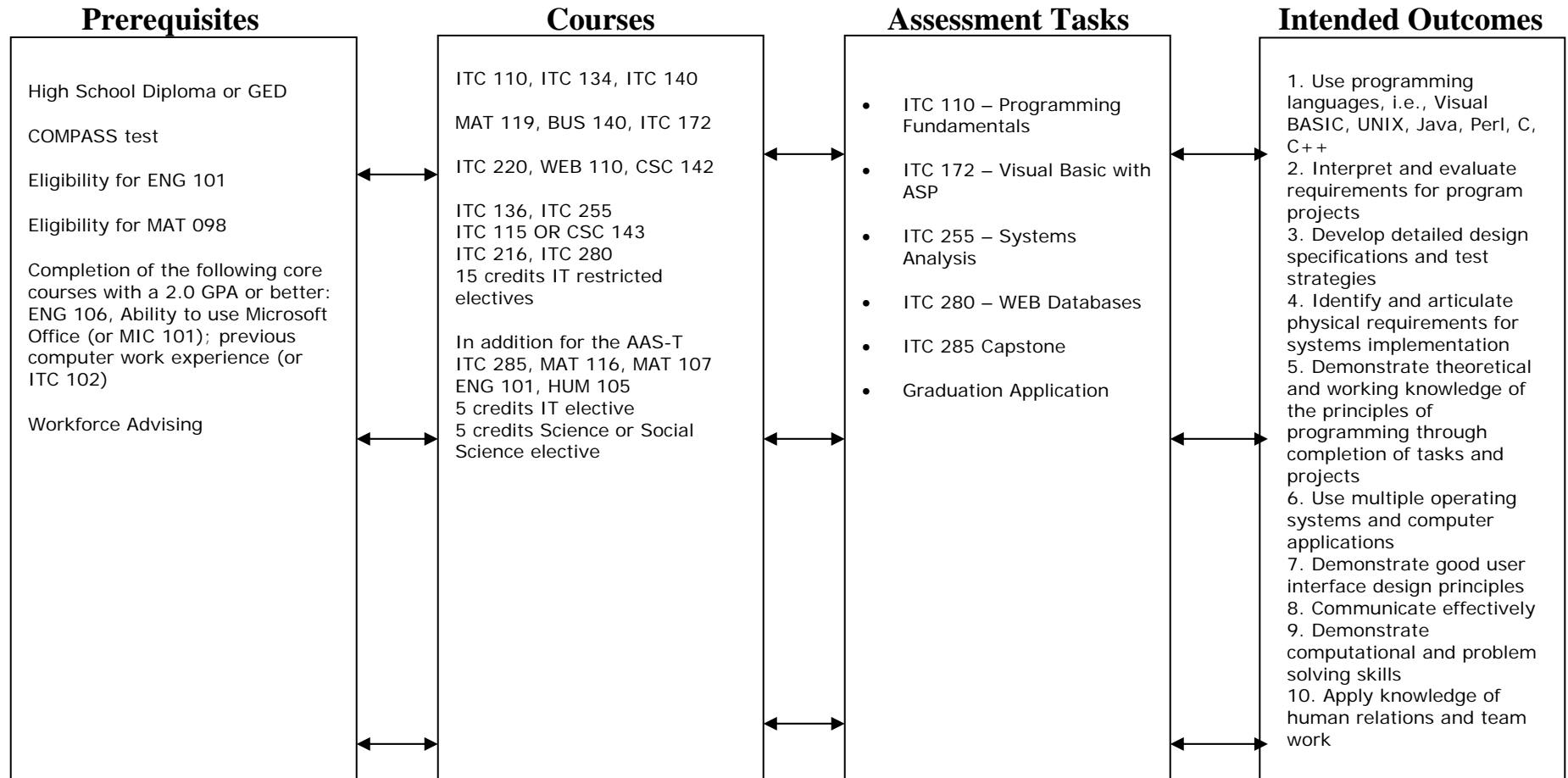
ACTIONS PLANNED: *What program changes or new assessment activities are you planning for next year?*

- Implement articulation agreements with 4-year Bachelor of Computer Science Universities
- Work with TAC feedback to keep up with industry changes
- Revise program outcomes
- Implement program entrance/exit surveys

Programming AAS-T Degree & Certificate *Revised 8 January 2008*

Program Name:

Theme(s): Problem solving, effective communication, programming languages, computer hardware
Program Role: Program prepares students for entry level positions in the software industry employment and for transfer to 4 year programs.



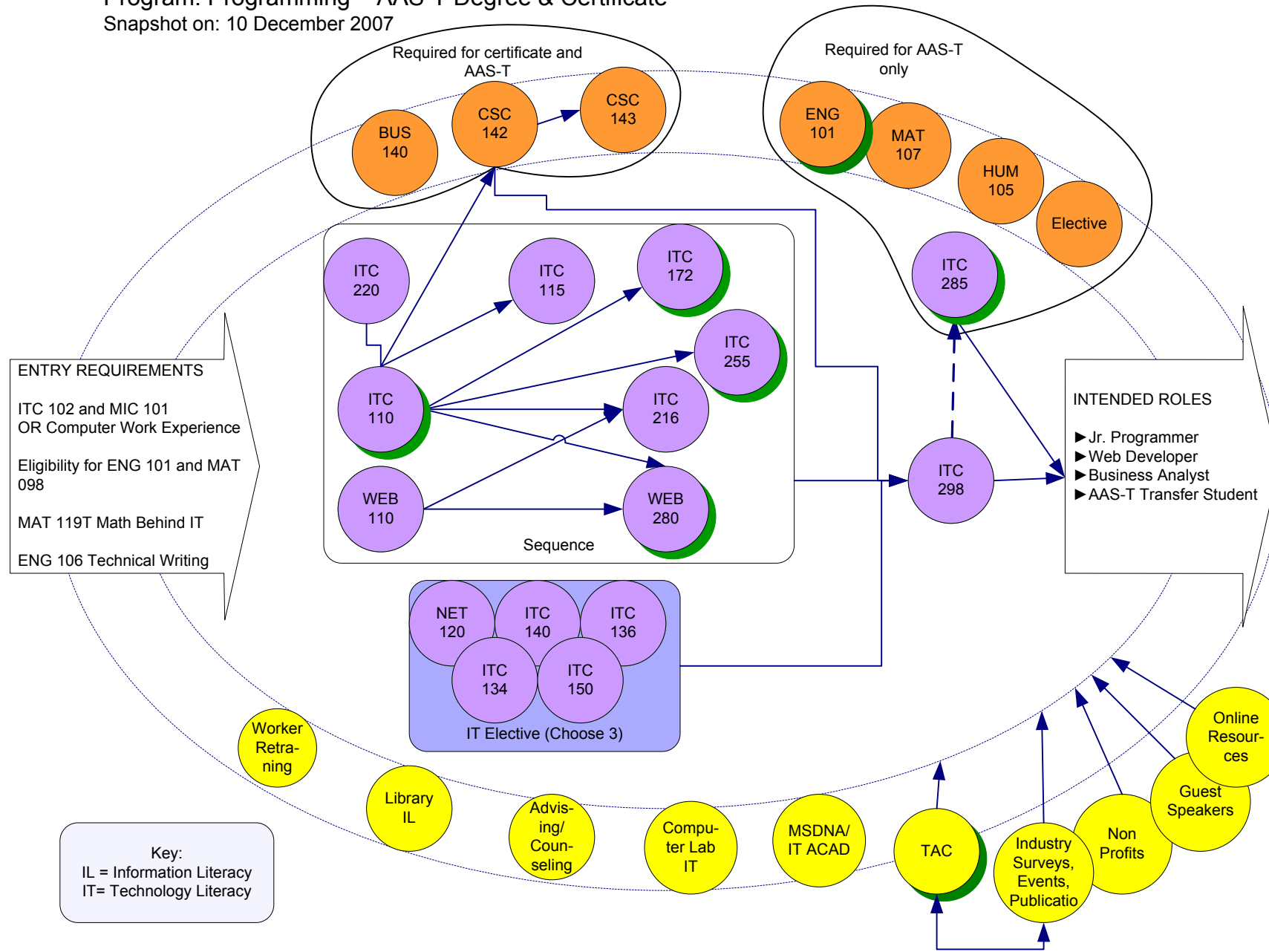
What must students understand to demonstrate the intended outcome?

What skills must students master to demonstrate the intended outcome?

What will students do in here to demonstrate evidence of the outcome?

What do students need to be able to DO “out there” that we’re responsible for “in here”??

Program: Programming – AAS-T Degree & Certificate
 Snapshot on: 10 December 2007



Intended Learning Outcomes:

1. Use programming languages, i.e., Visual BASIC, UNIX, Java, Perl, C, C++.
2. Interpret and evaluate requirements for program projects.
3. Develop detailed design specifications and test strategies.
4. Identify and articulate physical requirements for systems implementation.
5. Demonstrate theoretical and working knowledge of the principles of programming through completion of tasks and projects.
6. Use multiple operating systems and computer applications.
7. Demonstrate good user interface design principles
8. Communicate effectively
9. Demonstrate computational and problem solving skills
10. Apply knowledge of human relations and team work

Key:
 IL = Information Literacy
 IT= Technology Literacy

Program Assessment Inventory

Program: Programming – AAS-T and Certificate

Assessment methods used to determine that students are prepared to succeed and that they have achieved the program learning outcomes when they complete degrees or certificates.

	<i>Early program</i>	<i>Mid program</i>	<i>End of program</i>
<i>Students are prepared to learn (prerequisites)</i>			
ASSET test scores			
COMPASS test scores	<i>X</i>		
SLEP test scores	<i>X</i>		
ITC 102 Computer Concepts or Demonstrated Computer Experience	<i>X</i>		
MIC 101 Microsoft Office or Demonstrated MS Office Skills	<i>X</i>		
ENG 106 Technical Writing	<i>X</i>		
<i>Students are assessed as they move through the program</i>			
Competencies assessment (by course)	<i>quarterly</i>		
Internship feedback (N/A)			
Pre-Mid-Post assessment (N/A)			
Service Learning experience feedback (N/A)			
Student course evaluations	<i>quarterly</i>		
Student focus groups			<i>X</i>
Student grades	<i>quarterly</i>		
Student interviews (N/A)			
Student self assessment	<i>X</i>	<i>X</i>	<i>X</i>
Student surveys			<i>X</i>
<i>Students are assessed as they complete the program</i>			
Completion statistics			<i>by College</i>
Capstone projects			<i>ITC 285</i>
Graduation statistics			<i>by College</i>
Portfolios (N/A)			
Presentations	<i>BUS 140</i>		
<i>External assessment data is collected</i>			
Transfer rates			<i>by college</i>
Employer surveys (N/A)			
Technical Advisory Committee	<i>meets quarterly</i>		
License certification success rates			<i>by college</i>
Performance in 4 year programs (N/A)			
Employment rates (N/A)			
Salary statistics (N/A)			
Survey of former students			<i>X (once per year)</i>

Programming (AAS-T) (Certificate)

1. Use programming languages currently appropriate to the current information technology industry, i.e., Visual BASIC, UNIX, Java, Perl, C, C++.
2. Interpret and evaluate requirements for program projects.
3. Develop detailed design specifications and test strategies.
4. Identify and articulate physical requirements for systems implementation.
5. Demonstrate theoretical and working knowledge of the principles of programming through completion of tasks and projects.
6. Use multiple operating systems and computer applications.
7. Demonstrate an understanding of good user interface design principles through appropriate use of such principles and through exercising judgment in the use of such principles when carrying out tasks or projects.

AAS-T degree outcomes include those of the Programming certificate as well as the following general course outcomes:

1. Demonstrate the ability to communicate effectively in various formats including written documentation, email, spoken word and address communication to an audience of differing knowledge and listening levels by utilizing appropriate terminology, schematics, electronic presentation and technical documentation; as taught in ENG 101 Composition and ENG 106 Technical Writing.
2. Demonstrate computational and problem solving skills as applied to the computing industry; as exemplified in CIS 102 Computer Information Concepts, and MAT 119 Math Behind IT.
3. Demonstrate knowledge of human relations and team work as applied to the work environment of information technology industry in America and around the world; as taught in HUM 105 Intercultural communications and BUS 140 Customer relations, and NET 298 Special Projects.