**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/post surveys provide 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 project assessments are linked to outcomes and include designing, implementing, modifying and administering databases and their interfaces. Outcomes are developed incrementally in the curriculum through assignments and small projects in:

- **ITC Core component requirement** is being incorporated to address different levels of background experience in hardware, networking and programming among new students. Students work on those areas where their skills need development.
- **ITC 222 (SQL with Server)**: a series of graduated assignments develop SQL skills. A cumulative assignment applies these skills in a story problem.
- **ITC 172 (Visual Basic with ASP)**: students create client programs for databases through individual assignments and a group project. Students develop a set of deliverables and are 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 226 (Database Administration)**: Develops concepts & skills. Assessment: Students develop a set of deliverables and they are assessed for timeliness, complexity (how many elements used). Students present their project to class including a description, what was most difficult and what they are most proud of; demonstrate how their product works; and answer questions.
- **MS Certification in DB Administration** is strongly encouraged but the test is expensive and some students don’t take it for financial reasons.
- **ITC 280** has been streamlined to focus on developing strong basic skills using open source technologies such as PHP and MySQL.
- **ITC 281 (Advanced Web Databases)**. This new course provides introduction and exploration of more advanced Web database technologies such as Rich Text Editors, comparing open sources versus vendor specific technologies such as Java Server Pages, ASP.NET, Ruby on Rails, Ajax and any other emerging technologies.
- **Most courses** have final projects or assignments that address all the outcomes for a course. Final projects include creating websites and web databases using HTML, open source and proprietary languages.
- **BUS 140 (Customer Relations), ENG 106 (Technical Writing) and HUM 105 (Intercultural Communications)** provide practice and assessment of written and oral communications.
EXTERNAL EVIDENCE? Alumni, employer, Curriculum Review, Technical Advisory Committee feedback?

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

Anecdotal evidence can be retrieved from Linkedin.com. Students post resumes and ask faculty for references. Faculty can see current employment status and contact information for former students. [http://www.linkedin.com/]

The 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.

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

Industry expectations in this area prefer 4-year bachelor degree and industry certification. There are also expectations of high levels of skill in many areas. Our program would better serve students if it had a transfer degree option to support students who want to pursue further education at four year institutions.

The Curriculum Review report documents that faculty substantially rewrote the curriculum over the last year in response to the Technical Advisory Committee’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.

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.

Introductory courses open to all might draw new students into the IT programs.

IT core curriculum would build skill levels for all students in IT programs and should be included in the Database program.

Since the 2005 PAVS report, program enrollments have been climbing. The IT programs have been recruiting non-traditional students, including high school girls and the IBEST program.
ACTIONS TAKEN: What program changes have you made in the last three years? -- What was the impetus for change?

Many courses have been revised to reflect recent technology changes or software versions due to TAC recommendations, including preparing students for the MS certification. ITC 224 (Database Programming) and ITC 226 (Database Administration) have been revised to address on of the MS SQL Developer tests. ITC 224 is to include more native web service development such as creating objects, permissions, log files, reporting services and SQL management using Visual Studio tools. ITC 280 (Web Databases) has been streamlined to focus on open source technologies such as PHP and MySQL in order to develop a stronger basic skill set.

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.

Continue pre- and post-surveys of students for database classes to get student feedback on course outcomes and to measure student self confidence.

Faculty developed revised outcomes for program but they have not yet been through the approval process.

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

- Implement Program student surveys (end of year) or program entrance/exit surveys, implement per program focus group
- Continue TAC feedback via survey
- Plan to offer AAS-T degree option
- Revisit Program outcomes to combine and strengthen those listed
- Explore portfolio capstone for program
Program Name: Database Administration & Development – Certificate

Theme(s): Project-based hands on learning, client support, effective communication

Program Role: Prepares students to build and maintain databases that store, manage, and extract critical data securely and effectively.

Prerequisites
- COMPASS test
- Eligibility for ENG 101 and MAT 098
- Completion of the following core courses with a 2.0 GPA or better: MAT 119, Math behind IT; ENG 106, Technical Writing (both with a 2.0 GPA or better); ability to use Microsoft Office (or MIC 101, Introduction to Computer Applications); previous computer work experience (or ITC 102, Introduction to Computer Information Systems).
- Workforce advising

Courses
- ITC 110, ITC 134, ITC 140
- ITC 172, ITC 220, ITC 255, ITC 136, ITC 222
- ITC 224, ITC 226, ITC 228
- ITC 280 WEB 110, BUS 140
- 10 IT restricted elective credits

Assessment Tasks
- Pre/post surveys
- Final projects demonstrate course level outcomes
- Capstone projects - website and web databases - demonstrate program level outcomes
- Graduation Application and Certificate document achievement of program outcomes

Intended Outcomes
1. Design and model relational databases
2. Document database structures and rules
3. Maintain and retrieve data
4. Perform basic administrative functions
5. Perform security administration to protect data integrity
6. Develop databases with a variety of current industry software applications, such as MS Access and SQL Server, and on a variety of operating system platforms like Windows XP and Server 2003
7. Provide and support client interfaces for a database with a variety of programming languages in the .NET and open
8. Identify and utilize sources of information to research technical specifications and solve technical problems
9. Interact effectively with internal and external clients

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”??
ENTRY REQUIREMENTS
ITC 102 and MIC 101
OR Computer Work Experience
Eligibility for ENG 101 and
MAT 098
MAT 119T Math Behind IT
ENG 106 Technical Writing

Intended Learning Outcomes:
1. Design and model relational databases
2. Document database structures and rules
3. Maintain and retrieve data
4. Perform basic administrative functions
5. Perform security administration to protect data integrity
6. Develop databases with a variety of current industry software applications, such as MS Access and SQL Server, and on a variety of operating system platforms like Windows XP and Server 2003
7. Provide and support client interfaces for a database with a variety of programming languages in the .NET and open
8. Identify and utilize sources of information to research technical specifications and solve technical problems
9. Interact effectively with internal and external clients
Program Assessment Inventory

Program: Database Administration & Development 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.

<table>
<thead>
<tr>
<th>Students are prepared to learn (prerequisites)</th>
<th>Early program</th>
<th>Mid program</th>
<th>End of program</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASSET test scores</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMPASS test scores</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SLEP test scores</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITC 102 Computer Concepts or Demonstrated Computer Experience</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MIC 101 Microsoft Office or Demonstrated MS Office Skills</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENG 106 Technical Writing</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Students are assessed as they move through the program</th>
<th>Early program</th>
<th>Mid program</th>
<th>End of program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competencies assessment (By course)</td>
<td></td>
<td></td>
<td>quarterly</td>
</tr>
<tr>
<td>Internship feedback (N/A)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Mid-Post assessment (N/A)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service Learning experience feedback (N/A)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student course evaluations</td>
<td>quarterly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student focus groups</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Student grades</td>
<td>quarterly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student interviews (N/A)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student self assessment</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Student surveys</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Students are assessed as they complete the program</th>
<th>Early program</th>
<th>Mid program</th>
<th>End of program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completion statistics</td>
<td></td>
<td></td>
<td>by College</td>
</tr>
<tr>
<td>Capstone projects (N/A)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduation statistics</td>
<td></td>
<td></td>
<td>by College</td>
</tr>
<tr>
<td>Portfolios (N/A)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presentations</td>
<td>BUS 140</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>External assessment data is collected</th>
<th>Early program</th>
<th>Mid program</th>
<th>End of program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transfer rates</td>
<td></td>
<td></td>
<td>by college</td>
</tr>
<tr>
<td>Employer surveys (N/A)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technical Advisory Committee</td>
<td>meets quarterly</td>
<td></td>
<td>by college</td>
</tr>
<tr>
<td>License certification success rates</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performance in 4 year programs (N/A)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employment rates (N/A)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salary statistics (N/A)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Survey of former students</td>
<td>X (once per year)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Database Administration and Development (Certificate)

Learning Outcomes

1. Design and model relational databases.
2. Document Database structures and rules.
3. Maintain and retrieve data.
4. Perform basic administrative functions.
5. Perform security Administration to protect data integrity.
6. Develop databases with a variety of current industry software applications, such as Microsoft Access and SQL Server, on a variety of operating system platforms like Windows XP and Server 2003.
7. Provide and support client interfaces for a database with a variety of programming languages in the .NET and open source languages.
8. Identify and utilize sources of information to research technical specifications and solve technical problems.
9. Interact effectively with internal and external clients.