Information Systems Technology

2011-12 Program Review

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# Learning Outcomes
LFCC program graduates will:

<table>
<thead>
<tr>
<th>Measure</th>
<th>Target Criteria</th>
<th>Timeline</th>
<th>Schedule for Reporting Outcomes</th>
<th>How Results are to be Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Be able to effectively communicate both orally and in writing with subject-area experts in business/industry to understand their processes and to help formulate computer-based business solutions.</td>
<td>Student participation in team project requiring collaboration, critical-thinking and problem solving; Design and implement a computer-based solution for client. Instructor rating using rubric described in narrative of this report. (ITP 251)</td>
<td>The average rating as provided by the instructor for this PLO will be 80% or higher using the rubric provided.</td>
<td>Spring 2012</td>
<td>Results reported in program review (Fall 2012)</td>
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<tr>
<td>2. Comprehend software and systems designs with a focus on applications of information technologies, system life cycle methodology, system analysis and design, and system implementation</td>
<td>Students will complete an assessment, which specifically addresses the outcomes concerning software and systems design, SDLC, critical</td>
<td>The average score for the assessment items related to this PLO will be 80% or higher.</td>
<td>Spring 2012</td>
<td>Results reported in program review (Fall 2012)</td>
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</tbody>
</table>
### 3. Be able to analyze and understand database fundamentals including planning, defining and using a database, table design, linking and normalization, types of databases, database description and definition. Comprehend and apply web site design, construction, and management using HTML or XHTML.

<table>
<thead>
<tr>
<th>Practices. Use critical thinking in problem solving, programming logic in structured and object-oriented design using contemporary tools.</th>
<th>thinking, problem solving in programming logic and design. (ITP 251)</th>
<th>The average score for the assessment items related to this PLO will be 80% or higher.</th>
<th>Spring 2012</th>
<th>Results reported in program review (Fall 2012)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students will complete an assessment, which specifically addresses the outcomes concerning database fundamentals, Web site design and management. (ITP 251)</td>
<td></td>
<td></td>
<td>IT faculty will discuss specific strategies for improvement as well as seek input from the program's Curriculum Advisory Committee. Curriculum and course recommendations will be incorporated the next time the class is taught.</td>
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<tr>
<td>4. Demonstrate the use of operating system utilities and multiple-level directory structures, creation of batch files, and configuration of microcomputer environments. Demonstrate a basic comprehension of internet and network</td>
<td>Students will complete an assessment, which specifically addresses the outcomes concerning operating system fundamentals, networking technologies and security/project</td>
<td>The average score for the assessment items related to this PLO will be 80% or higher.</td>
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</tr>
<tr>
<td>technologies including IT job roles, connection methods, TCP/IP functionality and DNS. Analyze web server technologies with security and project management concepts.</td>
<td>management. (ITP 251)</td>
<td></td>
<td>taught.</td>
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</tr>
</tbody>
</table>
Information Systems Technology (IST)
Associate of Applied Science Degree and Career Studies Certificates combined
Spring 2012

Program Mission Statement:
To prepare students for employment or professional development in the area of Information Technology (IT), with specific knowledge in various areas such as database administration, networking, web design, and software development.

This program review reflects on the attainment of program learning outcomes over the last three years as well as changes made to the program during this time. The following learning outcomes are defined for this program:

1. Graduates will be able to effectively communicate both orally and in writing with subject-area experts in business/industry to understand their processes and to help formulate computer-based business solutions.

2. Graduates will comprehend software and systems designs with a focus on applications of information technologies, system life cycle methodology, system analysis and design, and system implementation practices as well as use critical thinking in problem solving, programming logic in structured and object-oriented design using contemporary tools.
3. Graduates will be able to analyze and understand database fundamentals including planning, defining and using a database, table design, linking and normalization, types of databases, database description and definition. Comprehend and apply web site design, construction, and management using HTML or XHTML.

4. Graduates will demonstrate the use of operating system utilities and multiple-level directory structures, creation of batch files, and configuration of microcomputer environments. Demonstrate a basic comprehension of Internet and network technologies including IT job roles, connection methods, TCP/IP functionality and DNS. Analyze web server technologies with security and project management concepts.

The first section of the report (Section A) describes the methods used to assess these learning outcomes, the results obtained, and the use of these results for improvement of the program.

The second section (Section B) provides program outcome data, including enrollment, retention, graduation, and productivity data.
Section A: Assessment of Program Learning Outcomes

Student Learning Outcome 1: Graduates will be able to effectively communicate both orally and in writing with subject-area experts in business/industry to understand their processes and to help formulate computer-based business solutions.

Assessment Measure:

IST students enrolled in the capstone course, ITP 251 (Systems Analysis and Design), form teams to design and implement a computer-based solution for individuals or businesses in the local area. Through their team projects and interaction with the project client, the ITP 251 instructor assesses each student relative to their performance as related to PLO #1. The rubric used for this PLO is provided below.

- 0 = Student did not participate in group project at all
- 5 = Student did minimal work and did not exhibit effective communication with team members; lacked an understanding of the process
- 10 = Student contributed to the project and displayed adequate teamwork and communication; displayed some understanding of the process
- 15 = Student contributed significantly to the project; displayed a high-level understanding of the process to help team members formulate a solution

Expected results: The average rating for this PLO will be 80% or higher using the rubric provided.
Results: The average rating for this PLO was 83%. Additionally, 19 of 34 students (56%) earned a rating of 100%. 32 of 34 students (94%) earned a rating of 67% or higher.

Use of results for improvement: A greater emphasis will be placed on the need for collaboration as well as effective communication within a team environment. This will be a point of emphasis in all IT courses. Also, the rubric used will be modified to allow for more discrimination between levels of participation. A rating of 12 (of 15 possible points) would yield the 80% target. Using the above rubric, the instructor was not able to provide a rating other than 0, 5, 10, or 15. This has most likely contributed to the percentage of students earning a rating below the 80% target.

Student Learning Outcome 2: Graduates will comprehend software and systems designs with a focus on applications of information technologies, system life cycle methodology, system analysis and design, and system implementation practices. Also, students will use critical thinking in problem solving, programming logic in structured and object-oriented design using contemporary tools.

Assessment Measure:
IST students enrolled in the capstone course, ITP 251 (Systems Analysis and Design), will complete an assessment (administered via Blackboard), which specifically addresses the outcomes concerning software and systems design, SDLC, critical thinking, problem solving in programming logic and design.

Expected results: The average score for the assessment items related to this PLO will be 80% or higher.

Results: The average score for the assessment items related this PLO was 76%. Additionally, 17 of 34 students (50%) scored at the 80% rate for this outcome.

Use of results for improvement: It is the IST faculty’s goal to make improvements to this area of instruction so that the average score for this PLO assessment reaches the 80% or higher level. Specific strategies will be emphasize critical thinking and problem solving methodology in all courses, but specifically in programming courses (ITP 100, ITP 112, ITP 120). An emphasis on the various aspects of the System Development Life Cycle (SDLC) will also be a focal point in ITE 120 Principles of Information Systems as well as the capstone course (ITP 251). More collaboration and hands-on activities will be utilized in all courses to help achieve this objective.
**Student Learning Outcome 3:** Graduates will be able to analyze and understand database fundamentals including planning, defining and using a database, table design, linking and normalization, types of databases, database description and definition. Comprehend and apply web site design, construction, and management using HTML or XHTML.

**Assessment Measure:**

IST students enrolled in the capstone course, ITP 251 (Systems Analysis and Design), will complete an assessment (administered via Blackboard), which specifically addresses the outcomes concerning database fundamentals, Web site design and management.

**Expected results:** The average score for the assessment items related to this PLO will be 80% or higher.

**Results:** The average score for the assessment items related this PLO was 77%. Additionally, 18 of 34 students (53%) scored at the 80% rate for this outcome.

**Use of results for improvement:** It is the IST faculty’s goal to make improvements to this area of instruction so that the average score for this PLO assessment reaches the 80% or higher level. Specific strategies will be emphasizing better understanding of database and web site design. Specific courses to address these issues are: ITD 110, ITD 130, ITD 210, and ITE 120. More
hands-on activities involving database development and web site design will be utilized in these courses to help achieve this objective.

**Student Learning Outcome 4:** Graduates will demonstrate the use of operating system utilities and multiple-level directory structures, creation of batch files, and configuration of microcomputer environments. Demonstrate a basic comprehension of Internet and network technologies including IT job roles, connection methods, TCP/IP functionality and DNS. Analyze web server technologies with security and project management concepts.

**Assessment Measure:**
IST students enrolled in the capstone course, ITP 251 (Systems Analysis and Design), will complete an assessment (administered via Blackboard), which specifically addresses the outcomes concerning Operating System fundamentals, networking technologies and security/project management.

*Expected results:* The average score for the assessment items related to this PLO will be 80% or higher.

*Results:* The average score for the assessment items related this PLO was 77%. Additionally, 20 of 34 students (59%) scored at the 80% rate for this outcome.
Use of results for improvement: It is the IST faculty’s goal to make improvements to this area of instruction so that the average score for this PLO assessment reaches the 80% or higher level. Specific strategies will be emphasizing better understanding of operating system fundamentals, networking and security issues. Specific courses to address these issues are: ITN 106, ITN 109, and ITE 120. More hands-on activities involving operating system, networking and security issues will be utilized in these courses to help achieve this objective.
Section B: Program Student Success Indicators

Summary of History of IST program at LFCC

The Information Systems Technology (IST) program has undergone significant change since the last program review completed in 2008. The following provides a summary of the makeup of the program as of 2008 and its current format today (2012).

Prior to 2008, the IST program was redesigned in 2006 to include four separate degree options:

- Associate of Applied Science Degree in IST (parent degree)
- Associate of Applied Science Degree in IST: Database Administration Specialization
- Associate of Applied Science Degree in IST: Network Engineering Specialization
- Associate of Applied Science Degree in IST: Web Applications Development Specialization

In addition, as part of the IST program, the following Career Studies Certificates were available:

- Database Administration Specialist CSC
- Database Administration Professional CSC
- Information and Network Security CSC
- Networking Specialist CSC
- Networking Engineering Professional CSC
- Web Design Specialist CSC
- Web Applications Development Professional CSC
In 2008, a new course, **ITE 120 Principles of Information Systems** was added to all degree programs and incorporated into a new Career Studies Certificate (discussed below). ITE 120 increased the transferability of the IT degrees. ITE 120 is the equivalent of specific courses at JMU, ODU, and Va. Tech. The ITE 120 course provides a strong systems view of computing that is more comprehensive than the basic computer literacy course.

Effective 2009, a new Career Studies Certificate (**Information Technology Foundations CSC**) was added. This new CSC, provided students an opportunity to earn a credential with the completion of the IT core courses, which are shared among the degrees. A new course, ITP 160 Introduction to Game Design and Development was included as part of this new CSC. This CSC has served as a feeder program into the degrees as well as being a foundational, career exploration program for students.

Effective 2010, the following modifications were made to the IST program:

- Removal of the Database Administration Professional CSC
- Removal of the Information and Network Security CSC

Each of the above Career Studies Certificates were removed due to a lack of sufficient enrollment in those CSC programs. On advice of the Curriculum Advisory Committee, the decision to remove the Database Administration Professional CSC was, in large part, due to the experience-level and high-level of complexity typically required for positions associated with the Database Administration field. The Information and Network Security CSC was also removed due to a lack of sufficient enrollment. The decision was made to remove this CSC and to re-
design a more appropriate set of courses at a later date. It should be noted that as of summer 2012, a new Cyber Security Career Studies Certificate has been approved and is now in place.

**Effective 2011, SDV 101 Orientation to the IT Professions** (one credit) was added to the following Career Studies Certificate programs:

- Database Administration Specialist CSC
- Information Technology Foundations CSC
- Networking Specialist CSC
- Web Design Specialist CSC

SDV 101 Orientation to the IT Professions is a course that is specifically designed for students enrolled in one of the IST programs or for those interested in one of the IST programs. The course provides fundamental, valuable information on career exploration specifically within the IT field as well as soft skills that employers look for in potential employees. It also focuses on ethical issues specifically related to the IT field among other IT and non-IT employability and life management skills. The addition of this one-credit course also allows these CSC’s to become eligible for various financial aid programs that were previously unavailable due to the program credit level requirements.

**Also in 2011**, the decision was made to discontinue new enrollments into the three IST degree specializations. This leaves the IST parent degree as the degree of choice for students. The
rationale for this change was to eliminate some of the fragmentation and confusion associated with the three specializations. By using one degree, students have been urged to simultaneously enroll in one or more Career Studies Certificates to gain expertise in their chosen specialty. No change in course offerings or content was made relative to this change. Rather, it simply creates a more unified approach for students to complete the program with the Associate of Applied Science degree in Information Systems Technology and to supplement that degree with one or more Career Studies Certificates. This approach will indicate to potential employers that the student has a well-rounded degree within the overall Information Technology field, but also has an area of expertise as indicated by one or more CSC.

In conjunction with the above change, a much stronger advising approach has been on-going to make students aware of this approach and the potential impact on their employability. Students are encouraged to satisfy the Approved IT Electives by completing one or more Career Studies Certificates (CSC). Students are encouraged to select courses within the “Specialist” CSC and then, when appropriate continue within the “Professional” CSC for a specific area. See below for specific CSC options. Specific advising sessions were held during the Spring 2012 semester to inform students as well as to answer questions they may have had. This transition has gone very smoothly and evidence of increased awards earned by students should become available soon.

The most recent addition to the IST program is the addition of the Cyber Security Career Studies Certificate. This program will provide students the opportunity to focus their career preparation on the cyber security aspect of the Information Technology field. The program will
modularly fit into the parent IST degree program so that the student has an opportunity to earn an Associate in Applied Science degree with the Cyber Security CSC as a separate credential.
As of this program review (June 2012), the IST degree available to new and current students enrolling into the IST program consists of:

<table>
<thead>
<tr>
<th>General Education Courses</th>
<th>IT Core Courses</th>
<th>Approved IT Electives (6 courses)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 111 College Composition I</td>
<td>ITD 110 Web Page Design I</td>
<td>Students are encouraged to satisfy the Approved IT Electives by completing one or more Career Studies.</td>
</tr>
<tr>
<td>ENG 112 College Composition II</td>
<td>ITD 130 Database Fundamentals</td>
<td></td>
</tr>
<tr>
<td>ENG 115 Technical Writing</td>
<td>ITE 120 Principles of Information Systems</td>
<td></td>
</tr>
<tr>
<td>MTH 151/152 (6 credits of Math required)</td>
<td>ITN 106 Microcomputer Operating Systems</td>
<td>Certificates (CSC). Students are encouraged to select courses within the “Specialist” CSC and then, when appropriate continue within the “Professional” CSC for a specific area. See below for specific CSC options.</td>
</tr>
<tr>
<td>ECO 201 or 202</td>
<td>ITN 109 Internet &amp; Network Foundations</td>
<td></td>
</tr>
<tr>
<td>PED/HLT elective</td>
<td>ITP 100 Software Design</td>
<td></td>
</tr>
<tr>
<td>Social Science elective</td>
<td>SDV 101 Orientation to the IT Professions</td>
<td></td>
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<tr>
<td>Humanities elective</td>
<td>ITP 251 Systems Analysis &amp; Design (capstone course; to be taken in the final semester)</td>
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Additional possible bridge courses: ITE 115 (Intro to Computer Applications & Concepts), AST 101 (Keyboarding) may be required to begin program. Consult with an IT faculty member for more information.
Total of 67 credits required for degree completion.

The following Career Studies Certificates are available which provide opportunities to obtain another valuable credential in a focused area of Information Technology:

- Cyber Security
- Database Administration Specialist
- Information Technology Foundations
- Networking Engineering Specialist
- Networking Engineering Professional
- Web Design Specialist
- Web Applications Development Professional

As of this program review, a proposal to add a Career Studies Certificate in Software Development has been approved at the local level (LFCC’s Curriculum & Instruction Committee and the college board). Final approval from the VCCS has also been received and this CSC will be available in the Fall 2012 semester. The program will provide students the opportunity to focus on the development of software, which is an integral part of the Information Technology field. The program will serve as another option for students to satisfy the IT electives that are necessary to obtain the Associate in Applied Science in Information Systems Technology degree.
Curriculum Advisory Committee

As a means to ensure that the IST curriculum remains as relevant as possible for students to successfully gain employment, a Curriculum Advisory Committee (CAC) has been used to suggest and approve changes made to the curriculum. This committee was recently examined and an effort was made to replace inactive committee members with newly recommended members. The current makeup of the CAC includes representatives from each locality within the LFCC service region. It also consists of a blend of IT professionals working in the private sector, local city or county governments, and in the public school systems in the LFCC service region.

The following individuals make up the current IST Curriculum Advisory Committee:

- Paul Crosen, Director of Information Technology, The Shockey Companies
- Robert Fuller, IT/GIS Technician, Clarke County Government
- Chris Gooditis, Director of Technical Services/Information Systems, Valley Health
- Jeff Manning, Manager - Network Engineering at Shentel Telecommunications Co.
- Louis McDonald, Director of Technology Services, Fauquier County Public Schools
- Steven Muller, Director of Technology, Winchester Public Schools
- John Nicolay, Director of Technology, Rappahannock County Schools
- Melody Sheppard, Director of Technology and CTE, Warren County Schools
Summary of assessment via capstone course (ITP 251)

The Program Learning Outcomes for the entire Information Systems Program are as follows:

Upon completion of the IST degree program, students will:

1. Be able to effectively communicate both orally and in writing with subject-area experts in business/industry to understand their processes and to help formulate computer-based business solutions.

2. Comprehend software and systems designs with a focus on applications of information technologies, system life cycle methodology, system analysis and design, and system implementation practices. Use critical thinking in problem solving, programming logic in structured and object-oriented design using contemporary tools.
3. Analyze and understand database fundamentals including planning, defining and using a database, table design, linking and normalization, types of databases, database description and definition. Comprehend and apply web site design, construction, and management using HTML or XHTML.

4. Demonstrate the use of operating system utilities and multiple-level directory structures, creation of batch files, and configuration of microcomputer environments. Demonstrate a basic comprehension of internet and network technologies including IT job roles, connection methods, TCP/IP functionality and DNS. Analyze web server technologies with security and project management concepts.

The above Program Learning Outcomes (PLO) are included in multiple courses as part of the overall student experience in the IST program. Each PLO is reinforced throughout the program of study. Depending on electives students choose, some areas may become an area of specialty for students. However, through a common set of core courses, all IST program students are provided a fundamental exposure to each Program Learning Outcome. The core courses are listed below:

- ITD 110 – Web Page Design I
- ITD 130 – Database Fundamentals
- ITE 120 – Principles of Information Systems
- ITN 106 – Microcomputer Operating Systems
- ITN 109 – Internet and Network Foundation
- ITP 100 – Software Design
SDV 101 – Orientation to the IT Professions

Students begin the program by taking the above core courses. This allows the student to begin exploration of fundamental topics and possible career paths within the IT industry. Students have the ability to further specialize in areas of their choice by taking additional courses that provide instruction and content for that specific area.

Students typically take the capstone course, ITP 251 Systems Analysis and Design, during their final semester of the IST program. The nature of the capstone course provides an opportunity for students to demonstrate mastery of specific skills as well as other desired outcomes of the IST program. The format of the ITP 251 course is one that allows students to collaborate within a team environment and to demonstrate areas of expertise as well as to display an overall, wide-breadth of attributes essential to success in the Information Technology field.

The following matrix shows the core courses and capstone course where the PLO’s are specifically part of the course content. Course syllabi for each core course as well as the capstone course (ITP 251) are provided in the appendix.

<table>
<thead>
<tr>
<th>PLO #1 – Effective communication with business &amp; industry experts; formulate computer-based solutions</th>
<th>ITE 120, ITP 100, ITD 130, ITP 251, SDV 101</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLO #2 – Software &amp; systems design, SLDC, critical thinking, problem solving in programming logic/design</td>
<td>ITE 120, ITP 100, ITP 251</td>
</tr>
<tr>
<td>PLO #3 – Database fundamentals; Web site design and management</td>
<td>ITD 130, ITE 120, ITD 110, ITP 251</td>
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<tr>
<td>PLO #4 – Operating system fundamentals;</td>
<td>ITN 106, ITN 109, ITE 120, ITP 251</td>
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Students enrolled in the capstone course, ITP 251 (Systems Analysis and Design), complete an assessment (administered via Blackboard) which specifically addresses PLO #2, #3, and #4. Additionally, through team projects and interaction with the project client, the ITP 251 instructor assesses each student relative to their performance as related to PLO #1. The rubric used for this PLO is provided below.

0  =  Student did not participate in group project at all
5  =  Student did minimal work and did not exhibit effective communication with team members; lacked an understanding of the process
10 =  Student contributed to the project and displayed adequate teamwork and communication; displayed some understanding of the process
15 =  Student contributed significantly to the project; displayed a high-level understanding of the process to help team members formulate a solution

Each of the remaining PLO’s (#2, #3, #4) are measured via the assessment. Detailed results of the assessment are included in the appendix of this report.

In the spring 2012 semester, two sections of ITP 251 were offered. A total of 34 students (both sections combined) completed the assessment. The following provides the results of this assessment instrument. A summarized analysis of each PLO follows.
### Summary of Program Learning Outcomes assessment:

<table>
<thead>
<tr>
<th>Program Learning Outcome</th>
<th>Percent of students reaching milestones</th>
<th>Overall Average</th>
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<tbody>
<tr>
<td>PLO #1</td>
<td>56% of the students scored 100%</td>
<td>83%</td>
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<td></td>
<td>94% scored 67% or higher</td>
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<td>PLO #2</td>
<td>18% of the students scored 100%</td>
<td>76%</td>
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<td>24% scored 90% or higher</td>
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<td></td>
<td>50% scored 80% or higher</td>
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<td></td>
<td>62% scored 70% or higher</td>
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<td></td>
<td>85% scored 60% or higher</td>
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<tr>
<td>PLO #3</td>
<td>9% of the students scored 100%</td>
<td>77%</td>
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<tr>
<td></td>
<td>24% scored 90% or higher</td>
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<tr>
<td></td>
<td>53% scored 80% or higher</td>
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<tr>
<td></td>
<td>65% scored 70% or higher</td>
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<td></td>
<td>88% scored 60% or higher</td>
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<tr>
<td>PLO #4</td>
<td>9% of the students scored 100%</td>
<td>77%</td>
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<td></td>
<td>26% scored 90% or higher</td>
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<td></td>
<td>59% scored 80% or higher</td>
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<tr>
<td></td>
<td>74% scored 70% or higher</td>
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</tr>
<tr>
<td></td>
<td>88% scored 60% or higher</td>
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</tbody>
</table>

### Summary of Program Learning Outcomes Overall (all 4 PLOs)

3% of the students scored 100% overall  
26% of the students scored 90% or higher overall  
44% of the students scored 80% or higher overall  
74% of the students scored 70% or higher overall  
91% of the students scored 60% or higher overall
Results of Student Survey

Near the end of the Spring 2012 semester, students in the ITP 251 course were asked to respond to a survey designed to elicit feedback regarding their experience within the Information Systems Technology program at LFCC. The complete, unedited results are provided in the appendix.

In general, most feedback was positive given that students praised the knowledge and ability of the IST faculty. Instructor support and small classes were positive comments provided by the students. Some interesting suggestions were made as to areas of improvement, such as a need for courses dealing with mobile devices and computer forensics. A number of students displayed interest in the Cyber Security program, which has just recently been announced.

Overall, 87% (20 of 23) students indicate that they are “satisfied” or “completely satisfied” with their experience regarding the IST program at LFCC.
Need data for enrollment, retention, graduation, etc.
Conclusions and Recommendations/Goals

The results of the assessment administered to the ITP 251 students indicates a consistent level of achievement with regard to Program Learning Outcomes #2, #3, and #4. Each of these PLO’s average in the 76-77% range overall.

The overall average for PLO #1 (Effective communication with business & industry experts; formulate computer-based solutions) is 83% which is higher than the average of PLO #2, #3 and #4. This can be, in part, attributed to the nature of that learning outcomes and the manner in which it was measured. PLO #1 represents a set of skills and attributes that are much more subjective and are much more difficult to measure overall. More work needs to be done to address a way to accurately measure student learning outcomes for PLO #1. However, since this learning outcome is considered by our Curriculum Advisory committee to be an essential part of the educational experience for IST graduates, the level of achievement is encouraging. A greater emphasis will be placed on the need for collaboration as well as effective communication within a team environment. This will be a point of emphasis in all IT courses. Also, the rubric used will be modified to allow for more discrimination between levels of participation. For example, a rating of ‘12’ (of 15 possible points) would yield the 80% target. Using the above rubric, the instructor was not able to provide a rating other than 0, 5, 10, or 15. This has most likely contributed to the percentage of students that earned ratings below the 80% target.

An analysis of PLO #2 (Software & systems design, SLDC, critical thinking, problem solving in programming logic/design) results in an average of 76% for this PLO. It also shows 50% of the students are achieving at the 80% or higher level. It is the IST faculty’s goal to make improvements to this area of instruction so that 70% of students achieve at the 80% or higher
level and so that the overall average score for this PLO assessment reaches the 80% or higher level. Specific strategies will be to emphasize critical thinking and problem solving methodology in all courses, but specifically in programming courses (ITP 100, ITP 112, ITP 120). An emphasis on the various aspects of the System Development Life Cycle (SDLC) will also be a focal point in ITE 120 Principles of Information Systems as well as the capstone course (ITP 251). More collaboration and hands-on activities will be utilized in all courses to help achieve this objective.

An analysis of **PLO #3** *(Database fundamentals; Web site design and management)* results in an average of 77% for this PLO. It also shows 53% of the students are achieving at the 80% or higher level. It is the IST faculty’s goal to make improvements to this area of instruction so that 70% of students achieve at the 80% or higher level and so that the overall average score for this PLO assessment reaches the 80% or higher level. Specific strategies will be to emphasize better understanding of database and web site design. Specific courses to address these issues are: ITD 110, ITD 130, ITD 210, and ITE 120. More hands-on activities involving database development and web site design will be utilized in these courses to help achieve this objective.

An analysis of **PLO #4** *(Operating system fundamentals; networking technologies; security & project management)* results in an average of 77% for this PLO. It also shows that 59% of the students are achieving at the 80% or higher level. It is the IST faculty’s goal to make improvements to this area of instruction so that 70% of students achieve at the 80% or higher level and so that the overall average score for this PLO assessment reaches the 80% or higher level. Specific strategies will be to emphasize better understanding of operating system fundamentals, networking and security issues. Specific courses to address these issues are: ITN
106, ITN 109, and ITE 120. More hands-on activities involving operating system, networking and security issues will be utilized in these courses to help achieve this objective.

(Documents for the Appendix in separate files)

The following items are included in the Appendix for this report:

- Associate of Applied Science Degree in Information Systems Technology 2011-12 catalog pages
- Career Studies Certificates 2011-12 catalog pages
- Results of Assessment of capstone course (ITP 251)
- Results of Assessment of capstone course (ITP 251) – Sorted by overall percent for all PLO’s
- Analysis of Program Learning Outcome #1
- Analysis of Program Learning Outcome #2
- Analysis of Program Learning Outcome #3
- Analysis of Program Learning Outcome #4
• Analysis of Overall Program Learning Outcomes

• Results of Student Survey (capstone course – ITP 251)

• Course syllabus for each IST core course and capstone course
  o ITD 110 Web Page Design I
  o ITD 130 Database Fundamentals
  o ITE 120 Principles of Information Systems
  o ITN 106 Microcomputer Operating Systems
  o ITN 109 Internet and Network Foundations
  o SDV 101 Orientation the IT Professions
  o ITP 251 Systems Analysis and Design (capstone course)