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**Date of Report**

**June 30, 2016**

**Five Year Review: Fall 2010 through Spring 2015**

**Academic Program Review**

Department of Computer Science and Information Systems

Academic Programs Reviewed

\_Computer Information Systems\_\_\_\_\_\_\_\_Computer Science\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**\_\_\_\_\_\_\_\_\_**David W. Nickels**\_\_\_\_\_\_\_\_\_\_**

**Department Chair**

**Part I**

**Departmental Assessment**

The University of North Alabama is committed to a process of ongoing and integrated planning and evaluation. To this end, each department engages in a five-year review to ensure that departmental goals, strategies, and projected outcomes support the institution’s mission, strategic plan, and commitment to academic excellence.

Specifically, all five-year reviews should 1) incorporate a systematic review of institutional mission, goals, and outcomes; 2) review results targeted toward continuing improvement in departmental quality; and 3) document changes have occurred as a result of the review.

**1. Assess the department as it relates to students including enrollment and graduation data, and student services:**

The Computer Science program moved from the Department of Mathematics and Computer Science in the College of Arts and Sciences to join the Computer Information Systems (CIS) in the College of Business in Fall 2011. The CIS department name was changed at the time to the Department of Computer Science and Information Systems (CSIS) to reflect the newly structured department housing both the Computer Science and Computer Information Systems programs.

Enrollment across the Fall 2010 through Spring 2015 Academic Program Review period showed a substantial increase in the number Bachelor-level full-time and part-time majors in 2011-12 (193 full-time majors, 62 part-time majors, 147.33 FTE students) over 2010-11 (136 full-time majors, 34 part-time majors, 213.67 FTE students) due to the Computer Science program joining the formerly-named CIS department in Fall 2011. Since that time through the 2014-15 academic year, enrollment in Bachelor-level full-time and part-time majors has remained relatively constant. The enrollment pattern is indicated in the following table:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Number of Duplicated Majors** (SU, FA & SP Semesters Combined) | | | | |  |  |
| **Bachelor** | ***2010-11*** | ***2011-12\**** | ***2012-13*** | ***2013-14*** | ***2014-15*** | ***Average*** |
| Full-Time | 136 | 193 | 207 | 199 | 198 | 186.60 |
| Part-Time | 34 | 62 | 54 | 53 | 49 | 50.40 |
| **Total** | **170** | **255** | **261** | **252** | **247** | **237.00** |
| *FTE Students* | *147.33* | *213.67* | *225.00* | *216.67* | *214.33* | *203.40* |

The CSIS department also offers two concentrations in the College of Business MBA program supported by the CIS program: a concentration in Information Systems and a concentration in ERP Systems Using SAP. The enrollment pattern of students in these two concentrations has been relatively stable across 2010-11 through 2013-2014 with somewhat of a decrease in 2014-15 as indicated in the following table:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **MBA Concentrations** |  |  |  |  |  |  |
| Full-Time | 4 | 5 | 6 | 7 | 5 | 5.40 |
| Part-Time | 37 | 30 | 34 | 38 | 21 | 32.00 |
| **Total** | **41** | **35** | **40** | **45** | **26** | **37.40** |
| *FTE Students* | *16.33* | *15.00* | *17.33* | *19.67* | *12.00* | *16.07* |

No Master’s level program is offered in Computer Science.

The number of Bachelor’s level degrees conferred increased steadily from 2010-11 through 2013-14 and experienced a slight decrease in 2014-15 over the 2013-14 level. During these same time periods, the number of Master’s level degrees (in the CIS program, only) conferred remained relatively stable across 2010-11 through 2013-14 and then experienced a decrease in 2014-15 over the 2013-14 level. These data are indicated in the following table:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Number of Degrees Conferred** | | |  |  |  |  |
| **Level** | ***2010-11*** | ***2011-12*** | ***2012-13*** | ***2013-14*** | ***2014-15*** | ***Average*** |
| Bachelor's | 20 | 25 | 29 | 41 | 33 | 29.60 |
| Master's | 14 | 10 | 17 | 14 | 6 | 12.20 |
| **Total** | **34** | **35** | **46** | **55** | **39** | **41.80** |

The CSIS department’s student undergraduate credit hours produced increased substantially in 2011-12 over 2010-11, reflecting the CS program joining the department. The undergraduate credit hours produced remained relatively stable for 2011-12 through 2013-14 before decreasing slightly in 2014-15 over 2013-14.

The CSIS department’s student graduate credit hours produced have decreased over the five-year report period from 1,089 in 2010 to 657 in 2014-15. The average class sizes were stable the five-year report period.

The student credit hours and average class size data across the report period are indicated in the following tables:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Student Credit Hours** (SU, FA & SP Semesters Combined) | | | | |  |  |
| **Level** | ***2010-11*** | ***2011-12*** | ***2012-13*** | ***2013-14*** | ***2014-15*** | ***Average*** |
| Undergraduate | 5,154 | 6,900 | 6,789 | 6,231 | 5,943 | 6,203.40 |
| Graduate | 1,089 | 1,017 | 768 | 828 | 657 | 871.80 |
| **Total** | **6,243** | **7,917** | **7,557** | **7,059** | **6,600** | **7,075.20** |
|  |  |  |  |  |  |  |
| **Average Class Size** (Classes of 6 or more students) | | | |  |  |  |
| **Level** | ***2010-11*** | ***2011-12*** | ***2012-13*** | ***2013-14*** | ***2014-15*** | ***Average*** |
| Undergrad | 21.5 | 21.5 | 19.9 | 20 | 19.7 | 20.52 |
| Graduate | 19.5 | 21.8 | 24.9 | 21.6 | 23.4 | 22.24 |

The student services offered by the CSIS department were substantial throughout the report period. Undergraduate majors in the two department programs are assigned a faculty advisor from among the departmental faculty and meet with their assigned advisors prior to each pre-registration period. The advisors maintain advising information on each advisee to help guide the advisees effectively in progression toward completing degree requirements. The group advising sessions conducted from 2010-11 through 2013-14 were discontinued in Fall 2014 in order to provide more focused advising services for individual student majors in the department’s two undergraduate academic programs.

Undergraduate students in the CS and CIS programs are encouraged to participate in the department-sponsored student chapters for the Association of Computing Machinery (ACM) and Association for Information Systems (AIS) global professional organizations. Membership in these student chapters provides the students with professional engagement opportunities in local, regional, and national activities. In addition, departmental faculty in both programs actively offer support, mentoring, and engagement for students in undergraduate student research projects. CIS majors in the capstone CIS 486 Projects in Information Systems course participate in service learning information systems projects providing services to the university, local community, and region.

**2. Assess the department as it relates to faculty and staff activities throughout the previous reporting period including research, service, and faculty/staff development:**

The number of full-time faculty in the department has ranged from 10 to 14 during the reporting period, and the number of part-time faculty has ranged from two to four during the same reporting period. All full-time faculty also serve as academic advisors of undergraduate student majors in the departmental programs. CSIS faculty qualified as graduate faculty members also teach CIS courses offered in the College of Business MBA program. The number of CSIS faculty across the reporting period has been adequate to support student demand for departmental courses in the two majors while supporting an optimal average FTE Student/FTE Faculty Ratio of 17.50 across the five-year reporting period.

The number of departmental faculty during the fall semesters of the reporting period is illustrated in the following table:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Number of Faculty** (Fall Semester) | | |  |  |  |  |
| **Faculty** | ***2010-11*** | ***2011-12*** | ***2012-13*** | ***2013-14*** | ***2014-15*** | ***Average*** |
| Full-Time | 10 | 10 | 12 | 14 | 12 | 11.60 |
| Part-Time | 4 | 3 | 3 | 3 | 2 | 3.00 |
| **Total** | **14** | **13** | **15** | **17** | **14** | **14.60** |
| *FTE Faculty* | *11.33* | *11.00* | *13.00* | *15.00* | *12.67* | *12.60* |

Department faculty were actively engaged in research, service, and professional development activities throughout the 2010-11 to 2014-15 reporting period. In the area of research, CSIS department faculty were very productive in intellectual contributions through research as indicated in the following table:

|  |  |  |  |
| --- | --- | --- | --- |
| **Intellectual Contributions by CSIS Department Faculty for 2010-11 through 2014-15** | | | |
| **Research Category** | ***Computer Science*** | ***Computer Information Systems*** | ***Total*** |
| Articles in Refereed Journals | 10 | 58 | 68 |
| Publications in Refereed Conference Proceedings | 20 |  | 20 |
| Presentations in Refereed Conference Proceedings |  | 36 | 36 |
| Books, Monographs, Compilations, Manuals, Supplements, Chapters, Cases, Readings | 1 | 5 | 6 |
| Presentations of Refereed Papers | 16 | 4 | 20 |
| Presentations of Non-Refereed Papers |  | 5 | 5 |
| Other Research |  | 3 | 3 |
| **Total** | **47** | **111** | **158** |

In service, CSIS departmental faculty were highly engaged throughout the reporting period. These activities included Service to the Institution, Service to the Community, and Service to the Profession. Faculty members provided a wide range of service across those three categories during the 2010-11 through 2014-15 reporting period. During the five-year reporting period, Department faculty collectively documented 178 service contributions to the University, 144 service contributions to the profession, and 46 service contributions to the community.

Funding to support faculty development activities was funded to the extent available within the departmental budget over the five-year reporting period as follows:

|  |  |
| --- | --- |
| **Academic Year** | **Professional Development Expenditures Funded by Department** |
| 2010-11 | $3,319.31 |
| 2011-12 | $3,515.69 |
| 2012-13 | $3,934.51 |
| 2013-14 | $1,960.81 |
| 2014-15 | $1,089.35 |

It is also noted that faculty development funding additional to the above amounts was provided through the COB Dean’s approval from COB-level budgets.

**3. Are facilities and resources adequate to address the goals and objectives of each program within the department? Explain why or why not:**

Yes, the computer lab classroom facilities, faculty and adjunct resources for instruction, and departmental budget have been adequate to effectively support the goals and objectives of both programs in the department. Adequacy of resources by category is detailed in the following.

Library

Library resources are adequate for our programs.

Computer Laboratory Facilities

As long as we maintain a pattern of replacement of the computers, printers, and other equipment, and as long as we have timely support from Information Technology Services, our present laboratories are adequate. A program analysis from ABET noted the excellence of our technology infrastructure to support our programs.

Equipment

Equipment available to our faculty, staff, and students is presently adequate for our program needs, as long as our current replacement patterns prevail so that all faculty, staff, and students have current technology available.

Space

Present office and classrooms available to the Department are sufficient for our programs.

Support Personnel

The Department has a full-time administrative assistant and student workers budgeted at 60 hours per week (40 hours per week in support of our operation of 6 computer labs) and 20 hours per week in support of office activities. This direct support, together with the general support from the College of Business, is sufficient for our programs at present.

**4. Notable achievements by the department (students, faculty, staff):**

Students:

In Phi Beta Lambda (PBL) student chapter information systems technology competitions, CIS major student achievements include:

* 2011, Alabama Statewide, a 1st place in Information Management
* 2012, Alabama Statewide, a 1st place in Database Design & Applications, a 2nd place in Database Design & Applications, a 2nd place in Network Design, and a 3rd place in Database Design & Applications
* 2012, US National, a 4th place in Database Design & Applications and a 7th place in Database Design & Applications
* 2013, Alabama Statewide, a 1st place in Project Management
* 2013, US National, a 7th place in Project Management
* 2014, Alabama Statewide, a 2nd place in Computer Applications
* 2015, Alabama Statewide, a 1st place in Networking Concepts and a 2nd place in Computer Applications
* 2015, US National, an 8th place in Computer Applications

CIS Major Thomas Rhodes received the 2014-15 COB Student Dean’s Award  
Students in the CIS 125 Honors class entered and won the design competition for W. C. Handy Music Festival logo in 2011, 2012, 2013, and 2014.

Faculty:

Professor David Nickels received the COB Faculty Teaching Award for 2010-11

Professor Joan Parris received the COB Faculty Service Award for 2010-11

Professor David Nickels received a Certificate of Keynote Speaker from the International Society of Management Engineers for 2011

Professor David Nickels received the UNA Eleanor Gaunder Phi Kappa Phi Excellence in Teaching Award for 2011-12

Professor John Crabtree received the COB Faculty Teaching Award for 2011-12

Professor Xihui “Paul” Zhang received the COB Faculty Research Award for 2011-12

Professor David Nickels received the COB Faculty Service Award for 2012-13

Professor Joan Parris received the COB Faculty Teaching Award for 2013-14

Professor James Jerkins received the COB Faculty Research Award for 2014-15

Professor Carol Gossett received the COB Faculty Advising Award for 2014-15

Staff:  
CSIS Administrative Assistant Kelly Irwin received the COB Staff Service Award for 2014-15

**5. How has the department addressed recommendations from the previous program review?**

The recommendations from the previous program review were addressed as follows:

* The Department was successful in maintaining the ABET accreditation for the Computer Information Systems program and in achieving initial ABET accreditation of the Computer program following an ABET site visit and review in 2013.
* All requirements associated with AACSB academically/professionally qualified faculty were also met during the reporting period.
* Intellectual contributions and service to the University, the community and the discipline were also continued successfully by the Department faculty.
* The CIS curriculum was evaluated and successfully redesigned for currency within the discipline during 2014-15 and received approval from the University Undergraduate Curriculum Committee for initiation in the 2015-16 academic year.
* An Information Systems concentration is continued to be offered at the graduate level, and a second concentration in ERP Systems Using SAP was developed, approved, and implemented in the College of Business MBA program.
* The CSIS Department has continued to offer CIS 125, a course that is included within the undergraduate general education requirements of almost all programs University-wide.
* The Department was successful in proposing the addition of CIS 236 as a second undergraduate course to our service offerings which would be required of all CoB majors.
* Recruiting efforts continued on a sustained basis for both undergraduate majors and the Information Systems (IS) concentrations in the MBA program with the following results:
  + The goal of maintaining a maximum of 200 undergraduate majors was surpassed in the 2011-12 through 2014-15 years.
  + The goal of maintaining 50 graduate concentrations was not met across the reporting period, ranging from a low of 26 in 2014-15 and a high of 45 in 2013-14.
  + The goal of graduating near one-fourth of those numbers each year was not met for either the Department undergraduate majors or the MBA-level IS concentration students.

**6. Briefly describe the department’s vision and how it aligns with the University’s strategic plan:**

The UNA mission of engaging in teaching, research, and service in order to provide educational opportunities for students, an environment for discovery and creative accomplishment, and a variety of outreach activities meeting the professional, civic, social, cultural, and economic development needs of our region in the context of a global community is closely related to the College of Business mission.

The mission of the College of Business is to prepare students to become successful professionals capable of leading organizations in a diverse, dynamic global economy. The College emphasizes teaching excellence and a learning environment in which the College contributes to student development and to the business community through professional involvement, applied intellectual contributions, and opportunities for global engagement.

Within this context, the mission for the CIS program is to prepare students to become successful information systems professionals capable of performing a variety of technical and leadership roles within information systems organizations in a diverse, dynamic global economy. Like the College of Business, the CSIS Department emphasizes teaching excellence and provides a learning environment in which the faculty and programs contribute to student development and to the business community through professional involvement and applied intellectual contributions

The Department’s vision as it relates to the two programs is:

Computer Science

Within five years after the completion of the program, graduates of the program should be able to

* Contribute to technological innovation and society through the application of computer science to research, industry, and government
* Advance in their careers in organizations by using computer science theory and skills
* Continue their professional development through advanced study and research
* Exhibit leadership qualities in their chosen career path

Computer Information Systems

Within five years after the completion of the program, graduates of the program should be able to

* Contribute to economic development and society through the application and management of computer information systems for business, government, service and research
* Advance in their careers by using computer information systems skills and by understanding evolving business and technological issues
* Continue their professional development through advance study and research
* Exhibit leadership qualities in their chosen career path

**Part II**

**Academic Program Assessment**

Departments should identify expected outcomes for each of their educational programs (graduate and undergraduate). The process below helps to determine whether the program achieves the stated outcomes and provides documented evidence of improvement based on analysis of those results. If a department offers more than one program, each program coordinator should complete this part of the report.

**7. Name of Program: Computer Information Systems**

**8. Coordinator of Program:** Dr. David Nickels (2010-11 to 2013/14), Dr. Shane Banks (2014-15)

**9. Mission Statement of Program:**

Within five years after the completion of the program, graduates of the program should be able to

* Contribute to economic development and society through the application and management of computer information systems for business, government, service and research
* Advance in their careers by using computer information systems skills and by understanding evolving business and technological issues
* Continue their professional development through advance study and research
* Exhibit leadership qualities in their chosen career path

**10. Program Overview:**

**10.1 Brief overview of program**

During the reporting period, the Computer Information Systems major was composed of two major options: Enterprise Information Systems and End User Information Systems. The Enterprise Information Systems option emphasizes activities enabling students to work in organizations developing information systems, including networks, large web applications and database systems. The End User Information Systems option prepares students to provide day-to-day support in smaller information systems environments. The types of support include help desk, user training, and tech support for PCs and office-type applications and use of end-user applications to develop local (usually departmental and small organization) projects including databases, spreadsheets, web applications, desktop publishing applications, and local area networks. The market for CIS majors in our immediate area during the reporting period was largely for students in the End User Computing option, but students in the Enterprise Information Systems option increasingly found significant opportunities, particularly with major corporations in the Huntsville area. As noted in Item 5. Above, the CIS undergraduate program was evaluated and successfully redesigned for currency within the discipline during 2014-15 and received approval from the University Undergraduate Curriculum Committee for initiation in the 2015-16 academic year.

**10.2 Student Learning Outcomes of the program *(student learning outcomes should identify the broad skill area students should master as a result of the program by the time they graduate. A matrix indicating which courses address each of the outcomes identified may be included)*.**

The Student Learning Outcomes for the Computer Information Systems program and the courses that address them are detailed in the following table:

#### Computer Information Systems Program

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Courses Contributing to Enabled Student Characteristics/Student Learning Outcomes** | | | | | | | | | | |
| **based on specific course objectives for CIS courses** | | | | | | | | | | |
| **Student Learning Outcomes** | | CIS Course Number | | | | | | | | |
| CIS Core | | | | | | | Options | |
| 225 | 236 | 330 | 366 | 376 | 406 | 486 | EIS | EUCS |
| a | An ability to apply knowledge of computing and mathematics appropriate to the discipline | X | X |  | X | X | X | X | CIS 315  CIS 445 | CIS 350  CIS 446 |
| b | An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution |  | X | X | X |  |  | X | CIS 445 | CIS 446 |
| c | An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs | X | X | X | X | X |  | X | CIS 315  CIS 445 | CIS 456 |
| d | An ability to function effectively on teams to accomplish a common goal |  | X | X | X |  |  | X |  |  |
| e | An understanding of professional, ethical, security, and social issues and responsibilities |  | X |  |  |  | X | X | CIS 466 | CIS 456 |
| f | An ability to communicate effectively with a range of audiences |  | X | X |  |  |  | X |  | CIS 350  CIS 456 |
| g | An ability to analyze the local and global impact of computing on individuals, organizations, & society |  | X |  |  |  |  | X | CIS 466 | CIS 350 |
| h | Recognition of the need for and an ability to engage in continuing professional development |  |  |  | X |  | X |  | CIS 466 | CIS 446 |
| i | An ability to use current techniques, skills and tools necessary for computing practice | X | X |  | X | X | X | X | CIS 315  CIS 445  CIS 466  CIS 480 | CIS 350  CIS 446  CIS 456  CIS 480 |
| j | An understanding of processes that support the delivery and management of information systems within a specific application environment |  | X |  |  |  |  | X | CIS 466  CIS 480 | CIS 350  CIS 480 |

**10.3 Program productivity to include five-year trends for number of majors, degrees conferred, and other data that demonstrate program growth:**

Enrollment across the Fall 2010 through Spring 2015 Academic Program Review period showed a substantial increase in the number of Bachelor-level full-time and part-time majors in 2011-12 (193 full-time majors, 62 part-time majors, 147.33 FTE students) over 2010-11 (136 full-time majors, 34 part-time majors, 213.67 FTE students) due to the Computer Science program joining the formerly-named CIS department in Fall 2011. Since that time through the 2014-15 academic year, enrollment in Bachelor-level full-time and part-time majors has remained relatively constant. The enrollment pattern is indicated in the following tables*\**:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Number of Duplicated Majors** (SU, FA & SP Semesters Combined) | | | | |  |  |
| **Bachelor** | ***2010-11*** | ***2011-12\**** | ***2012-13*** | ***2013-14*** | ***2014-15*** | ***Average*** |
| Full-Time | 136 | 193 | 207 | 199 | 198 | 186.60 |
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The CSIS department also offers two concentrations in the College of Business MBA program supported by the CIS program: a concentration in Information Systems and a concentration in ERP Systems Using SAP. The enrollment pattern of students in these two concentrations has been relatively stable across 2010-11 through 2013-2014 with somewhat of a decrease in 2014-15 as indicated in the following table:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **MBA Concentrations** |  |  |  |  |  |  |
| Full-Time | 4 | 5 | 6 | 7 | 5 | 5.40 |
| Part-Time | 37 | 30 | 34 | 38 | 21 | 32.00 |
| **Total** | **41** | **35** | **40** | **45** | **26** | **37.40** |
| *FTE Students* | *16.33* | *15.00* | *17.33* | *19.67* | *12.00* | *16.07* |

The number of Bachelor’s level degrees conferred increased steadily from 2010-11 through 2013-14 and experienced a slight decrease in 2014-15 over the 2013-14 level. During these same time periods, the number of Master’s level degrees (in the CIS program, only) conferred remained relatively stable across 2010-11 through 2013-14 and then experienced a decrease in 2014-15 over the 2013-14 level. These data are indicated in the following table:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Number of Degrees Conferred** | | |  |  |  |  |
| **Level** | ***2010-11*** | ***2011-12*** | ***2012-13*** | ***2013-14*** | ***2014-15*** | ***Average*** |
| Bachelor's | 20 | 25 | 29 | 41 | 33 | 29.60 |
| Master's | 14 | 10 | 17 | 14 | 6 | 12.20 |
| **Total** | **34** | **35** | **46** | **55** | **39** | **41.80** |

The CSIS department’s student undergraduate credit hours produced increased substantially in 2011-12 over 2010-11, reflecting the CS program joining the department. The undergraduate credit hours produced remained relatively stable for 2011-12 through 2013-14 before decreasing slightly in 2014-15 over 2013-14.

The CSIS department’s student graduate credit hours produced have decreased over the five-year report period from 1,089 in 2010 to 657 in 2014-15. The average class sizes were stable the five-year report period.

The student credit hours and average class size data across the report period are indicated in the following tables:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Student Credit Hours** (SU, FA & SP Semesters Combined) | | | | |  |  |
| **Level** | ***2010-11*** | ***2011-12*** | ***2012-13*** | ***2013-14*** | ***2014-15*** | ***Average*** |
| Undergraduate | 5,154 | 6,900 | 6,789 | 6,231 | 5,943 | 6,203.40 |
| Graduate | 1,089 | 1,017 | 768 | 828 | 657 | 871.80 |
| **Total** | **6,243** | **7,917** | **7,557** | **7,059** | **6,600** | **7,075.20** |
|  |  |  |  |  |  |  |
| **Average Class Size** (Classes of 6 or more students) | | | |  |  |  |
| **Level** | ***2010-11*** | ***2011-12*** | ***2012-13*** | ***2013-14*** | ***2014-15*** | ***Average*** |
| Undergrad | 21.5 | 21.5 | 19.9 | 20 | 19.7 | 20.52 |
| Graduate | 19.5 | 21.8 | 24.9 | 21.6 | 23.4 | 22.24 |

*\*Note: the enrollment data provided by the Office of Institutional Research does not contain enrollment by major within the CSIS Department. The data among the above tables contains consolidated data from the Computer Information Systems and Computer Science programs.*

**10.4 Evaluate the adequacy of library resources available to support your program:**

The library resources available to support this program are adequate. In particular, the electronic periodical holdings available from the Business database collection provide comprehensive support for faculty and student research activities.

**10.5 If you deem existing library resources to be inadequate for your program, identify resources that would improve the level of adequacy:**

As indicated in point 10.4 above, the library resources are adequate for the needs of the Computer Information Systems program.

**11. Program Evaluation Including Appropriate Documentation**

**11.1 Means of assessing each Student Learning Outcome:**

The means of assessing each student learning outcome as previously identified in point 10.2 are identified in the tables on the following pages:

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Student Learning Outcome Assessment - Computer Information Systems Program** | | | | | | | | | | | |
| **Outcome a:** | | An ability to apply knowledge of computing and mathematics appropriate to the discipline | | | | | | | | | |
| **Outcome Coordinator:** | | | Robert Bailey | | | | | | | | |
|  | Course Selected for Data Collection | Person Collecting Data for evaluation | Type of Data | Data Collection Details/ Dates | Name of Measure | Type of Measure | Benchmark Expectation | Summary of Assessment/ Evaluation Process | Perform- ance Level | Comparison to benchmark expectation | Reporting Date |
| 1) | CIS 225 | John Crabtree | Java Programs with resultant output | All students in course; Feb. 2013 | Financial Calculations Programs | DIRECT:  Correct answer percentage for program results | 80% | Tabulation of correct answers generated by program | 67% | Not met | 5/3/2013 |
| 2) | CIS 406 | Ron Davis | Network- ing Lab Manual files | CIS  students; Fall 2012 & Spring 2013 | Networking Lab Manual | DIRECT:  Instructor scoring of assignment submissions | 80% | Average of student scores on Networking Labs 1 - 12 | 84% | Met | 5/9/2013 |
| 3) | CIS 486 | David Nickels | Team project files | Teams; whole semester; Fall 2012 & Spring 2013 | IS system design | DIRECT:  Instructor scoring of IS Project submissions | 90% | Average of overall scores on completed projects | 93% | Met | 5/6/2013 |
| 4) | CAAP  Exam Math | UNA OIRPA | CAAP  Exam Objective Questions | CAAP  Exam Admini- stration; Fall 2012 | Mathematics | INDIRECT:  Automated scoring of exam questions | 58.5%  (National Score) | Average of CIS majors' exam scores | 46% | Not Met | 5/9/2013 |
| **Summary of previous assessment results and actions:** No actions were planned as a result of previous assessments for this outcome. | | | | | | | | | | | |

**Results 2012-2013:** Benchmark expectations were met on two of the four measures. On the financial calculations program in CIS 225, only 67% of students calculated the interest correctly. The major problems were 1) misplaced decimal point and 2) syntax problems.

**Actions 2013-14:** CIS 225 will be redesigned to provide an additional, preceding assignment that will 1) emphasize checking results 2) remove the total method and 3) hard-code input to avoid parameter confusion. After taking this action, the financial calculation assignment should be easier for students to comprehend, resulting in an improved understanding of how to create methods that can produce correct mathematical results. The instructors in CIS courses using mathematical procedures in applications will seek new opportunities to integrate additional applied mathematical components in course assignments to support improvement of CIS majors in this area.

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| **Student Learning Outcome Assessment - Computer Information Systems Program** | | | | | | | | | | | |
| **Outcome b:** | | An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution | | | | | | | | | |
| **Outcome Coordinator:** | | | Ron Davis | | | | | | | | |
|  | Course Selected for Data Collection | Person Collecting Data for evaluation | Type of Data | Data Collection Details/ Dates | Name of Measure | Type of Measure | Benchmark Expectation | Summary of Assessment/ Evaluation Process | Perform- ance Level | Comparison to benchmark expectation | Reporting Date |
| 1) | CIS 330 | Carol Gossett | Case problem files | All CIS students; End of Spring 2013  Semester | Content Criterion on Case Problems | DIRECT:  Instructor scoring of case content | 2.5/4 | Assignment Average (4 assignments) Rubric | 3.21/4.0 | Met | 5/9/2013 |
| 2) | CIS 366 | Joan Parris | Team Business Case Study Database files | All CIS students; End of Spring 2013  Semester | Database Business Case Study | DIRECT:  Percentage of students mastering skill | 80% | Analysis of Rubric | 94% of students scored  >=80% | Met | 5/6/2013 |
| 3) | CIS 486 | David Nickels | Team project files | Teams; whole semester; Fall 2012 & Spring 2013 | IS Project | DIRECT:  Instructor scoring of percentage of project scope met | 90% | Average of scope component scores on Rubric | 95% | Met | 5/6/2013 |

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| 4) | CAAP  Exam Crtical Thinking | UNA OIRPA | CAAP  Exam Objective Questions | CAAP  Exam Admini- stration; Spring 2012 | Critical Thinking | INDIRECT:  Automated scoring of exam questions | 60.6%  (National Score) | Average of CIS majors' exam scores | 61% | Met | 5/9/2013 |
| **Summary of previous assessment results and actions:** No actions were planned as a result of previous assessments for this outcome. | | | | | | | | | | | |
| **Results 2012-2013:** Benchmark expectations were met on all four measures. | | | | | | | | | | | |
| **Actions 2013-2014:** No actions planned as a result of this assessment. | | | | | | | | | | | |

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| **Student Learning Outcome Assessment - Computer Information Systems Program** | | | | | | | | | | | |
| **Outcome c:** | | An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired | | | | | | | | | |
| **Outcome Coordinator:** | | | Joan Parris | | | | | | | | |
|  | Course Selected for Data Collection | Person Collecting Data for evaluation | Type of Data | Data Collection Details/ Dates | Name of Measure | Type of Measure | Benchmark Expectation | Summary of Assessment/ Evaluation Process | Perform- ance Level | Comparison to benchmark expectation | Reporting Date |
| 1) | CIS 225 | John Crabtree | Test Question requiring writing Java Programs | All CIS students; individual work; prepared and submitted in Testing Lab (K233)  Exam 4 - 4/30/13 | Inheritance hierarchy program | DIRECT:  Average of scores on Exam program; Instructor evaluation | 75% | Average of all CIS student scores on the program tabluated by faculty member | 93% | Met | 5/3/2013 |
| 2) | CIS 486 | David Nickels | Client Evaluation of IS Projects | Teams; whole semester; Fall 2012 & Spring 2013 | Complete Delivered IS Project | INDIRECT:  Average of Client Evaluation ratings | 90% | Average of client evaluations of completed projects | 97% | Met | 5/6/2013 |
| **Summary of previous assessment results and actions:** No actions were planned as a result of previous assessments for this outcome. | | | | | | | | | | | |
| **Results 2012-2013:** Benchmark expectations were met on both measures. | | | | | | | | | | | |
| **Actions 2013-2014:** No actions planned as a result of this assessment. | | | | | | | | | | | |

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| **Student Learning Outcome Assessment - Computer Information Systems Program** | | | | | | | | | | | |
| **Outcome d:** | | An ability to function effectively on teams to accomplish a common goal | | | | | | | | | |
| **Outcome Coordinator:** | | | John Crabtree | | | | | | | | |
|  | Course Selected for Data Collection | Person Collecting Data for evaluation | Type of Data | Data Collection Details/ Dates | Name of Measure | Type of Measure | Benchmark Expectation | Summary of Assessment/ Evaluation Process | Perform- ance Level | Comparison to benchmark expectation | Reporting Date |
| 1) | CIS 236 | Joan Parris | Teamwork Evaluation Data submitted by students | End of Fall 2012 and Spring 2013  semester | Teamwork dynamics | INDIRECT:  Student evaluation of the teamwork process (not evaluating individuals) | 80% | Average of student evaluations of team performance | 66% | Not Met | 5/6/2013 |
| 2) | CIS 330 | Carol Gossett | Team Peer Evaluations | End of semester 5/3/13 | Teamwork dynamics | INDIRECT:  Peer Evaluation | 90% | Average of student peer evaluations | 99% | Met | 5/9/2013 |
| 3) | CIS 486 | David Nickels | Project Team Peer Evaluations | End of semester 5/3/13 | Teamwork dynamics | INDIRECT:  Peer Evaluation | 3.25/4.0 | Average of student peer evaluations | 3.35/4.0 | Met | 5/6/2013 |
| **Summary of previous assessment results and actions:** No actions were planned as a result of previous assessments for this outcome. | | | | | | | | | | | |
| **Results 2012-2013:** Benchmark expectations were met on two of the three measures. The data show a progression from lower division students to upper division students on their ability to function in teams. | | | | | | | | | | | |
| **Actions 2013-2014:** No actions planned as a result of this assessment. | | | | | | | | | | | |

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| **Student Learning Outcome Assessment - Computer Information Systems Program** | | | | | | | | | | | | | | | | | | | | |
| **Outcome e:** | | | An understanding of professional, ethical, legal, security, and social issues and responsibilities | | | | | | | | | | | | | | | | | |
| **Outcome Coordinator:** | | | | | David Nickels | | | | | | | | | | | | | | | |
|  | Course Selected for Data Collection | | Person Collecting Data for evaluation | | Type of Data | Data Collection Details/ Dates | | Name of Measure | | Type of Measure | | Benchmark Expectation | | Summary of Assessment/ Evaluation Process | | Perform- ance Level | | Comparison to benchmark expectation | | Reporting Date |
| 1) | CIS 236 | | Joan Parris | | Qualitative assessment of team consensus report on two ethics scenarios | Team Reports for the assign- ments 2/1/13 | | Assignment on Ethics | | DIRECT:  Instructor scoring of submissions | | 90% | | Average of assignment scores | | 90% | | Met | | 5/6/2013 |
| 2) | CIS 406 | | Ron Davis | | 25  Multiple Choice Questions (randomly selected) from Test Bank) | Final Exam; Fall 2012 & Spring 2013 | | Test questions on Security | | DIRECT:  Automated scoring of question responses | | 80% | | Average of test question correct responses | | 79% | | Not Met | | 5/6/2013 |
| **Summary of previous assessment results and actions:** Based on the assessment conducted by the College of Business in 2011-2012, CIS majors demonstrated an understanding of general ethical issues. No actions were inititated on the basis of that assessment. | | | | | | | | | | | | | | | | | | | | |
| **Results 2012-2013:** Benchmark expectations were met on one of the two measures. | | | | | | | | | | | | | | | | | | | | |
| **Actions 2013-2014:** In Summer 2013, CIS 406 has adopted a new textbook containing two chapters of security materials rather than just the single chapter of the previous text. With this change, the professor plans to spend more class time covering this topic. Additionally, the professor has developed a laboratory assignment that addresses wireless security in greater detail. To gauge the improvement of students in this area, the professor will continue to place multiple choice questions on an exam to assess CIS student retention of this topic. The objective of 80% will remain in place. | | | | | | | | | | | | | | | | | | | | |
| **Student Learning Outcome Assessment - Computer Information Systems Program** | | | | | | | | | | | | | | | | | | | | |
| **Outcome f:** | | An ability to communicate effectively with a range of audiences | | | | | | | | | | | | | | | | | | |
| **Outcome Coordinator:** | | | | Yingping Huang | | | | | | | | | | | | | | | | |
|  | Course Selected for Data Collection | Person Collecting Data for evaluation | | Type of Data | | | Data Collection Details/ Dates | | Name of Measure | | Type of Measure | | Benchmark Expectation | | Summary of Assessment/ Evaluation Process | | Perform- ance Level | | Comparison to benchmark expectation | Reporting Date |
| 1) | CIS 236 | Joan Parris | | Rubric; Presenta- tion Evaluation Score | | | Project Presenta- tion Day; Fall 2012 & Spring 2013 | | Team Project Presenta- tions | | DIRECT:  Instructor Scoring of Team Presenta- tions | | 80% | | Averages of Rubric Results | | 90% | | Met | 5/9/2013 |
| 2) | CIS 330 | Carol Gossett | | Rubric; Oral Comm, Evaluation Score | | | Four presenta- tions per student; Spring 2013 | | Oral Communica- tion Criteria | | DIRECT:  Instructor Scoring of Team Presenta- tions | | 2.5/4.0 | | Averages of Rubric Results | | 2.73/4.0 | | Met | 5/9/2013 |
| 3) | CIS 486 | David Nickels | | Rubric; Individual Presenta- tion Evaluation Score | | | Team Presenta- tions; Fall 2012 &  Spring 2013 | | Team Project Team Presenta- tions | | DIRECT:  Instructor Scoring of Team Presenta- tions | | 90% | | Averages of Rubric Results | | 97% | | Met | 5/9/2013 |
| 4) | CAAP  Exam Writing Skills | UNA OIRPA | | CAAP  Exam Objective Questions | | | CAAP  Exam Admin.; Spring 2013 | | Writing Skills | | INDIRECT:  Automated scoring of exam questions | | 63.1%  (National Score) | | Average of CIS majors' total score on essay assignment | | 49% | | Not Met | 5/9/2013 |

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| 5) | | Writing Skills Compon- ent of MG 382W | Jana Beaver (Dept. of MG and MK) | Essay Assignment | Essay Assign- ment; Fall 2011 | Writing Skills | DIRECT:  Scoring by 3 UNA  English Faculty | 80% (35.2  points out of 44 total) | Average of CIS majors' rubric scores on essay assignment | 60.5%  (26.6  points out of 44 total) | Not Met | 5/9/2013 |
| **Summary of previous assessment results and actions:** Based on assessment results from last cycle, faculty agreed to hold to the standards of written communication in standard English for all forms of written communication relating to classes and mentoring students. Implementation of an active strategy of reminders has been instrumental in achieving better performance in classroom writing assignments. | | | | | | | | | | | | |
| **Results 2012-2013:** Benchmark expectations were met on three out of the five measures. | | | | | | | | | | | | |
| **Actions 2013-2014:** The instructors in CIS courses requiring writing assignments will more strongly encourage CIS majors to use the support services provided by the UNA Center for Writing Excellence. In addition, instructors in those courses will be encouraged to provide clear feedback on writing errors in couse writing assignments. | | | | | | | | | | | | |
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| **Student Learning Outcome Assessment - Computer Information Systems Program** | | | | | | | | | | | |
| **Outcome g:** | | An ability to analyze the local and global impact of computing on individuals, organizations, and society | | | | | | | | | |
| **Outcome Coordinator:** | | | Carol Gossett | | | | | | | | |
|  | Course Selected for Data Collection | Person Collecting Data for evaluation | Type of Data | Data Collection Details/ Dates | Name of Measure | Type of Measure | Benchmark Expectation | Summary of Assessment/ Evaluation Process | Perform- ance Level | Comparison to benchmark expectation | Reporting Date |
| 1) | CIS 236 | Joan Parris | CIS  student team case analysis file | Middle of Fall 2012 and Spring 2013  semesters | Global Component of Case Analysis | DIRECT:  Instructor scoring of submissions using rubric established for all sections | 75% | Average of rubric category scores reported to course coordinator | 78% | Met | 5/9/2013 |
| 2) | CIS 486 | David Nickels | Exam Essay Questions | Exam 2 in  Fall 2012 | Knowledge of Virtual Team Operations, including Global aspects | DIRECT:  Instructor Scoring of Essay Question on Exam | 85% | Average of Essay Question Scores on Exam | 79% | Not Met | 5/6/2013 |
| **Summary of previous assessment results and actions:** No actions were planned as a result of previous assessments for this outcome. | | | | | | | | | | | |
| **Results 2012-2013:** Benchmark expectations were met on one of the two measures. On the essay question on virtual team operations in CIS 486, the average score of 79% was below the benchmark expectation of 85%. The average was negatively impacted by very low scores on three of the 19 student essay answers. | | | | | | | | | | | |
| **Actions 2013-2014:** Because the CIS 236 students' average score was so close to the benchmark, the faculty members teaching the course will provide a greater emphasis on the need for a focus on the global component of the assignment to the students. To address the below benchmark result in CIS 486, an additional class assignment related to this topic followed by an in-class activity designed to strengthen student's knowledge in this area is planned for the 2013-2014 sections of this course. | | | | | | | | | | | |

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| **Student Learning Outcome Assessment - Computer Information Systems Program** | | | | | | | | | | | |
| **Outcome h:** | | Recognition of the need for and an ability to engage in continuing professional development | | | | | | | | | |
| **Outcome Coordinator:** | | | Paul Zhang | | | | | | | | |
|  | Course Selected for Data Collection | Person Collecting Data for evaluation | Type of Data | Data Collection Details/ Dates | Name of Measure | Type of Measure | Benchmark Expectation | Summary of Assessment/ Evaluation Process | Perform- ance Level | Comparison to benchmark expectation | Reporting Date |
| 1) | CIS 366 | Joan Parris | Score on MOS  Access Certifica- tion Exam | End of Fall 2012 and Spring 2013  Semesters | Microsoft Office Application Specialist in Access Certification | DIRECT:  Certifica- tion Exam on Access | 90% pass rate of those opting to take Test | Reports on certification exam results delivered to faculty member | 100%  (12  students) | Met | 5/9/2013 |
| 2) | CIS 406 | Ron Davis | Short answer discussion question on Final exam | CIS  Student answers Fall 2012 and Spring 2013  Final | Knowledge of Importance of Continuing Education | DIRECT:  Class average on exam question; Instructor Evaluation | 80% | Analysis of students' responses to exam question | 93% | Met | 5/9/2013 |
| 3) | CIS 446 | Carol Gossett | Score on MOS  Excel Certifica- tion exam | End of Spring 2013  Semester | Microsoft Office Application Specialist in Excel Certification | DIRECT:  Certifica- tion Exam on Excel | 90% pass rate of those opting to take Test | Reports on certification exam results delivered to faculty member | 100%  (1  student) | Met | 5/9/2013 |
| **Summary of previous assessment results and actions:** No actions were planned as a result of previous assessments for this outcome. | | | | | | | | | | | |

**Results 2012-2013:** Benchmark expectations were met on all three measures.

**Actions 2013-2014**: Because of the low rate of students in CIS 446 electing to take the certification exam in Excel, the Excel certification exam will be discussed more thoroughly with students to include study tips and best practices in order to encourage more students to take

the exam.

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| **Student Learning Outcome Assessment - Computer Information Systems Program** | | | | | | | | | | | |
| **Outcome i:** | | An ability to use current techniques, skills, and tools necessary for computing practice | | | | | | | | | |
| **Outcome Coordinator:** | | | Robert Bailey | | | | | | | | |
|  | Course Selected for Data Collection | Person Collecting Data for evaluation | Type of Data | Data Collection Details/ Dates | Name of Measure | Type of Measure | Benchmark Expectation | Summary of Assessment/ Evaluation Process | Perform- ance Level | Comparison to benchmark expectation | Reporting Date |
| 1) | CIS 225 | John Crabtree | Java Programs with Resultant Output | Exam III - 3/21/13  (Container Classes) | Java Develop- ment | DIRECT:  Exam Programs | 70% | Average Score on Exams | 87% | Met | 5/3/2013 |
| 2) | CIS 236 | Joan Parris | Team Case Project Files | End of Semester - Fall 2012 & Spring 2013 | Team Case Project | DIRECT:  Instructor Scoring of Team Case Projects | 80% | Average of Overall Rubric Score on Team Case Project | 93% | Met | 5/6/2013 |
| 3) | CIS 486 | David Nickels | Team Project Files | End of Semester - Fall 2012 & Spring 2013 | Team Project | DIRECT:  Instructor Scoring of Project Manage- ment Category of Rubric | 90% | Average of Project Management Category Scores on Rubric | 95% | Met | 5/6/2013 |
| **Summary of previous assessment results and actions:** No actions were planned as a result of previous assessments for this outcome. | | | | | | | | | | | |
| **Results 2012-2013:** Benchmark expectations were met on all three measures. | | | | | | | | | | | |
| **Actions 2013-2014:** No actions planned as a result of this assessment. | | | | | | | | | | | |

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| **Student Learning Outcome Assessment - Computer Information Systems Program** | | | | | | | | | | | |
| **Outcome j:** | | An understanding of processes that support the delivery and management of information systems within specific application environment | | | | | | | | | |
| **Outcome Coordinator:** | | | Paul Zhang | | | | | | | | |
|  | Course Selected for Data Collection | Person Collecting Data for evaluation | Type of Data | Data Collection Details/ Dates | Name of Measure | Type of Measure | Benchmark Expectation | Summary of Assessment/ Evaluation Process | Perform- ance Level | Comparison to benchmark expectation | Reporting Date |
| 1) | CIS 236 | Joan Parris | Team Case Project Submission | End of Semester - Fall 2012 & Spring 2013 | Team Case Project | DIRECT:  Instructor Scoring of Team Case Projects | 80% | Average of Overall Rubric Score on Team Case Project | 93% | Met | 5/6/2013 |
| 2) | CIS 486 | David Nickels | Team Project Files | End of Semester - Fall 2012 & Spring 2013 | Team Project | DIRECT:  Instructor Scoring of Project Manage- ment Category of Rubric | 90% | Average of Project Management Category Scores on Rubric | 95% | Met | 5/6/2013 |
| **Summary of previous assessment results and actions:** No actions were planned as a result of previous assessments for this outcome. | | | | | | | | | | | |
| **Results 2012-2013:** Benchmark expectations were met on all three measures. | | | | | | | | | | | |
| **Actions 2013-2014:** No actions planned as a result of this assessment. | | | | | | | | | | | |

**11.2 Summary of the results of the assessment/s for each Student Learning Outcome:**

See the **Summary of previous assessment results and action** and **Results** sections of each of the tables in point 11.1.

**11.3 Program improvements made as a result of these assessments:**

See the **Actions** sections of each of the tables in point 11.1.

**11.4 Appropriate documentation to support the assessment of Student Learning Outcomes as well as the improvements made as a result of these assessments:**

See the tables displayed in point 11.1.

**12. Planning**

**12.1 Outline program goals over the next five years including, but not limited to, accreditation/re-accreditation, enrollment or expansion, and curriculum:**

The primary program goals over the next five years are to:

* Maintain ABET accreditation of the program through sustained review and appropriate modification of student learning outcomes to ensure a high quality and effective learning environments for student majors in the program.
* Increase the numbers of overall undergraduate majors in the Computer Information Systems program to 125 by the end of the five-year period.
* Implement a student peer mentoring program to be offered fall semesters for first-time entering majors in the program.
* Locate and equip a computer networking laboratory facility within the College of Business Keller Hall or Raburn Wing.
* Evaluate the viability of the SAP University Alliances membership to make a modification, continuance, or discontinuance decision.
* Increase the numbers of overall students in Information Systems and ERP Systems Using SAP concentrations in the MBA program to 25 by the end of the five-year period.
* Evaluate the potential for modification and or expansion of CIS-related concentrations in the MBA program.
* Design, seek ACHE approval for, and implement a new program in Information Technology.
* Seek grant opportunities related to information systems and information technology.

**12.2 Outline faculty development goals for the next five years including new faculty, research, and professional development:**

The primary faculty development goals over the next five years are to:

* Continue efforts to ensure that all full-time CIS faculty maintain Scholarly Academic (SA) status as specified by AACSB.
* Continue collaborative research efforts among departmental faculty to achieve at least two peer-reviewed research publications per academic year.
* Assign each new faculty member a peer faculty mentor from within the department for their initial year of service.
* Ensure that adequate funding is available to support professional development activities for program faculty.

**13. Program Recommendations**

**13.1 Recommendations for changes which are within the control of the program:**

None.

**13.2 Recommendations for changes that require action at the Dean, Provost, or higher, which are congruent to and support the institution’s mission and strategic plan:**

* Request approval for moving forward with the design and implementation of a new academic program in Information Technology.
* Obtain approval for two new tenure-track faculty lines to support the addition of a new academic program in Information Technology.

**Academic Program Assessment**

Departments should identify expected outcomes for each of their educational programs (graduate and undergraduate). The process below helps to determine whether the program achieves the stated outcomes and provides documented evidence of improvement based on analysis of those results. If a department offers more than one program, each program coordinator should complete this part of the report.

**14. Name of Program: Computer Science**

**15. Coordinator of Program:** Dr. Janet Jenkins

**16. Mission Statement of Program:**

Within five years after the completion of the program, graduates of the program should be able to

* Contribute to technological innovation and society through the application of computer science to research, industry, and government.
* Advance in their careers in organizations by using computer science theory and skills.
* Continue their professional development through advance study and research
* Exhibit leadership qualities in their chosen career path

**17. Program Overview:**

**17.1 Brief overview of program**

The Computer Science Program requires courses which have a wide range of technical content designed to enable the students to have both the theoretical knowledge base and the ability to see how innovations are developed and integrated into the workplace. Students are provided opportunities for practical experience in the capstone computer science course through the development of an actual project for a client including establishing requirements, managing the development process, and preparing deliverables. Team work and leadership opportunities provide the students with needed preparation for achieving the program educational objectives. The emphasis on research within several courses including the requirement to learn new programming languages, CASE tools, and software development methods contribute to the students’ career preparation as well.

**17.2 Student Learning Outcomes of the program *(student learning outcomes should identify the broad skill area students should master as a result of the program by the time they graduate. A matrix indicating which courses address each of the outcomes identified may be included)*.**

The Student Learning Outcomes for the Computer Science program and the courses that address them are detailed in the following table:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Courses Contributing to Student Learning Outcomes** | | | | | | | | | | | | | |
| **(based on specific course objectives for CS courses)** | | | | | | | | | | | | | |
| **Criterion 3**  **Enabled Student Characteristics/ Student Learning Outcomes** | | CS Course Number | | | | | | | | | | | |
| CS Required Courses | | | | | | | | | CS Electives | | |
| 155 | 245 | 255 | 310 | 311 | 355 | 410W | 420 | 455 | Prog Lan | Adv | Gen |
| a | An ability to apply knowledge of computing and mathematics appropriate to the discipline | X | X | X |  |  | X |  |  | X | CS 315  CS 325  CS 335  CIS 315 | CS 421  CIS 406  CIS 445 |  |
| b | An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution |  |  | X | X |  | X |  | X |  | CS 315  CS 325  CS 335 | CIS 445 |  |
| c | An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs |  |  | X | X | X | X |  | X | X | CS 315  CS 325  CS 335  CIS 315 | CS 470  CIS 445 | CIS 486 |
| d | An ability to function effectively on teams to accomplish a common goal |  |  |  |  |  | X |  |  | X |  |  |  |
| e | An understanding of professional, ethical, security, and social issues and responsibilities | X |  | X |  |  |  | X | X |  | CS 325 |  |  |
| f | An ability to communicate effectively with a range of audiences |  |  |  |  |  | X | X |  | X |  |  |  |
| g | An ability to analyze the local and global impact of computing on individuals, organizations, & society |  |  |  |  |  |  | X | X | X | CS 315  CS 335 | CIS 406 |  |
| h | Recognition of the need for and an ability to engage in continuing professional development |  |  |  | X |  |  | X | X | X | CS 325 |  |  |
| i | An ability to use current techniques, skills and tools necessary for computing practice | X |  | X |  | X |  | X |  | X | CS 315  CS 335  CIS 315 | CS 421  CIS 406  CIS 445 |  |
| j | An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices |  |  | X | X | X | X | X | X | X | CS 315  CS 335 | CS 470 |  |
| k | An ability to apply design and development principles in the construction of software systems of varying complexity. |  |  | X | X |  | X | X |  | X | CS 315  CS 335 |  |  |

**17.3 Program productivity to include five-year trends for number of majors, degrees conferred, and other data that demonstrate program growth:**

Enrollment across the Fall 2010 through Spring 2015 Academic Program Review period showed a substantial increase in the number of Bachelor-level full-time and part-time majors in 2011-12 (193 full-time majors, 62 part-time majors, 147.33 FTE students) over 2010-11 (136 full-time majors, 34 part-time majors, 213.67 FTE students) due to the Computer Science program joining the formerly-named CIS department in Fall 2011. Since that time through the 2014-15 academic year, enrollment in Bachelor-level full-time and part-time majors has remained relatively constant. The enrollment pattern is indicated in the following tables*\**:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Number of Duplicated Majors** (SU, FA & SP Semesters Combined) | | | | |  |  |
| **Bachelor** | ***2010-11*** | ***2011-12\**** | ***2012-13*** | ***2013-14*** | ***2014-15*** | ***Average*** |
| Full-Time | 136 | 193 | 207 | 199 | 198 | 186.60 |
| Part-Time | 34 | 62 | 54 | 53 | 49 | 50.40 |
| **Total** | **170** | **255** | **261** | **252** | **247** | **237.00** |
| *FTE Students* | *147.33* | *213.67* | *225.00* | *216.67* | *214.33* | *203.40* |

The number of Bachelor’s level degrees conferred increased steadily from 2010-11 through 2013-14 and experienced a slight decrease in 2014-15 over the 2013-14 level. During these same time periods, the number of Master’s level degrees (in the CIS program, only) conferred remained relatively stable across 2010-11 through 2013-14 and then experienced a decrease in 2014-15 over the 2013-14 level. These data are indicated in the following table:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Number of Degrees Conferred** | | |  |  |  |  |
|  | ***2010-11*** | ***2011-12*** | ***2012-13*** | ***2013-14*** | ***2014-15*** | ***Average*** |
| Bachelor's | 20 | 25 | 29 | 41 | 33 | 29.60 |

The CSIS department’s student undergraduate credit hours produced increased substantially in 2011-12 over 2010-11, reflecting the CS program joining the department. The undergraduate credit hours produced remained relatively stable for 2011-12 through 2013-14 before decreasing slightly in 2014-15 over 2013-14.

The CSIS department’s student undergraduate credit hours produced increased substantially in 2011-12 over 2010-11, reflecting the CS program joining the department. The undergraduate credit hours produced remained relatively stable for 2011-12 through 2013-14 before decreasing slightly in 2014-15 over 2013-14. The average class sizes were stable the five-year report period.

The student credit hours and average class size data across the report period are indicated in the following tables:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Student Credit Hours** (SU, FA & SP Semesters Combined) | | | | |  |  |
|  | ***2010-11*** | ***2011-12*** | ***2012-13*** | ***2013-14*** | ***2014-15*** | ***Average*** |
| Undergraduate | 5,154 | 6,900 | 6,789 | 6,231 | 5,943 | 6,203.40 |
|  |  |  |  |  |  |  |
| **Average Class Size** (Classes of 6 or more students) | | | |  |  |  |
| **Level** | ***2010-11*** | ***2011-12*** | ***2012-13*** | ***2013-14*** | ***2014-15*** | ***Average*** |
| Undergrad | 21.5 | 21.5 | 19.9 | 20 | 19.7 | 20.52 |

*\*Note: the enrollment data provided by the Office of Institutional Research does not contain enrollment by major within the CSIS Department. The data among the above tables contains consolidated data from the Computer Information Systems and Computer Science programs.*

**17.4 Evaluate the adequacy of library resources available to support your program:**

The library resources available to support this program are adequate. In particular, the electronic periodical holdings available from the Computer Science database collection provide comprehensive support for faculty and student research activities.

**17.5 If you deem existing library resources to be inadequate for your program, identify resources that would improve the level of adequacy:**

As indicated in point 17.4 above, the library resources are adequate for the needs of the Computer Science program.

**18. Program Evaluation Including Appropriate Documentation**

**18.1 Means of assessing each Student Learning Outcome:**

The means of assessing each student learning outcome as previously identified in point 17.2 are identified in the tables on the following pages:

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Student Learning Outcome Assessment - Computer Science Program** | | | | | | | | | | | |
| **Outcome a:** | | An ability to apply knowledge of computing and mathematics appropriate to the discipline | | | | | | |  |  |  |
| **Outcome Coordinator:** | | | James Jerkins | |  |  |  |  |  |  |  |
|  | Course Selected for Data Collection | Person Collecting Data for evaluation | Type of Data | Data Collection Details/ Dates | Name of Measure | Type of Measure | Benchmark Expectation | Summary of Assessment/ Evaluation Process | Perform- ance Level | Comparison to benchmark expectation | Reporting Date |
| 1) | CS 245 | Pat Roden | Test Responses | Final exam Dec. 2012 | Understanding Discrete Mathematics | DIRECT:  Final exam grade average | 70% | Scored by instructor | 80% | Met | Week of 4/22/13 |
| 2) | CS 355 | Janet Jenkins | Written analysis response | Post- project algorithm analysis question Fall 2012 | Knowledge of Algorithms Analysis | DIRECT:  Average of post-project analysis | 75% | Scored by instructor, reevaluated by outcome coordinator | 75% | Met | Week of 4/22/13 |
| 3) | CAAP  Exam-- Mathe- matics | UNA OIRPA | CAAP  Exam Objective Questions | CAAP  Exam Admini- stration; Spring 2013 | Abilty to apply knowledge of mathematics | INDIRECT:  Automated scoring of exam questions | 59% | Results provided from OIRPA. Benchmark set at National Average | 87% | Met | Spring 2013 |
| **Summary of previous assessment results and actions:** Three actions have taken place to address student weakness in problem solving:  1) change in prerequisites for CS 245 requiring higher level of mathematical maturity, 2) replacement of the CS 110 and CS 120 preparatory course sequence with CS 135 designed to enhance student ability to think abstractly, reason carefully, and utilize technology in problem solving strategies, 3) addition of MA 227 (Calculus III) as a selected elective to provide more depth in the mathematics area, also motivating students to complete a math minor with one additional course. | | | | | | | | | | | |
| **Results 2012-2013: Benchmark expectations were met on all three measures.** | | | | | | | | | | | |
| **Action Plan 2013-2014: No new actions planned as a result of this assessment.** | | | | | | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Student Learning Outcome Assessment - Computer Science Program** | | | | | | | | | | | |
| **Outcome b:** | | An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution | | | | | | | | | |
| **Outcome Coordinator:** | | | Tom Center | | | | | | | | |
|  | Course Selected for Data Collection | Person Collecting Data for evaluation | Type of Data | Data Collection Details/ Dates | Name of Measure | Type of Measure | Benchmark Expectation | Summary of Assessment/ Evaluation Process | Perform- ance Level | Comparison to benchmark expectation | Reporting Date |
| 1) | CS 255 | James Jerkins | C++  Source Code | Programm- ing assignment Feb., March 2013 | Identify appropriate data structures to fullfill requirements | DIRECT:  Project score average | 75% | Scored by instructor | 75% | Met | 5/8/2013 |
| 2) | CS 355 | Janet Jenkins | Test cases | Student identified test cases to test project Dec. 2012 | Ability to identify and define computing requirements | Source Code and Test Cases | 75% | Scored by instructor | 76% | Met | Week of 4/22/13 |
| 3) | CAAP  Exam-- Critical thinking | UNA OIRPA | CAAP  Exam Objective Questions | CAAP  Exam Admini- stration; Spring 2013 | Abiltiy to analyze a problem | INDIRECT:  Automated scoring of exam questions | 61% | Results provided from OIRPA. Benchmark set at National Average | 81% | Met | Spring 2013 |
| **Summary of previous assessment results and actions:** No actions were planned as a result of previous assessments for this outcome. | | | | | | | | | | | |
| **Results 2012- 2013:** Benchmark expectations were met on all three measures. | | | | | | | | | | | |
| **Action Plan 2013-2014:** No new actions planned as a result of this assessment. | | | | | | | | | | | |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Student Learning Outcome Assessment - Computer Science Program** | | | | | | | | | | | |
| **Outcome c:** | | An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs | | | | | | | | | |
| **Outcome Coordinator:** | | | James Jerkins | |  |  |  |  |  |  |  |
|  | Course Selected for Data Collection | Person Collecting Data for evaluation | Type of Data | Data Collection Details/ Dates | Name of Measure | Type of Measure | Benchmark Expectation | Summary of Assessment/ Evaluation Process | Perform- ance Level | Comparison to benchmark expectation | Reporting Date |
| 1) | CS 355 | Janet Jenkins | Test response | Question on sorting component based on project Dec. 2012 | Ability to evaluate an algorithmic process | DIRECT:  Average score on test response | 75% | Scored by instructor | 70% | Not Met | Week 4/22/13 |
| 2) | CS 455 | Pat Roden | Capstone Project | Score of  documenta- tion and implement- ation 4/30/2013 | Group  Programmin g Project- Design and Implementati on 4/2013 | DIRECT:  Average project score | 80% | Scored by instructor | 84% | Met | 4/30/2013 |
| **Summary of previous assessment results and actions:** To address lack of planning, team communication, and effort spent on initial design, additional emphasis on planning, design techniques, and design documents have been placed in CS 155, CS 255, CS 355, and CS  455. Additionally, the new CS 135 preparatory course was designed with these issues in mind. | | | | | | | | | | | |
| **Results 2012-2013:** Benchmark expectations were met on one of the two measures. The benchmark for ability to evaluate an algorithmic process was not met. | | | | | | | | | | | |
| **Action Plan 2013-2014:** Deeper discussion of algorithm analysis will be introduced earlier in the curriculum. The notion of it will be introduced in CS 135 as students learn to write algorithms. In the latter part of CS 155 and throughout CS 255, algorithm analysis will be introduced and reviewed. The importance of efficient algorithms will be an added component in graded rubrics for projects. | | | | | | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Student Learning Outcome Assessment - Computer Science Program** | | | | | | | | | | | |
| **Outcome d:** | | An ability to function effectively on teams to accomplish a common goal | | | | | | | | | |
| **Outcome Coordinator:** | | | Tom Center | | | | | | | | |
|  | Course Selected for Data Collection | Person Collecting Data for evaluation | Type of Data | Data Collection Details/ Dates | Name of Measure | Type of Measure | Benchmark Expectation | Summary of Assessment/ Evaluation Process | Perform- ance Level | Comparison to benchmark expectation | Reporting Date |
| 1) | CS 355 | Janet Jenkins | Student evaluation of other team members | Final team project peer evaluation of team work Dec 2012 | Ability to funcion effectively on a team | Direct: Average letter grade of each team | B | Outcome coordinator Analysis of Evaluation | A- | Met | 4/22/2013 |
| 2) | CS 455 | Pat Roden | Student evaluation of other team members | Capstone team project peer evaluation of team work May 2013 | Ability to function effectively on a team | Direct: Average letter grade | B+ | Outcome coordinator Analysis of Evaluation | A- | Met | 4/30/2013 |
| **Summary of previous assessment results and actions:** No actions were planned as a result of previous assessments for this outcome. | | | | | | | | | | | |
| **Results 2012-2013:** Benchmark expectations were met on both measures. | | | | | | | | | | | |
| **Action Plan 2013-2014:** Although benchmarks were met, there is a need for a more formal evaluation process of team work in addition to student, peer review. CS faculty will consult with the instructor of the CIS captone course to develop an evaluation rubric for assessing team collaboration in CS 355 and CS 455. | | | | | | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Student Learning Outcome Assessment - Computer Science Program** | | | | | | | | | | | |
| **Outcome e:** | | An understanding of professional, ethical, legal, security, and social issues and responsibilities | | | | | | | |  |  |
| **Outcome Coordinator:** | | | James Jerkins | | | | | | | | |
|  | Course Selected for Data Collection | Person Collecting Data for evaluation | Type of Data | Data Collection Details/ Dates | Name of Measure | Type of Measure | Benchmark Expectation | Summary of Assessment/ Evaluation Process | Perform- ance Level | Comparison to benchmark expectation | Reporting Date |
| 1) | CS 155 | Tom Center | Test response | Question regarding ethical decisions 4/22/13 | Understand- ing of ethical issues and responsibili- ties | DIRECT:  Average exam question score | 65% | Scored by instructor | 33% | Not met | Week of 4/30/13 |
| 2) | CS 420 | Tom Center | Writing assignment | Write up security in the design of various operating systems Oct. 2012 | An understand- ing of security issues and responsbilit- ies | DIRECT:  Average Writing assignment score | 75% | Scored by instructor, reviewed by outcome coordinator | 82% | Met | Jan-12 |
| 3) | CIS 406 | Ron Davis | Test responses | Questions regarding security Fall 2012 Spring 2013 | Understand- ing of security issues and responsibili- ties | DIRECT:  Average score on test response | 80% | Scored by instructor | 86% | Met | 5/2013 |
| **Summary of previous assessment results and actions:** A semester long series of assignments on ethics, legal issues, and social consequences and responsibilites has been implemented in the pilot version of CS 135 and will continue in the new course beginning Fall 2013. Most CS majors will be required to successfully complete this course. | | | | | | | | | | | |

**Results 2012-2013:** Benchmark expectations were met on two of three measures. The benchmark for understanding of ethcial issues and responsibilities was not met.

**Action Plan 2013-2014:** In CS 155, students will be held responsible on the final exam for the ACM Code of Ethics and Professional Conduct. Additional emphasis and case studies will be place on ethics in CS 255.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Student Learning Outcome Assessment - Computer Science Program** | | | | | | | | | | | |
| **Outcome f:** | | An ability to communicate effectively with a range of audiences | | | | | | | |  |  |
| **Outcome Coordinator:** | | | Tom Center | |  |  |  |  |  |  |  |
|  | Course Selected for Data Collection | Person Collecting Data for evaluation | Type of Data | Data Collection Details/ Dates | Name of Measure | Type of Measure | Benchmark Expectation | Summary of Assessment/ Evaluation Process | Perform- ance Level | Comparison to benchmark expectation | Reporting Date |
| 1) | CS 410W | Pat Roden | Written research paper | Research paper on a single programm- ing language Dec. 2012 | Ability to communicate effectively through writing | DIRECT:  Average paper score | 75% | Scored by Instructor | 85% | Met | Week of 4/22/13 |
| 2) | CAAP  Exam-- Writing skills | UNA OIRPA | CAAP  Exam Objective Questions | CAAP  Exam Admini- stration; Spring 2013 | Ability to communicate effectively through writing | INDIRECT:  Automated scoring of exam questions | 63% | Results  provided from OIRPA. Benchmark set at National Average | 61% | Not Met |  |
| 3) | CS 455 | Pat Roden | Team presenta- tion and demonstra- tion of project | Capstone project presenta- tion group of CS faculty 4/30/2013 | Ability to communicate effectively orally | DIRECT:  Average group presentation score | 80% mean score | Rated with rubic by four CS faculty | 75% | Not Met | 4/13/2013 |

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| --- |
| **Summary of previous assessment results and actions:** Based on spring 2012 assessment measures the CS faculty have introduced additonal procedures to make clear the expectations regarding writing skills. These procedures are in place and are being applied in upper division CS classes. Additional procedures were also introduced to improve performance regarding students' body language and poise during presentations. The introduction of organized practice times for presentations and a rubric for students to evaluate each other was targeted at improving all aspects of presentation skills. |
| **Results 2012-2013:** Benchmark expectations were met on one of the three measures. Expectations from an outside assessment show our students performed below the national average in writing skills. Expectations were not met on oral communication with team presentations. The rubric evaluation showed a particular weakness with eye contact, body language, and elocution. |
| **Action Plan 2013-2014:** During practice sessions for the CS 455 presentations, students will be given opportunity to practice making eye contact with the audience while presenting using the computer as a presentation tool. Additionally, in CS 355, students will be given opportunities throughout the semester to make mini-presentations while using the computer as a presentation tool. To address writing skills, students will be introduced to the University Writing Center in CS 355 and will be required to have their research papers reviewed by the Writing Center in CS 410W. |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Student Learning Outcome Assessment - Computer Science Program** | | | | | | | | | | | |
| **Outcome g:** | | An ability to analyze the local and global impact of computing on individuals, organizations, and society | | | | | | | | | |
| **Outcome Coordinator:** | | | Janet Jenkins | | | | | | | | |
|  | Course Selected for Data Collection | Person Collecting Data for evaluation | Type of Data | Data Collection Detail/ Dates | Name of Measure | Type of Measure | Benchmark Expectation | Summary of Assessment/ Evaluation Process | Perform- ance Level | Comparison to benchmark expectation | Reporting Date |
| 1) | CS 410W | Pat Roden | Test Response | Discussion Test Question Fall 2013 | Impact of language design choices | DIRECT:  Test question average score | 75% mean score | Scored by instructor, sample reevaluated by Jenkins | 93%  mean score | Met | Week of 4/22/13 |
| 2) | CS 420 | Tom Center | Research mini-paper | Writing Discussion Assignment Fall 2012 | Impact of operating system choice | DIRECT:  Average of assignment score | 75% mean score | Scored by instructor, reevaluated by Jenkins | 84%  mean score | Met | Jan. 2013 |
| **Summary of previous assessment results and actions:** No actions were planned as a result of previous assessments for this outcome. | | | | | | | | | | | |
| **Results 2012-2013:** Benchmark expectations were met on both measures. | | | | | | | | | | | |
| **Action Plan 2013-2014:** No actions planned as a result of this assessment. | | | | | | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Student Learning Outcome Assessment - Computer Science Program** | | | | | | | | | | | |
| **Outcome h:** | | Recognition of the need for and an ability to engage in continuing professional development | | | | | | | |  |  |
| **Outcome Coordinator:** | | | Janet Jenkins | |  |  |  |  |  |  |  |
|  | Course Selected for Data Collection | Person Collecting Data for evaluation | Type of Data | Data Collection Details/ Dates | Name of Measure | Type of Measure | Benchmark Expectation | Summary of Assessment/ Evaluation Process | Perform- ance Level | Comparison to benchmark expectation | Reporting Date |
| 1) | CS 310 | Pat Roden | Test Response | Final exam question Spring 2013 | Recognition of concepts needed to learn new systems | DIRECT:  Average score on test response | 70% | Scored by instructor | 88% | Met | Week of 4/22/13 |
| 2) | CS 310 CS  455 | Janet Jenkins | Survey Response (20  responses) | College learning vs. career learning 4/2013 | Recognition for continuing professional development | INDIRECT:  Average score on response | 80% | Outcome coordinator surveyed students and evaluated responses | 85% | Met | 4/2013 |
| 3) | CS 310 CS  455 | Janet Jenkins | Survey Response (22  responses) | Describe learning new technology 4/2013 | Ability to engage in professional development | INDIRECT:  Average score on response | 70% | Outcome coordinator surveyed students and evaluated responses | 65% | Not Met | 4/2013 |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 4) | CIS 406 | Ron Davis | Short answer discussion question (9 responses) | Final exam question for Fall 2012 &  Spring 2013 | Recognition for continuing professional development | DIRECT:  Average score on test response | 80% | Scored by instructor | 97% | Met | 5/2013 |
| **Summary of previous assessment results and actions:** During Spring 2013, several members of our Industrial Advisory Board served  on a panel to answer student questions. Panel advised students in the job search process and gave insight to the need for knowledge to be attained in addition to knowledge attained in college. Students from CS 455 (Capstone course) were required to attend. Students in CS courses of all levels were strongly encouraged to attend as well. | | | | | | | | | | | |
| **Results 2012-2013:** Benchmark expectations were met on three of four measures. | | | | | | | | | | | |
| **Action Plan 2013-2014:** Emphasis in problem solving and learning techniques will be employed beginning in CS 135. This course is a precuror to CS 155. In CS 410, emphasis will be given that the characteristics studied for each language are the areas that should be explored when learning a new language. | | | | | | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Student Learning Outcome Assessment - Computer Science Program** | | | | | | | | | | | |
| **Outcome i:** | | An ability to use current techniques, skills, and tools necessary for computing practice. | | | | | | | |  |  |
| **Outcome Coordinator:** | | | Tom Center | | | | | | | | |
|  | Course Selected for Data Collection | Person Collecting Data for evaluation | Type of Data | Data Collection Details/ Dates | Name of Measure | Type of Measure | Benchmark Expectation | Summary of Assessment/ Evaluation Process | Perform- ance Level | Comparison to benchmark expectation | Reporting Date |
| 1) | CS 255 | James Jerkins | C++  Source Code | Project assignment (14  projects) May 2013 | Ability to use techniques necessary for computing practice | Direct: Average question score | 70% | Original work scored by Jerkins, reevaluated and averaged by Center | 83% | Met | 5/9/2013 |
| 2) | CS 455 | Pat Roden | List of CASE  tools used | Capstone team project CASE  tools (3 teams) 4/30/2013 | Ability to use tools necessary for computing practice | Direct: Minimum number of tools used among teams | 4 | Tool Count | 8 | Met | 4/30/2013 |
| **Summary of previous assessment results and actions:** No actions were planned as a result of previous assessments for this outcome. | | | | | | | | | | | |
| **Results 2012-2013:** Benchmark expectations were met on both measures. The CS 255 instructor noted that most students either failed to completely grasp the concept of exception handling or failed to implement it properly. | | | | | | | | | | | |
| **Action Plan 2013-2014:** Additional assignments will need to be planned in order to hone in on assessing the use of techniques, skills, and tools independently from a larger project. | | | | | | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Student Learning Outcome Assessment - Computer Science Program** | | | | | | | | | | | |
| **Outcome j:** | | An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and desig | | | | | | | | | |
|  |  | of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices | | | | | | | | | |
| **Outcome Coordinator:** | | | James Jerkins | | | | | | | | |
|  | Course Selected for Data Collection | Person Collecting Data for evaluation | Type of Data | Data Collection Details/ Dates | Name of Measure | Type of Measure | Benchmark Expectation | Summary of Assessment/ Evaluation Process | Perform- ance Level | Comparison to benchmark expectation | Reporting Date |
| 1) | CS 310 | Pat Roden | Test response | Final Exam Question May 3-7,  2013 | Relationship of architecture to system design | DIRECT:  Average Question Score | 75% | Scored by instructor, reevaluated by outcome coordinator | 88% | Met | 5/9/2013 |
| 2) | CS 355 | Janet Jenkins | Test response | Final Exam Question on algorithm Fall 2012 | Consideration of Tradeoffs Space vs.  Speed | DIRECT:  Average written student response average score | 75% | Scored by instructor, reevaluated by outcome coordinator | 87% | Met | Week of 4/22/13 |
| **Summary of previous assessment results and actions:** In CS 355, students complete algorithm analysis questions on multiple aspects of each project/lab assignment. | | | | | | | | | | | |
| **Results 2012-2013:** Benchmark expectations were met on both measures. | | | | | | | | | | | |
| **Action Plan 2013-2014:** No additional action will be taken at this time. | | | | | | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Student Learning Outcome Assessment - Computer Science Program** | | | | | | | | | | | |
| **Outcome k:** | | An ability to apply design and development principles in the construction of software systems of varying complexity | | | | | | | | | |
| **Outcome Coordinator:** | | | Janet Jenkins | | | | | | | | |
|  | Course Selected for Data Collection | Person Collecting Data for evaluation | Type of Data | Data Collection Details/ Dates | Name of Measure | Type of Measure | Benchmark Expectation | Summary of Assessment/ Evaluation Process | Perform- ance Level | Comparison to benchmark expectation | Reporting Date |
| 1) | CS 255 | James Jerkins | Algorithm represented in pseudocode | Project design assignment 4/30/2013 | Ability to design algorithms for a progam | DIRECT:  Average scores on algorithm design | 70% | Scored by instructor, sample reevaluated by outcome coordinator | 70% | Met | 5/7/2013 |
| 2) | CS 455 | Pat Roden | SRS  Document, Design document, Source Code | Semester long Capstone team project 4/30/2013 | Ability to design and implement a sizable team project | DIRECT:  Average scores on project | 80% | Scored by instructor reevaluated by CS faculty | 84.17% | Met | 5/7/2013 |
| **Summary of previous assessment results and actions:** CS students under previous catalogs catalogs at UNA were required to take the MFT as a requirement for graduation. That requirement has been dropped. The last assessment using this measure was 2011-2012 when two students took the MFT. The scores met the expected performance benchmark and no action was initiated. Also, already in the pipeline is the newly developed CS0 (CS135) which focuses on algorithm development free from a programming language. | | | | | | | | | | | |
| **Results 2013:** Benchmark expectations were met for both measures. However, the benchmark to design algorithms for a project was not surpassed. | | | | | | | | | | | |
| **Action Plan 2013-2014:** Algorithm development will be reinforced as assignments to be counted as a portion of the final grade given in CS 155 and CS 255. | | | | | | | | | | | |

**18.2 Summary of the results of the assessment/s for each Student Learning Outcome:**

See the **Summary of previous assessment results and action** and **Results** sections of each of the tables in point 18.1.

**18.3 Program improvements made as a result of these assessments:**

See the **Actions** sections of each of the tables in point 18.1.

**18.4 Appropriate documentation to support the assessment of Student Learning Outcomes as well as the improvements made as a result of these assessments:**

See the tables displayed in point 18.1.

**19. Planning**

**19.1 Outline program goals over the next five years including, but not limited to, accreditation/re-accreditation, enrollment or expansion, and curriculum:**

The primary program goals over the next five years are to:

* Maintain ABET accreditation of the program through sustained review and appropriate modification of student learning outcomes to ensure a high quality and effective learning environments for student majors in the program.
* Increase the numbers of overall undergraduate majors in the Computer Science program to 125 by the end of the five-year period.
* Implement a student peer mentoring program to be offered fall semesters for first-time entering majors in the program.
* Investigate the need for, and the feasibility of, an increased emphasis on information security (“cybersecurity”) through the creation of additional courses in this topical area.
* Complete a comprehensive review of the Computer Science curriculum for currency and relevance to prevailing employment demand in industry.
* Continue to seek additional grant opportunities in STEM and other computer science areas.

**19.2 Outline faculty development goals for the next five years including new faculty, research, and professional development:**

The primary faculty development goals over the next five years are to:

* Continue efforts to expand the current work in the program on identifying and fostering undergraduate research projects with Computer Science majors.
* Continue collaborative research efforts among departmental faculty to achieve at least two peer-reviewed research publications per academic year.
* Assign each new faculty member a peer faculty mentor from within the department for their initial year of service.
* Ensure that adequate funding is available to support professional development activities for program faculty.

**20. Program Recommendations**

**20.1 Recommendations for changes which are within the control of the program:**

None.

**20.2 Recommendations for changes that require action at the Dean, Provost, or higher, which are congruent to and support the institution’s mission and strategic plan:**

Obtain approval for two new tenure-track faculty lines in Computer Science.