Assessment Plan 2018-2019

Department of Cyber Systems

University of Nebraska at Kearney

Using CSIT, MIS, and ITEC courses
from the
2018-2019 UNK Undergraduate Catalog

Prepared by the Faculty of the Department
Revised Fall 2018-Summer 2019

Assessment Plan for the
University of Nebraska at Kearney
Department of Cyber Systems

Department Mission and Vision

The Department's vision is e*mpowering difference makers to solve cyber challenges through personalized, innovative learning and research opportunities.*

The Mission of the Department of Cyber Systems in accordance with the role, mission and objectives of the University of Nebraska at Kearney as approved by the University of Nebraska Board of Regents and in accordance with the statewide plan of the Coordinating Commission for Post-secondary Education is to creates value by engaging with stakeholders to make a difference.

We do this through:

- Producing graduates who can analyze complex computing problems; apply principles of computing and other relevant disciplines to identify solutions; design, implement and evaluate a computing-based solution to meet a given set of computing requirements; communicate effectively in a variety of professional contexts; recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles; and function effectively as a member or leader of a team.
- Promoting the innovative and appropriate use of technology in the university and beyond
- Developing fundamental skills and professional knowledge needed for lifelong success
- Student-led experiential learning [that is] integrated throughout the curriculum
- Inspiring faculty in the pursuit and delivery of progressive scholarship, teaching and meaningful service activities
- Supporting and encouraging technology initiatives contributing to educational and economic advances

The Department meets its mission by providing our students with up-to-date curricula and pedagogy in the computer science, cyber security operations, information networking and telecommunications, information technology, and management information systems disciplines; ensuring that they have a solid foundation in the core concepts, equipping them with problem solving and decision-making skills; and preparing them for lifelong learning in the discipline. The department provides for and encourages collegial, intellectual, and academic growth of its faculty. The department supports and encourages local and regional technology initiatives contributing to educational and economic advances.

The Cyber Systems Department emphasizes quality in all of its activities in accordance with current trends in postsecondary education quality assurance. While the Department's primary focus is on undergraduate teaching, faculty scholarship and service are encouraged in accordance with the Regents' and Coordinating Commission's plans and the Boyer-Rice model for such faculty activities.

Cyber Systems Programs

The Department's major programs and the accreditation standards for each program, are shown below, in alphabetical order:

- Applied Computer Science (ACS):
  - ACM (Association for Computing Machinery) curricular standard for CS programs
- Computer Science Comprehensive (CSC):
  - ACM curricular standard for CS programs
- Cyber Security Operations (CSO). The program is designed to follow the standards and we plan to submit an application in the near future for:
  - ACM curricular standard for computer security programs
  - NSA CAE in Cyber operations (U.S. National Security Agency Center of Academic Excellence in Cyber Operations) (planned for future)
- Information Networking & Telecommunications (INT):
  - ATMAE (Association of Technology, Management & Applied Engineering) accredited since 2006
  - NSA Center of Academic Excellence in Cyber Operations with a specialization in Network Security Administration (planned for future.)
- Information Technology (IT):
  - ACM curricular standard for IT programs
- Management Information Systems (MIS):
  - AACSB (Association to Advance Collegiate Schools of Business) accredited since 2006.

Cyber Systems Constituents

The Cyber Systems (CS) Department constituents include current CS students and alumni, industry partners, especially local-area employers, graduate degree programs, and CS faculty.

The Cyber Systems Departmental has an Advisory Council with representatives from industry partners, graduate programs, and current students. Several of the industry partners are alumni as well as business representatives who hire Cyber System graduates. The Advisory Council has representatives for all Cyber System programs. The Cyber Systems tenured and tenure track faculty are all ex-officio members of the Advisory Council as well. As such, the Advisory Council represents the constituents of the department and its programs.

Assessment Mission

UNK has an established assessment process that requires programs to: have university approved assessment plans with defined outcomes and measures; annually collect, interpret and discuss data; report assessment results; use results to improve student learning; and annually evaluate the assessment process. UNK's assessment process is shown in Figure 1 below. UNK used the WeaveOnline software to store all assessment information from 2007-2018. For the 2018-2019 reporting year, a new Weave system goes into effect[1]. The focus of assessment at UNK is on continuous improvement of teaching and learning through inquiry, and the collecting and reporting of evidence to measure how well a program is meeting its objectives (www.unk.edu/academic_affairs/assessment/).

[1] Unfortunately, the assessment PEOs, student objectives, measures, targets, etc. in WeaveOnline will not transfer to the new Weave system, and will need to be entered along with the assessment results for the 2018-2019 year.

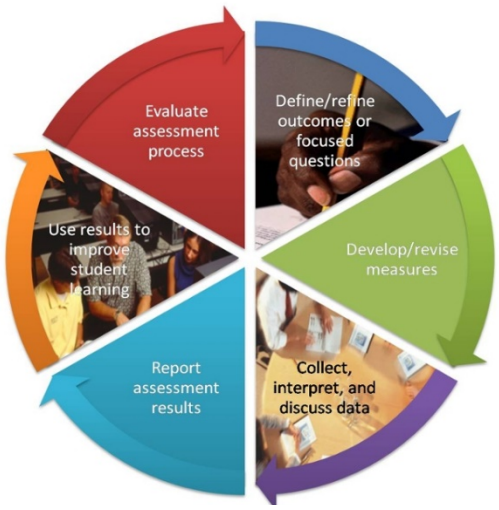

Figure 1 UNK Assessment Process

The mission of the Department's assessment process is to assess how well the department fulfills the mission stated above. The intent is to assess how well the department prepares graduates for careers or for graduate study in several computing areas. In addition, the assessment process is designed to measure the degree to which graduates fulfill the department's mission of producing graduates who can analyze complex computing problems; apply principles of computing and other relevant disciplines to identify solutions; design, implement and evaluate a computing-based solution to meet a given set of computing requirements; communicate effectively in a variety of professional contexts; recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles; and function effectively as a member or leader of a team.

Program Educational Objectives (PEO)s

The UNK Cyber Systems Department seeks to produce well-prepared cyber systems graduates who in their careers:

- Apply computing and cyber systems knowledge to real-world problems,
- Keep current in their fields of expertise,
- Communicate effectively with colleagues and other stakeholders,
- Exhibit high standards of responsibility and ethics, and
- Accumulate experiences in collaborating effectively as a team member.

Program Educational Objectives Review Process

CS Department Advisory Council. The Cyber System Department at UNK makes use of the CS Department Advisory Council as representatives of our constituents. The council includes current students, alumni, employers of our graduates a graduate school representative, along with the entire CS faculty body. The (then-named) CSIT Department started its Council in 2008, and the INT program's council was formed in 2006. With the formation of the Cyber Systems Department in 2018, these councils were merged into a single departmental council. The business representatives are chosen to represent each CS program, various industry types, and various

geographical locations, with heavy focus on local-area employers who readily hire CS graduates. The council is charged with reviewing the undergraduate degree programs, including the objectives and outcomes. The advisory board, acting as the representative of the alumni, graduate schools, and employers of our graduates, provide input on program educational objectives from time to time at their regular meetings, and through an annual survey.

Annual Advisory Council Survey. The annual Advisory Council survey (see the Appendix) contains a variety of questions that relate specifically to the PEOs to ensure that the PEOs are consistent with the institutional mission; the needs of the program's constituencies; and the ATMAE and ABET CAC accreditation criteria. It also contains opportunities for Council members to suggest improvements to the CS programs. Thus, the survey provides an indication of the perceived success of the program and the likelihood that the program educational objectives are met by the graduates of the program.

The process for utilizing the survey follows.

1. Each May, the CS Chair will email the survey to the current Advisory Council members, with an appropriate message stating the importance of completing the survey in a timely manner. A sample email follows:

   Hello UNK Cyber Systems Advisory Council Members,

   Below is the link to our annual Advisory Council Survey:
   UNK Cyber Systems Advisory Council Assessment Survey
   password: XXXX

   As representatives of the constituents of all programs in the Cyber Systems Department, your response is essential to the continued improvement of the Cyber System programs, our ability to maintain accreditation with the Association of Technology, Management and Applied Engineering (ATMAE) for the INT program, and our ability to gain ABET accreditation for the Computer Science Comprehensive program.

   We greatly appreciate your time and kept the survey as brief as possible (approx. 12-15 minutes). We need your survey responses by May 20th. I will then summarize the results, and provide feedback at the Advisory Council next meeting, tentatively planned for a virtual meeting in July or August.

   If you have questions about the assessment survey, or anything related to our UNK Cyber Systems Advisory Council, please let me know.

2. The CS Chair will be responsible for following up with Council members to ensure a high response rate, and then collect the results for distribution in early summer.
3. The feedback from the survey will be provided back to the Council for discussion and review, at the following Council meeting (usually July-August0, to ensure that the PEOs remain consistent with the institutional mission, the program constituents' needs and ATMAE and ABET criteria.
4. The CS faculty will also discuss the feedback at the annual departmental fall retreat or an early fall meeting to follow-up on any suggestions from the Council. Any changes made to the PEOs will be communicated to the Advisory Council and posted to the CS website. Any curricular changes that result will follow the normal process for curricular changes and reported to the Advisory Council in a timely manner.

Annual Student/Advisory Council Meeting. At the annual on-campus Advisory Council meeting, the Cyber Systems students meet with the council members and CS faculty and Chair to express any concerns about their program (quality of classroom sessions, lab, and infrastructure), to explain their progress in the program. This meeting is informal but provides an opportunity for the students to express concerns and for CS faculty to provide updates to the students when appropriate. The Council addresses and evaluates student concerns from their perspective. The Council also provides oversight to ensure that concerns are followed up by the department.

IT Career Showcase Event. A key partnering event with employers is the annual IT Career Showcase event, held on the morning of the UNK Spring Career Fair. At the spring 2019 event, more than 30 employers recruited students for full-time or internship opportunities. Faculty members introduce students to the representatives (who often times are alumni) and help facilitate the communication between employers and students. At this event, we also sometimes hold educational/listening sessions where business professionals, faculty, and students interact, such as the 2018 session entitled "Internship Best Practices" and the 2017 session entitled "Building a Vision for Information Technology." At these events, small group discussions with industry professionals explore synergies and opportunities in CS/IT.

Student Learning Outcomes

A. All UNK Cyber System graduates from the CS Comprehensive, Applied CS, IT, and CSO programs will have the ability to:

1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
3. Communicate effectively in a variety of professional contexts.
4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.

A program specific student outcomes for CS students is that graduates of the CS Comprehensive and Applied CS programs will be able to:

6. Apply computer science theory and software development fundamentals to produce computing-based solutions.

A program specific student outcomes for IT students is that graduates of the IT Program will be able to:

7. Identify and analyze user needs and to take them into account in the selection, creation, integration, evaluation, and administration of computing based systems.

A program specific student outcomes for CSO students is that graduates of the CSO Program will be able to:

8. Apply security principles and practices to maintain operations in the presence of risks and threats.

B. All UNK Cyber System graduates from the Information Networking and Telecommunications (INT) students will have abilities in Critical Thinking, Technology, Management & Leadership, and Communication & Professionalism, as defined below.

9. INT Outcome 1 Information Technology (K) (Critical Thinking, Technology): The INT graduate will be able to demonstrate a current knowledge of information technology to support continuously evolving business applications or processes.
10. INT Outcome 2 Technical Design and Application (K, A) (Critical Thinking & Technology): The INT graduate will be able to design, install, configure, secure and maintain information networks.
11. INT Outcome 3 Writing, Presenting and Participating (K, A, S) (Communication & Professionalism): The INT graduate will be able to write, present and act as professionals in their discipline through the most appropriate form.
12. INT Outcome 4 Business & Technology Integration (A, S) (Critical Thinking, Management & Leadership): The INT graduate will be able to assess and apply leadership fundamentals and business management practices as they apply to the networking and telecommunications industry.
13. INT Outcome 5 Assessment of Policy, Issues and Regulatory Impact (S) (Critical Thinking, Technology, Management & Leadership, and Communication & Professionalism): The INT graduate will be able to articulate the impact of the regulatory environment as well as policy and other issues upon the networking and telecommunications enterprise.

C. All UNK Cyber Systems graduates from the Management Information Systems program will have the ability to:

14. AACSB Outcome 1: Demonstrate effective critical thinking skills.
15. AACSB Outcome 2: Demonstrate knowledge of basic business disciplines and concepts.
16. AACSB Outcome 3: Demonstrate ethical decision making.
17. AACSB Outcome 4: Demonstrate competencies in current technology.
18. AACSB Outcome 5: Demonstrate professionalism.
19. AACSB Outcome 6: Work effectively with others in team settings.
20. AACSB Outcome 7: Demonstrate basic systems development life cycle knowledge and vocabulary and can use appropriate software development tools.

Student Learning Outcome Assessment

The Cyber System courses all have course outcomes that support one or more of the attributes in the student learning outcomes of the Cyber System programs.

A. Means of Assessing the CS Comprehensive, Applied CS, IT, and CSO programs

Tables 1-4 list the Student Outcomes followed by the courses that support each student outcome for the CSC, ACS, IT, and CSO programs, respectively. Assessed courses are shown in bold. Each assessed course has specific course outcomes that are measured to determine that the student outcome has been enabled. We will utilize a summative program assessment process, utilizing mainly senior-level courses. Key assessment tools are the departmental Assessment Course Survey[2] and the rubrics[3] included in the Appendices at the end of each semester.

Students in the CSC and ACS programs are annually assessed in: CSIT 330, CSIT 401, CSIT 404, CSIT 441 and CSIT 496. Students in the IT program are annually assessed in: CSIT 223 and CSIT 497. Students in the CSO program are assessed in: CSIT 330, 401 and CSIT 496. For each of these courses, the faculty teaching the course will use appropriate measures and rubrics to assess student work.

Target goals are established as follows. For each assessment measure used, individual student work is evaluated using the appropriate rubric. Each rubric has several categories. Each category has a value range (most range from 0-4). For each student's work being assessed, the score earned in all categories is summed and the total score for the student's work is divided by the maximum value possible on the rubric. The target for all measures is a 75% average of all categories assessed on the rubric. The number of students in each program whose work meets this average (or above) are tallied for each measure. The target goal for the program on each measure is met if the work for at least 70% of the program's students in the class averages 75% or above on the measure's rubric. For each program, the percentage of students whose work meet the measure is reported by measure on the departmental Assessment Course Survey.

The evaluation of the results and how unmet target goals are handled will be described in the Evaluation of Results section of this assessment plan.

Table 1. Mapping Required Courses to Outcomes for the CS Comprehensive (CSC) program (Assessed courses in bold)

Outcome	Courses
1	CSIT 130, CSIT 150, CSIT 180, CSIT 301, CSIT 330, **CSIT 401**, CSIT 402, **CSIT 404,** CSIT 425, **CSIT 441**, **CSIT 496**
2	CSIT 130, CSIT 150, CSIT 180, CSIT 301, CSIT 330, **CSIT 401**, CSIT 402, **CSIT 404**, CSIT 425, **CSIT 441**, **CSIT 496**
3	CSIT 150, **CSIT 330 (written)**, **CSIT 401 (oral)**, CSIT 404, **CSIT 441(oral), CSIT 496 (oral and written)**
4	CSIT 150, CSIT 425, **CSIT 496**
5	CSIT 404, **CSIT 441, CSIT 496**
6	CSIT 150, CSIT 180, CSIT 330, **CSIT 404**, CSIT 408, CSIT 425, **CSIT 441**, **CSIT 496**

[2] This survey is based on the survey used by the University of Kansas, provided to UNK by Dr. Annette Tetmeyer, Associate Professor of Practice, Director of BSIT Program at the University of Kansas, in fall 2017.

[3] Rubrics are based on AAC&U VALUE Rubrics, available at https://www.aacu.org/value-rubrics.

Table 2. Mapping Required Courses to Outcomes for the Applied CS (ACS) program (Assessed courses in bold)

Outcome	Courses
1	CSIT 130, CSIT 150, CSIT 180, CSIT 301, CSIT 330, **CSIT 401**, CSIT 402, **CSIT 404, CSIT 441**, **CSIT 496**
2	CSIT 130, CSIT 150, CSIT 180, CSIT 301, CSIT 330, **CSIT 401**, CSIT 402, **CSIT 404**, **CSIT 441**, **CSIT 496**
3	CSIT 150, **CSIT 330 (written)**, **CSIT 401 (oral)**, CSIT 404, **CSIT 441 (oral), CSIT 496 (oral and written)**
4	CSIT 150, **CSIT 496**
5	CSIT 404, **CSIT 441, CSIT 496**
6	CSIT 150, CSIT 180, CSIT 330, **CSIT 404**, CSIT 408, **CSIT 441**, **CSIT 496**

Table 3. Mapping Required Courses to Outcomes for the Information Technology (IT) program (Assessed courses in bold)

Outcome	Courses
1	CSIT 130, CSIT 150, CSIT 380, CSIT 425, **CSIT 497**
2	CSIT 130, CSIT 150, CSIT 380, CSIT 425, **CSIT 497**
3	CSIT 150, **CSIT 223 (written), CSIT 497 (oral and written)**
4	CSIT 150, CSIT 425**, CSIT 497**
5	**CSIT 497**
7	CSIT 223, CSIT 380, CSIT 425, **CSIT 497**

Table 4. Mapping Required Courses to Outcomes for the Computer Security Operations (CSO) program (Assessed courses in bold)

Outcome	Courses
1	CSIT 130, CSIT 150, CSIT 180, CSIT 301, CSIT 330, **CSIT 401**, CSIT 402, CSIT 444, CSIT 458, **CSIT 496**
2	CSIT 130, CSIT 150, CSIT 180, CSIT 301, CSIT 330, **CSIT 401**, CSIT 402, CSIT 458, **CSIT 496**
3	CSIT 150, **CSIT 330 (written)**, **CSIT 401 (oral)**, **CSIT 496 (oral and written)**
4	CSIT 150, **CSIT 496**
5	C**SIT 496**
8	**CSIT 401**, CSIT 444, **CSIT 496**

1. **<u>Course Project Assessment for ACS, CSC, CSO, and IT programs (Assessing Outcomes 1, 2, 6-8)</u>**

The department uses projects in multiple courses, starting with the freshman level, including CSIT 150, CSIT 180. Projects are also completed during the students' sophomore and junior years in CSIT 330, CSIT 404, CSIT 425, and CSIT 441. The department has two capstone courses. CSIT

496 Seminar in Computer Science is the capstone course for ACS, CSC, and CSO. CSIT 497 Seminar in Computer Information Systems is the capstone course for IT majors.

Students create an entrepreneurial or research-based project of their own work or with a client, either from on campus or from the business and professional community. Students in the projects in these courses apply theory and use appropriate tools in the analysis, design and implementation of computer-based solutions to problems. Appropriate tool choices include the selection of and proficiency in appropriate computer languages, computer assisted software engineering tools, operating environments, and project management software.

Students are required to demonstrate ethical behavior and professionalism while analyzing, designing, implementing and evaluating their solutions. In the past, we collected sample projects from the combined CSIT 496 and 497 classes and reported the results every three years. CSC, CSO and ACS students are required to demonstrate their ability to reason about and explain computer-based solutions at multiple levels of abstraction in the completion of their computing project. IT students are required to identify and analyze user needs and to take them into account in the selection, integration, evaluation, and administration of computer-based systems. CSO students are required to create a solution that demonstrates the application of security principles and practices to maintain operations in the presence of risks and threats.

Evaluation of Course Projects for ACS, CSC, CSO and IT programs

CSC and ACS student projects will be assessed for meeting outcomes 1, 2, and 6 in CSIT 401, CSIT 404, and CSIT 441 and CSIT 496. IT student projects will be assessed for meeting outcomes 1,2, and 7 in CSIT 497; and CSO student projects will be assessed for meeting outcomes 1,2, and 8 in CSIT 401 and CSIT 496. Project assessment is completed annually for projects in these courses, separated by program, and completed by the faculty member teaching each class at the end of the semester. The appropriate Project Assessment Rubric for each program (included in the Appendix) is used to assess the students' projects.

2. Oral Communication Assessment for ACS, CSC, CSO, and IT programs (Assessing Outcome 3)

Several CSIT courses culminate in class presentations. The capstone course presentations are formal, public presentations to which the campus community, alumni, businesses and cooperating clients are invited. This needs to be prepared and practiced well in advance. The instructor will assess the quality of the oral presentation completed by the students and the professionalism of those students as they interact with the audience.

Evaluation of Oral Communication for ACS, CSC, CSO, and IT programs

Project presentations are used to assess outcome 3 (oral communication) each fall in CSIT 496 and CSIT 497 courses, separated by program, and completed by the faculty member teaching this class at the end of each fall semester.[4] Oral communication is also assessed in the CSIT 401 course for

[4] In the past, we evaluated a sampling of project presentations from the combined CSIT 496 and 497 classes and reported the combined results.

the CSC, ACS, and CSO programs each fall and in the CSIT 441 course for the ASC and CSC program each spring. The Oral Communication Rubric (included in the Appendix) is used to assess the students' presentations.

3. Written Communication Assessment for ACS, CSC, CSO, and IT programs (Assessing Outcome 3)

All departmental students are expected to write in many courses. Students write in many different formats, including papers, programs, and blogs, starting with the introductory course.

Evaluation of Written Communication for the IT program

We use a written essay assignment to assess writing in CSIT 223, a required course in the second year in the IT curricula. We also assess an ethics-themed term paper written assignment in CSIT 497, the senior capstone course in the IT programs of study.[5] The Written Communication & Ethics Rubric (included in the Appendix) is used to assess the students' papers. The assessment is completed annually for the CSIT 223 and CSIT 497 courses, completed by the faculty member teaching each course at the end of each fall semester.

Evaluation of Written Communication for the CSC, ACS, and CSO programs

We assess the written part of a programming project in CSIT 330, a required course in the second year in the ACS, CSO and CSC curricula, using its own rubric (included in the Appendix). We also assess an ethics-themed term paper written assignment in CSIT 496, the senior capstone course in the ACS, CSO and CCS programs of study programs of study, using the Written Communication & Ethics Rubric (included in the Appendix). The assessment is completed annually for the CSIT 330 and CSIT 496 courses, separated by program, and completed by the faculty member teaching this class at the end of each fall semester.

4. Ethics Assessment of the ACS, CSO, IT and CSC programs (Assessing Outcome 4)

Students are required to demonstrate ethical behavior and professionalism while engaging in the work of their ethics team project, ethics paper and designing, implementing, and evaluating their computing-based project.

Evaluation of the ethical writing samples from CSIT 496 and CSIT 497 for the ACS, IT, CSO and CSC programs

Each student team will lead a class discussion on an ethical topic assigned by the instructor. The class discussion must involve all students in the class and must discuss relevant ethical issues dealing with the assigned topic. As discussion leaders, students will be expected to participate in the leading of the discussions. Each student will write a paper on the same topic as the one assigned for the class discussion. The research for the paper will provide additional information on the topic that can be used for both the paper and the class discussion

[5] In the past, we evaluated a sampling of written assignments from the combined CSIT 496 and 497 classes and reported the combined results.

The ethics assessment is completed annually as part of the written assessment for the CSIT 496 and CSIT 497 courses, using the Written Communication & Ethics Rubric (included in the Appendix), separated by program, by the faculty member teaching this class at the end of each fall semester.

5. Teamwork Assessment for ACS, CSC, CSO and IT programs (Assessing Outcome 5)

All departmental students are expected to work in teams in many courses. Students participate on many different teams, in many different settings, starting with the CSIT 130 and CSIT 150 peer programming labs for the ACS, CSC, CSO, and IT programs. As stated in the AACU Teamwork Value Rubric, "Teamwork is behaviors under the control of individual team members (effort they put into team tasks, their manner of interacting with others on team, and the quantity and quality of contributions they make to team discussions.)"

The Teamwork rubric (included in the Appendix) is used to assess student teamwork. The rubric is meant to assess the teamwork of an individual student, not the team as a whole. Therefore, it is possible for a student to receive high ratings, even if the team as a whole is rather flawed. Similarly, a student could receive low ratings, even if the team as a whole works fairly well.

Evaluation of Teamwork for the ACS, CSC, CSO and IT programs

In the CSC and ACS programs, CSIT 441 Artificial Intelligence requires a team robotics project, in which teamwork is assessed using the Teamwork rubric. Teamwork assessment is completed annually for the CSIT 441 course, completed by the faculty member teaching this class at the end of the spring semester.

In the capstone courses (CSIT 496 for the ACS, CSC and CSO programs and CSIT 497 for the IT program), students demonstrate the ability to work with team members throughout the analysis, design, and implementation process of an ethics presentation project. For assessment purposes, teamwork will be assessed with a team ethics presentation, within the capstone course. The capstone course requires that teams of students work together on an ethical topic and present a team presentation, and lead the class in a discussion on that ethical topic. This needs to be prepared and practiced well in advance. It requires teamwork and team meetings. The instructor will assess the quality of the team work demonstrated through the team presentation completed by the teams of students. The instructor will also evaluate his/her observations of the team's functioning and the individual students' contributions to the team. Teamwork assessment is completed annually for the CSIT 496 and CSIT 497 courses, completed by the faculty member teaching this class at the end of each fall semester using the Teamwork rubric.

B. Means of Assessing the INT program

INT Program competencies with course coverage are shown in the Appendix INT Competency Matrix.

Validation Methods:
The INT program uses several methods of identifying, assessing and validating competencies:

1. **Identifying** the INT competencies are based on National Security Administration (NSA) Centers of Academic Excellence (CAE) in Cybersecurity standards for Network Security Administration,

Cyber Investigations and Systems Security Administration to identify current academic standards. Feedback is taken from the INT Advisory Council (INTAC), internship survey and employer/graduate survey to develop competencies to meet industry partner needs. Competencies are also designed with current curriculum resources in mind.

2. **Assessing** of the competencies occurs through several stages. The main 5 competencies are academically measured through two main rubrics that are attached to final projects in the two-final upper division INT courses (ITEC430 and ITEC435). The sub-competencies are actively measured in every INT course through classroom assignments/activities, lab work and quizzes/exams. The competencies are also assessed through an annual information networking and telecommunications advisory council (INTAC) meeting, in which the advisory council provides feedback. Finally, the competencies are assessed through graduate and employer surveys.
3. **Validating** the INT validation of competencies occurs annually through a quantitative and qualitative process. The course level competencies are validated independently by faculty teaching the courses. The faculty adjust course level competencies based on the pass/fail rate of particular assignments/activities and quizzes. The academic rubrics in the two-final upper division INT courses are measured annually and recorded in a university system known as WEAVE. Here, the 5 main competencies are quantitatively measured; the INT faculty aim to have 80% of the students meeting or exceeding the competency rubric measurement. The quantitative data from the graduate and employer surveys are also recorded and placed in WEAVE, which actively assess all competencies (5 main competencies plus sub-competencies). Qualitative data taken from INTAC meeting minutes as well as the internship survey, graduate and employer survey are also placed in WEAVE. A self-examination is performed annually in WEAVE, attempting to further validate the competencies and close the feedback look.

C. Means of Assessing the MIS program

The MIS program will be assessed by the UNK CBT AACSB Assurance Of Learning (AOL) assessment process documented online at https://www.unk.edu/academics/bt/assurance_of_learning.php.

Evaluation of Results

At the end of each semester, result for each course assessed that semester is collected and recorded on a departmental Assessment Course Survey by program. The assessment results and a discussion of the results will be reported to the *UNK Assessment System* by October 31st of the following year, as per UNK Assessment requirements. The UNK Assessment Office and the CS faculty can review the material in this online system.

The Assessment Course Surveys and the Assessment Reports will be evaluated by the Department faculty at a curriculum meeting annually for the CSC, ACS, CSO, IT, and INT programs. The MIS program assessment results will be evaluated as part of the UNK CBT AACSB AOL process. Typically, the UNK Assessment Office also meets with the departmental faculty annually to discuss the assessment results, especially if there is a concern.

If any target goal is not met for any student outcome, the faculty will discuss the issue and the outcome area in which the target was not met and formulate recommendations for an action plan. The action plan will be recorded in the UNK Assessment System, as per UNK Assessment requirements. The goal of the action plan will be to try to improve the programs' ability to meet the student outcomes in the future. The action plan stays active in the UNK Assessment System for three years, per UNK Assessment guidelines. During that time frame, the faculty are required to review and provide updates annually on progress made toward meeting the target goal.

The assessment reports will also be provided to the Cyber Systems Advisory Council for their review and input. Any recommendations from the Advisory Council will be addressed by the faculty at a later faculty meeting.

As the faculty discuss the results and discuss the feedback from others (such as the Assessment Office and the Advisory Council), the goal is to evaluate the results of the assessment to improve student learning and improve the programs' ability to meet the student outcomes in the future. The faculty also review current accreditation and curricular standards to adjust the student outcomes, course requirements, program requirements, etc.

Assessment of the Assessment Plan

The Departmental faculty members annually will examine and evaluate the department's assessment plan after the evaluation of the departmental assessment. Each year a new assessment plan is implemented, using the feedback from the entire process.

Appendices

University of Nebraska at Kearney
Department of Cyber Systems
Assessment Course Survey

Program Name: _____

Course #	**Course Title:**	
Instructor:		**Semester:**

At the end of the semester what was your course grade distribution? Total students, excluding W:__
Please put the NUMBER not a percentage:

A **B** **C** **D** **F** **W**

At the beginning of the semester, which percentage of students were competent in most of the prerequisite material? *Please mark one response:*

☐ **>90%** ☐ **80-89%** ☐ **70-79%** ☐ **60-69%** ☐ **<60%**

What lacking prerequisite-specific knowledge, if any, caused the most difficulty?

What general skills and abilities were weaker than expected at this stage of your students' education?

Can you suggest any changes in prerequisite courses or their contents that would better prepare students for this class?

The Course Outcomes identified in your syllabus are listed below. Please identify the percentage of students who showed evidence that they met the requirements of this outcome.

Course Learning Outcome and Description	**Matching Program-level Student Outcome**	**Measure**	**Performance to meet outcome**	**% who met outcome**

Are there any other comments you would like to share with the Accreditation Committee?

UNK CYBER SYSTEMS WRITTEN COMMUNICATION RUBRIC

(ESTABLISHED FALL 2013; REVISED FALL2016; REVISED FALL 2018) ***Addresses outcomes #3 and #4***

UNK CSIT rubrics are modified from rubrics created by the Association for American Colleges and Universities, value@aacu.org

	Capstone 4	**Milestones** 3	 2	**Benchmark** 1
Context of and Purpose for Writing Includes considerations of audience, purpose, and the circumstances surrounding the writing task(s).	Demonstrates a thorough understanding of context, audience, and purpose that is responsive to the assigned task(s) and focuses all elements of the work.	Demonstrates adequate consideration of context, audience, and purpose and a clear focus on the assigned task(s) (e.g., the task aligns with audience, purpose, and context).	Demonstrates awareness of context, audience, purpose, and to the assigned tasks(s) (e.g., begins to show awareness of audience's perceptions and assumptions).	Demonstrates minimal attention to context, audience, purpose, and to the assigned tasks(s) (e.g., expectation of instructor or self as audience).
Content Development	Uses appropriate, relevant, and compelling content to illustrate mastery of the subject, conveying the writer's understanding, and shaping the whole work.	Uses appropriate, relevant, and compelling content to explore ideas within the context of the discipline and shape the whole work.	Uses appropriate and relevant content to develop and explore ideas through most of the work.	Uses appropriate and relevant content to develop simple ideas in some parts of the work.
Genre and Disciplinary Conventions Formal and informal rules inherent in the expectations for writing.	Demonstrates detailed attention to and successful execution of a wide range of conventions particular to the discipline including organization, content, presentation, formatting, and stylistic choices.	Demonstrates consistent use of important conventions particular to the discipline and/or writing task(s), including organization, content, presentation, and stylistic choices	Follows expectations appropriate to the discipline and/or writing task(s) for basic organization, content, and presentation	Attempts to use a consistent system for basic organization and presentation.
Sources and Evidence	Demonstrates skillful use of high-quality, credible, relevant sources to develop ideas that are appropriate for the discipline and genre of the writing	Demonstrates consistent use of credible, relevant sources to support ideas that are situated within the discipline and genre of the writing.	Demonstrates an attempt to use credible and/or relevant sources to support ideas that are appropriate for the discipline and genre of the writing.	Demonstrates an attempt to use sources to support ideas in the writing.
Control of Syntax	Uses graceful language that skillfully communicates meaning to readers with clarity and fluency.	Uses straightforward language that generally conveys meaning to readers.	Uses language that generally conveys meaning to readers with clarity.	Uses language that sometimes impedes meaning because of errors in usage.
Mechanics	Virtually error-free. No grammar, mechanical, or spelling errors. Appropriate physical formatting.	The language in the portfolio has few grammar, mechanical, or spelling errors. Attempts to use appropriate physical format.	Writing includes some grammar, mechanical, or spelling errors. Makes little attempt to use appropriate physical format.	Writing includes grammar, mechanical, or spelling errors that makes ideas hard to follow. Does not follow appropriate physical format.
Ethical (used in CSIT 496 & CSIT 497) ***Addresses outcome #4***	States a position and states the objections to, assumptions and implications of and reasonably defends against the objections to, assumptions and implications of different ethical perspectives/concepts. Defense is adequate and effective.	States a position and states the objections to, assumptions and implications of and reasonably defends against the objections to, assumptions and implications of different ethical perspectives/concepts. Defense is inadequate or ineffective.	States a position and states the objections to, assumptions and implications of and but does not defends against the objections to, assumptions and implications of different ethical perspectives/concepts.	States a position but cannot state the objections to, assumptions and implications of different ethical perspectives.

UNK CYBER SYSTEMS ORAL COMMUNICATION ASSESSMENT RUBRIC

(ESTABLISHED FALL 2013; REVISED FALL2016; REVISED FALL 2018) ***Addresses outcomes #3***

Evaluators are encouraged to assign a zero to any work sample that does not meet Beginning level performance.

UNK CSIT rubrics are modified from rubrics created by the Association for American Colleges and Universities, value@aacu.org

	Beginning 1	Developing 2	Proficient 3	Advanced 4
Organization	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is not observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is intermittently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable within the presentation.	Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable and is skillful and makes the content of the presentation cohesive.
Language	Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to audience.	Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to audience.	Language choices are imaginative, memorable, and compelling, and enhance the effectiveness of the presentation. Language in presentation is appropriate to audience.
Delivery	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and speaker appears uncomfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and speaker appears tentative.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and speaker appears comfortable.	Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and speaker appears polished and confident.
Support	Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make reference to information or analysis that minimally supports the presentation or establishes the presenter's credibility/authority on the topic.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that partially supports the presentation or establishes the presenter's credibility/authority on the topic.	Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that generally supports the presentation or establishes the presenter's credibility/authority on the topic.	A variety of types of supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that significantly supports the presentation or establishes the presenter's credibility/authority on the topic.
Theme	Central message can be deduced, but is not explicitly stated in the presentation.	Central message is basically understandable but is not often repeated and is not memorable.	Central message is clear and consistent with the supporting material.	Central message is compelling (precisely stated, appropriately repeated, memorable, and strongly supported.)

UNK CYBER SYSTEMS TEAMWORK
ASSESSMENT RUBRIC Addresses outcome #5

Evaluators are encouraged to assign a zero to any work sample that does not meet Beginning level performance.

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	Capstone 4	**Milestones** 3 2		**Benchmark** 1
Contributes to team meetings	Helps the team move forward by articulating the merits of alternative ideas or proposals.	Offers alternative solutions or courses of action that build on the ideas of others.	Offers new suggestions to advance the work of the group.	Shares ideas but does not advance the work of the group.
Facilitates the contributions of team members	Engages team members in ways that facilitate their contributions to meetings by both constructively building upon or synthesizing the contributions of others as well as noticing when someone is not participating and inviting them to engage.	Engages team members in ways that facilitate their contributions to meetings by constructively building upon or synthesizing the contributions of others.	Engages team members in ways that facilitate their contributions to meetings by restating the views of other team members and/or asking questions for clarification.	Engages team members by taking turns and listening to others without interrupting.
Individual contributions outside of team meetings	Completes all assigned tasks by deadline; work accomplished is thorough, comprehensive and advances the project. Proactively helps other team members complete their assigned tasks to a similar level of excellence.	Completes all assigned tasks by deadline; work accomplished is thorough, comprehensive and advances the project.	Completes all assigned tasks by deadline; work accomplished advances the project.	Completes all assigned tasks by deadline.
Fosters constructive team climate	Supports a constructive team climate by doing all of the following: • Treats team members respectfully by being polite and constructive in communication. • Uses positive vocal or written tone, facial expressions, and/or body language to convey a positive attitude about the team and its work. • Motivates teammates by expressing confidence about importance of the task and the team's ability to accomplish it. • Provides assistance and/or encouragement to team members.	Supports a constructive team climate by doing any three of the following: • Treats team members respectfully by being polite and constructive in communication. • Uses positive vocal or written tone, facial expressions, and/or body language to convey a positive attitude about team and its work. • Motivates teammates by expressing confidence about importance of tasks and team's ability • provides assistance and/or encouragement to team members.	Supports a constructive team climate by doing any two of the following: • Treats team members respectfully by being polite and constructive in communication. • Uses positive vocal or written tone, facial expressions, and/or body language to convey a positive attitude about the team and its work. • Motivates teammates by expressing confidence about the importance of the task and the team's ability to accomplish it. • Provides assistance and/or encouragement to team members.	Supports a constructive team climate by doing any one of the following: • Treats team members respectfully by being polite and constructive in communication. • Uses positive vocal or written tone, facial expressions, and/or body language to convey a positive attitude about the team and its work. • Motivates teammates by expressing confidence about the importance of the task and the team's ability to accomplish it. • Provides assistance and/or encouragement to team members.
Responds to conflict	Addresses destructive conflict directly and constructively, helping to manage/resolve it in a way that strengthens overall team cohesiveness and future effectiveness	Identifies and acknowledges conflict and stays engaged with it	Redirecting focus toward common ground, toward task at hand (away from conflict)	Passively accepts alternate viewpoints/ideas/opinions.

UNK CYBER SYSTEMS Project Rubric – CSC, ACS Programs

Addresses outcomes #1,2,6

Evaluators are encouraged to assign a zero to any work sample that does not meet Beginning level performance.

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	Beginning 1	**Developing 2**	**Proficient 3**	**Advanced 4**
1) Analyze a complex computing problem; apply principles of computing & other disciplines to identify a solution ***Addresses outcome #1***	Has difficulty defining the scope of the problem. Has difficulty determining key requirements. Sources of information selected do not relate to an appropriate solution.	Defines the scope of the problem incompletely (parts are missing, remains too broad or too narrow, etc.) Determines a majority of the key requirements. Sources of information selected partially relate to an appropriate solution.	Defines the scope of the problem completely, but is vague in places. Determine key requirements. Sources of information selected relate to an appropriate solution.	Effectively defines the complete and concise scope of the target problem. Effectively determines key requirements. Sources of information selected directly relate to an appropriate solution.
2) Design solutions using appropriate design tools ***Addresses outcome #2***	Only a single approach is considered and is used to solve the problem. Inquiry design demonstrates a misunderstanding of the design technologies.	Considers and rejects less acceptable approaches to solving problem. Critical elements of the design framework are missing, incorrectly developed, or unfocused.	Having selected from among alternatives, develops a logical, consistent plan to solve the problem. Critical elements of the design framework are skillfully developed using appropriate design technologies, however, more subtle elements are ignored or unaccounted for.	Not only develops a logical, consistent plan to solve the target problem, but recognizes consequences of the solution and can articulate reason for choosing solution. All elements of the design framework are skillfully developed using appropriate design technologies.
3) Implement and evaluate solution to meet a given set of computing requirements in context of program's discipline ***Addresses outcome 2***	The project completed by employing, in a basic way, knowledge from the discipline. The project solution is difficult to evaluate because it is vague or only indirectly addresses the problem.	The project has been completed by employing knowledge from the discipline, but does not use the most appropriate approaches and/or strategies and the solution has several errors.	The project has been completed by employing knowledge of appropriate approaches and/or strategies from the discipline and the solution solves the target problem using the best approach, but has minor errors.	The project has been completed by using appropriate approaches and/or strategies from the discipline and the solution solves the target problem using the best approach.
6) Apply computer science theory and software development fundamentals to produce computing-based solutions ***Addresses outcome #6, CSC, ACS students***	Inquiry design demonstrates a misunderstanding of the design technologies and theories. The project solution is difficult to evaluate because it is vague or only indirectly applies CS theory to the problem.	Considers and rejects less acceptable theories to solving problem; and uses acceptable theories. The capstone project has been completed by employing knowledge from the discipline, but does not use the most appropriate theories as strategies.	Having selected from among alternatives, develops a logical, consistent plan of applying appropriate theories to solve the problem. The capstone project has been completed by employing knowledge of appropriate theories and strategies from the discipline and the solution solves the target problem using the best approach, but has minor errors.	**Not only develops a logical, consistent plan to use the most appropriate theories to solve the target problem, but recognizes consequences of the solution and can articulate reason for the applied theories. The capstone project has been completed by using appropriate theory, approaches and/or strategies from the discipline and the solution solves the target problem using the best approach.**

UNK CYBER SYSTEMS Project Rubric – CSO Program

Addresses outcomes #1,2,8

Evaluators are encouraged to assign a zero to any work sample that does not meet Beginning level performance.
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	Beginning 1	**Developing 2**	**Proficient 3**	**Advanced 4**
1) Analyze a complex computing problem; apply principles of computing & other disciplines to identify a solution ***Addresses outcome #1***	Has difficulty defining the scope of the problem. Has difficulty determining key requirements. Sources of information selected do not relate to an appropriate solution.	Defines the scope of the problem incompletely (parts are missing, remains too broad or too narrow, etc.) Determines a majority of the key requirements. Sources of information selected partially relate to an appropriate solution.	Defines the scope of the problem completely, but is vague in places. Determine key requirements. Sources of information selected relate to an appropriate solution.	Effectively defines the complete and concise scope of the target problem. Effectively determines key requirements. Sources of information selected directly relate to an appropriate solution.
2) Design solutions using appropriate design tools ***Addresses outcome #2***	Only a single approach is considered and is used to solve the problem. Inquiry design demonstrates a misunderstanding of the design technologies.	Considers and rejects less acceptable approaches to solving problem. Critical elements of the design framework are missing, incorrectly developed, or unfocused.	Having selected from among alternatives, develops a logical, consistent plan to solve the problem. Critical elements of the design framework are skillfully developed using appropriate design technologies, however, more subtle elements are ignored or unaccounted for.	Not only develops a logical, consistent plan to solve the target problem, but recognizes consequences of the solution and can articulate reason for choosing solution. All elements of the design framework are skillfully developed using appropriate design technologies.
3) Implement and evaluate solution to meet a given set of computing requirements in context of program's discipline ***Addresses outcome 2***	The project completed by employing, in a basic way, knowledge from the discipline. The project solution is difficult to evaluate because it is vague or only indirectly addresses the problem.	The project has been completed by employing knowledge from the discipline, but does not use the most appropriate approaches and/or strategies and the solution has several errors.	The project has been completed by employing knowledge of appropriate approaches and/or strategies from the discipline and the solution solves the target problem using the best approach, but has minor errors.	The project has been completed by using appropriate approaches and/or strategies from the discipline and the solution solves the target problem using the best approach.
8) Apply security principles and practices to maintain operations in the presence of risks and threats. ***Addresses outcome 8 for CSO students only***	Inquiry design demonstrates a misunderstanding of the security design technologies and theories. The project solution is difficult to evaluate because it is vague or only indirectly applies appropriate security theory, approaches and/or strategies to maintain operations in the presence of risks and threats.	Considers and rejects less acceptable security theories to solving problem; and uses acceptable theories. The capstone project has been completed by employing security knowledge to maintain operations in the presence of risks and threats, but does not use the most appropriate theories as strategies.	Having selected from among alternatives, develops a logical, consistent plan of applying appropriate security theories to solve the problem. The capstone project has been completed by using appropriate security theory, approaches and/or strategies to maintain operations in the presence of risks and threats. but has minor errors.	Not only develops a logical, consistent plan to use the most appropriate security principles and tactics to solve the target problem, but recognizes consequences of the solution and can articulate reason for the applied theories. The capstone project has been completed by using appropriate security theory, approaches and/or strategies to maintain operations in the presence of risks and threats.

UNK CYBER SYSTEMS Capstone Project Rubric – IT Programs

Addresses outcomes #1,2,7

Evaluators are encouraged to assign a zero to any work sample that does not meet Beginning level performance.

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	Beginning 1	**Developing 2**	**Proficient 3**	**Advanced 4**
1) Analyze a complex computing problem; apply principles of computing & other disciplines to identify a solution Addresses outcome #1	Has difficulty defining the scope of the problem. Has difficulty determining key requirements. Sources of information selected do not relate to an appropriate solution.	Defines the scope of the problem incompletely (parts are missing, remains too broad or too narrow, etc.) Determines a majority of the key requirements. Sources of information selected partially relate to an appropriate solution.	Defines the scope of the problem completely, but is vague in places. Determine key requirements. Sources of information selected relate to an appropriate solution.	Effectively defines the complete and concise scope of the target problem. Effectively determines key requirements. Sources of information selected directly relate to an appropriate solution.
2) Design solutions using appropriate design tools ***Addresses outcome #2***	Only a single approach is considered and is used to solve the problem. Inquiry design demonstrates a misunderstanding of the design technologies.	Considers and rejects less acceptable approaches to solving problem. Critical elements of the design framework are missing, incorrectly developed, or unfocused.	Having selected from among alternatives, develops a logical, consistent plan to solve the problem. Critical elements of the design framework are skillfully developed using appropriate design technologies, however, more subtle elements are ignored or unaccounted for.	Not only develops a logical, consistent plan to solve the target problem, but recognizes consequences of the solution and can articulate reason for choosing solution. All elements of the design framework are skillfully developed using appropriate design technologies.
3) Implement and evaluate solution to meet a given set of computing requirements in context of program's discipline ***Addresses outcome 2***	The project completed by employing, in a basic way, knowledge from the discipline. The project solution is difficult to evaluate because it is vague or only indirectly addresses the	The project has been completed by employing knowledge from the discipline, but does not use the most appropriate approaches and/or strategies and the solution has several errors.	The project has been completed by employing knowledge of appropriate approaches and/or strategies from the discipline and the solution solves the target problem using the best approach, but has minor errors.	The project has been completed by using appropriate approaches and/or strategies from the discipline and the solution solves the target problem using the best approach.
4) Identify and analyze user needs and to take them into account in the _____ of computer-based systems. ***Addresses outcome 7***	*Capstone project has identified and analyzed some user needs but fails to take them into account in the _____ of the computer-based system*	*Capstone project has identified and analyzed user needs and taken them into account in the _____ of the computer-based system or project recognizes some consequences of the solution and can articulate some reasons for the way the user needs were addressed in the _____ process.*	*Capstone project has identified and analyzed user needs and taken them into account in the _____ of the computer-based system. Project recognizes some consequences of the solution and can articulate some reasons for the way the user needs were addressed in the _____ process.*	*Capstone project clearly has identified and analyzed user needs and taken them into account in the _____ of the computer-based system. Project recognizes consequences of the solution and can articulate reasons for the way the user needs were addressed in the _____ process.*
a) Selection	selection	selection	selection	selection
b) Integration	integration	integration	integration	integration
c) Evaluation	evaluation	evaluation	evaluation	evaluation
d) Administration	administration	administration	administration	administration

UNK CSIT 330 Writing Assessment Rubric

Criteria	Three points	Two points	One point	Zero points
Level of project	⅄ appropriate scope/difficulty	⅄ intermediate level project	⅄ novice project	⅄ below beginning level
Syntax	⅄ free of syntax or runtime errors	⅄ free of syntax errors ⅄ has minor runtime error(s)	⅄ free of syntax errors ⅄ major runtime errors	⅄ critical syntax errors
Solution/Logic	⅄ solves target problem using best approach	⅄ solves problem but not in best manner	⅄ does not solve problem	⅄ illogical or missing
Supporting documentation	⅄ complete ⅄ sufficient detail ⅄ no or minor grammatical errors ⅄ no extraneous facts	⅄ requires minor additions ⅄ easily corrected grammatical errors ⅄ some extraneous facts ⅄ some details omitted	⅄ requires major additions ⅄ requires major revision ⅄ significant details omitted ⅄ many extraneous facts	⅄ missing
Appearance	⅄ intuitive ⅄ uncluttered ⅄ professional appearance	⅄ mildly counterintuitive ⅄ slightly cluttered ⅄ requires minor revisions	⅄ counterintuitive ⅄ cluttered ⅄ poor appearance	⅄ missing

UNK INT Program Assessment Competency Matrix

ITEC Department General Outcomes	Information Networking Telecomunications Competency Matrix	INT General Studies Expectations	Plane Trigonometry or Calculus	Introduction to Criminal Justice	INT Technology Core Requirements	Introduction to Technology	Engineering Design Graphics	Technology Today	Communicating Through Technology	INT Core Requirements	Internetworking Literacy	Electricity/Electronics	Applied Electronics	Information Networking Prec/tprial	Network Architecture and Telecom I	Network Architecture and Telecom II	Internetworking Design	Global Internetworking	Internship	INT Management Core Requirements	Information Networking Law & Policy	Information Networking Seminar	Industrial Management	Leadership in Business & Technology	INT Support Track Options	15 hours - Cyber Investigations	15 hours - Web & Scripting	15 hours - Business & Entrepreneurship	15 hours - Tailored Option
			MATH 103 or 123	CJUS 101	A	ITEC 110	ITEC 120	ITEC 130	ITEC 290	B	ITEC 150	ITEC 220	ITEC 320	ITEC 330	ITEC 335	ITEC 345	ITEC 430	ITEC 435	ITEC 475	C	ITEC 390	ITEC 465	ITEC 308	ITEC 408	D					
EVALUATIVE METHODS: Q=Quiz; W=Writing Assignment; P=Project; H=Hands-on Lab; Presentation=R																													
Meets ITEC Outcomes: Critical Thinking & Technology	**INT Outcome 1: INT Information Technology (K)** The INT graduate will be able to demonstrate a current knowledge of information technology to support continuously evolving business applications or processes.																												
	Recognized and explain basic blueprint and diagramming concepts as related to all ITEC programs						Q																						
	Recognize and explain geometric dimensioning and tolerancing as related to 2D and 3D technical drawings as relevant to all ITEC programs						Q																						
	Know the basics of circuit switching versus packet switching and historically how the old-school telephone network is structured and has evolved including location services and phone number structure (E.164)										Q,W				Q														
	Understand how the Internet affects everyone; Know the open standards Internet architecture including a broad overview of IP addressing and DNS										Q,P				Q														
	Define the idea of cloud services and virtualization and how that has changed the business of the Internet										Q,W				Q														
	Define how the different radio spectrums (cell vs wi-fi) are different in both standards (802.11, CDMA, GSM, LTE, WiMAX) and regulation (Internet vs PLMN vs PSTN)										Q,W				Q		Q												
	Know the plethora of differing computing devices (smartphone, tablet, computer) and how the OS's differ (PC, Apple, Linux, iOS, Windows Mobile, Android, etc.)										Q,W				Q,H		Q,H												
	Know cell roaming and how this works with mobile registration, picocells, and femtocells; Define and discuss mobile terms such as GMS vs LTE protocol stacks, mobile encryption										Q,W				Q														
	Define how mobile device generations and identification work (2nd gen IMSI, IMEI, MSISDN; 3rd gen MEID,; 4th gen IMSI, IMEI, UEID, NEID); discuss world regions according to standards										Q,W																		
	Know basic information security concepts: stages of hacking cycle, emergence of advanced persistent threats (APTs), vulnerabilities, threats, risks, safeguards										Q,W						Q,H	Q,H			Q,W								
	Describe and discuss various types of attacks (malware, social engineering, trust/insider problem, cyberwarfare, adversary/target models) and enablers (vulnerabilities) through use of the current events										Q,W						Q,H												
	Define how the Internet of Things /Internet of Everything is growing exponentially and why it is hard to secure										Q,W				Q		Q												
	Discuss current security issues and vulnerabilities as well as PSTN wireless and cellular issues that are happening today; discuss sources of threat information as tied to current events										Q,W						Q												
	Know all of the intermediary devices within a network environment and be able to describe the differences between each one (workstations, servers, network storage, routers, switches, firewalls, IDS/IPS)										Q, D			Q	Q,H														
	Define and describe the fundamentals of law, regulations and standards both now and in the past as applied to the information networking field			X							Q, D										Q,W								
	Define the functions and jurisdiction of national, state, and local telecommunications regulatory agencies.			X																	Q								
	Define and describe the various models, circuits, theory and protocols used within different systems.											Q,H																	
	Describe different network architectures including OSI model, TCP/IP model as well as Cisco's hierarchical network design model and network security models														Q,H														
	Define and describe basic electronic and network design concepts and how they interoperate using electrical and physical calculations		Q									Q,H			Q,H														
	Describe and discuss different access control methods and security mechanisms given specific business scenarios																Q,H	Q,H				P,W							
	Know why different types of data need different types of encryption (data at rest vs data in transit vs data in processing)																Q,H	Q,H				P,W							
	Describe and discuss the purpose of honeypots and honeynets in defense strategies as well as new threat analysis																Q,H	Q,H											

			MATH 103 or 123	CJUS 101	A	ITEC 110	ITEC 120	ITEC 130	ITEC 290	B	ITEC 150	ITEC 220	ITEC 320	ITEC 330	ITEC 335	ITEC 345	ITEC 430	ITEC 435	ITEC 475	C	ITEC 390	ITEC 465	ITEC 308	ITEC 408	D				
	Describe DMZs, proxy servers, double-firewall and other layered defense protections; apply within a case study or lab example																	Q,H										
	Know what a vulnerability is and how/why they exist (Google Project Zero, Exploit DB); know what social engineering is and how it creates vulnerabilities																	Q,H										
	Know the pen testing cycle and how access can be gained through an array of techniques																	Q,H				P,W						
Meets ITEC Outcomes: Critical Thinking & Technology	**2: INT Technical Design and Application (K, A)** **The INT graduate will be able to design, install, configure, secure and maintain information networks.**																											
	Demonstrate the ability to create a 3D sketch from an orthogonal projection and vice versa (orthogonal project to 3D)						Q,H																					
	Draw/model 2D and 3D representations of objects						Q,H																					
	Demonstrate the ability to understand and remember the spatial relations among objects						Q,H																					
	Describe and discuss the differences between Cisco's artichoke security model and the traditional onion security model understanding how different devices play different defensive roles given specific business scenarios																Q,H	Q,H				P,W						
	Apply and illustrate electronic design scenarios in a hands-on lab and using circuitry software											Q,H																
	Define and utilize the appropriate electrical component to achieve system goal												Q,H															
	Demonstrate a knowledge of the different types of media and components utilized in electronics and networking (concentration on physical components)														Q,H													
	Troubleshoot various circuitry scenarios in the lab evaluating problems and then applying a fix												Q,H															
	Demonstrate Layer 2 switching in detail including MAC address tables, SPT (spanning tree), lag (LACP/PAgP), and VLANs															Q,H												
	Demonstrate Layer 2 security including sticky MAC addresses and MAC address spoofing and recognize complexity of protecting edge devices at L2															Q,H												
	Know and demonstrate how inter-VLAN routing works including the idea of L3 switching; Know and demonstrate the different routing protocols and their respective algorithms including RIP, IS-IS, EIGRP, OSPF and BGP.															Q,H												
	Troubleshoot continuously through the course configuring and applying simple to complex network scenarios in the lab															Q,H												
	Use Wireshark to understand the different protocol communication including DHCP, DNS, HTTP and ARP														Q,H													
	Use Wireshark and other debugging tools to first, port mirror and second, see router and switch communications (STP, OSPF, EIGRP)														Q,H	Q,H												
	Know and demonstrate why and how a router or switch and other network equipment (firewalls, IDS/IPS) are secured.															Q,H												
	Explain and solve IPv4 and IPv6 subnetting scenarios and how the are applied to real-world problems; Know how IPv6 improves security		X												Q,H	Q,H												
	Know how subnets are related to VLANs and how this is extremely important for network security														Q,H	Q,H												
	Define how routing protocols, SSL, SMTP, DHCP and DNS are protocols related to ports and could be hijacked for reconnaissance or injection purposes														Q,H	Q,H												
	Sketch how virtualization works on a system networking level and then demonstrate a local computer virtualization setup using two different OS's exploring the different networking aspects (e.g. bridging, NAT)														Q,H													
	Demonstrate a small LAN setup with one router, one switch (three VLANs) and two PCs in different subnets; demonstrate subnetting for different groups and then building out to physical infrastructure														Q,H													
	Demonstrate a secure router and switch in a complex network setup including no less than 3 routers and 2 switches with 5 VLANs using the following protocols: EIGRP or OSPF, VLANs, LACP, STP, IPv4, IPv6 and DHCP															Q,H												
	Demonstrate active and passive network mapping techniques utilizing different protocols (ping, traceroute, ARP, DHCP, DNS) and open-source programs like Ettercap and Siphon															Q,H												
	Classify physical IT security and trust. Explain how trust can be compromised. Explain the role of security automation.																Q,H	Q,H				P,W						
	Apply attacks on cryptographic key/hashes scenarios (i.e. grabbing PSK keys and running password cracks and brute force attacks) in a wireless lab environment setup																Q,H	Q,H										
	Sketch and then implement the following through case study or lab given a complex enterprise business scenario (e.g. NAT, enterprise virtualization, ACLs, enterprise wireless, RADIUS, Internet vs WAN, VPN, double-firewall, DMZ)																Q,H											

			MATH 103 or 123	CJUS 101	A	ITEC 110	ITEC 120	ITEC 130	ITEC 290	B	ITEC 150	ITEC 220	ITEC 320	ITEC 330	ITEC 335	ITEC 345	ITEC 430	ITEC 435	ITEC 475	C	ITEC 390	ITEC 485	ITEC 308	ITEC 408	D				
	Establish RADIUS authentication through wireless using and understanding WPA/WPA2, AES, TKIP, PEAP, LEAP, MSCHAPv2, PKI infrastructure, SSL certificates, Active Directory and LDAP in a complex assembled network environment																Q,H												
	Deduce the importance of cryptography and its ties to wireless, SSH and RADIUS authentication protocols as well as SSL certificates and public/private key infrastructure (PKI)														Q,H	Q,H	Q,H	Q,H												
	Know the difference in secure measures between symmetric and assymmetric cryptography, hashes and differing SSH versions with underlying protocols; apply in lab															Q,H	Q,H	Q,H												
	Explore TCPDump and Snort (IDS/IPS) in a lab environment; explore and configure Snort to attempt to eliminate false positives																	Q,H												
	Explore other tools such as NetworkMiner, PRTG Network Monitor (with NetFlow), and Microsoft Network Monitor (and other log file analyzers) knowing the placement and importance of auxiliary hardware like taps, mirroring devices, port mirroring and hubs																	Q,H												
	Know the difference between intrusion detection and intrusion prevention and how an organization utilizes these mechanisms for protection; compare differences of signature vs activity (i.e. anomaly detection, next-gen firewalls, malicious code ID)																Q,H	Q,H			Q,W	P,W								
	Apply different brute force attacks to network equipment in the lab; describe what information can be gained from this vantage point																	Q,H												
	Demonstrate tools and techniques for finding vulnerabilities (Fing, nmap, Metasploit); launch attacks in a lab environment (both wired and wireless)																	Q,H												
	Explore malware/rootkits/DNS attacks and other malicious traffic through a packet sniffer; demonstrate where the malicious traffic exists within the packet trace and explain why/how the traffic is malicious																	Q,H												
	Explore and demonstrate how networks can be remotely managed through different software applications															Q,H														
Meets ITEC Outcomes: Communication & Professionalism	**3: INT Writing, Presenting and Participating (K, A, S) The INT graduate will be able to write, present and act as professionals in their discipline through the most appropriate form.**																													
	Develop effective presentation skills to persuade and motivate								R																					
	Develop effective presentation skills using distance technologies								R																					
	Explain complex ideas & technical concepts to non-technical persons both verbally and in writing.													W,R					W,R			W,R		W,R					
	Understand how to use graphics and simple technical diagrams to illustrate and simplify technical concepts (2D to 3D) both verbally and in report writing.													W,R								W,R							
	Utilize verbal and technology-based communication skills for individual and group presentations.								R,Q										R			R							
	Understand how to prepare business proposals, reports and resume as well as how to present each one.							W,R						W,R					W,R			W,R		W,R					
	Retrieve and use reliable sources of information from the Internet, technical consortiums, periodicals, journals & other sources.													W,R							W	W							
	Participate in appropriate professional conferences, career fairs, organizations and field trips.																		R										
	Present a case study design & analysis to a business audience using proper speech techniques as well as presentation graphics																R												
	Understand the importance of and display a positive professional image in the form of appearance, dress, attitude, manners and social skills								R,Q					W,R					W,R		W	W		W,R					
	Demonstrate ways word processing, spreadsheet and email features can be used to improve communications in personal information management.							Q,H																						
Meets ITEC Outcomes: Critical Thinking, Management & Leadership	**4: INT Business & Technology Integration (A, S) The INT graduate will be able to assess and apply leadership fundamentals and business management practices as they apply to the networking and telecommunications industry.**																													
	Discuss and perform risk assessment alongside of the security life cycle																				Q,W	W,P								
	Describe the role and players within the DoD system certification and accreditation processes																				Q,W									
	Know the NIST Risk Management Framework (SP800-37) and apply to a real-world business scenario																				Q,W									
	Know the framework of the DoD policies and directives surrounding the NIST and C&A Process; describe why such a framework is important																				Q,W									
	Know the connection between risk assessment, system certification/accreditation and cyberwarfare																				Q,W					X				

		MATH 103 or 123	CIUS 101	A	ITEC 110	ITEC 120	ITEC 130	ITEC 290	B	ITEC 150	ITEC 220	ITEC 320	ITEC 330	ITEC 335	ITEC 345	ITEC 430	ITEC 435	ITEC 475	C	ITEC 390	ITEC 485	ITEC 308	ITEC 408	D				
Describe the components of the C&A Process (now mostly abandoned) and the transition to NIST																				Q,W								
Understand that the complexities of differing business strategies may define the structure and design of the information network and be able to apply and simulate these differing designs in a lab environment.																		W,R										
Describe and diagram simple to complex real-world business network including all devices: workstations, servers, storage, routers, switches, firewalls, mobile and peripheral devices in various environments (i.e. university, health care, retail and consulting).													P,W								Q,W							
Understand the relevancy of national and international business environments and their influence on the information networking industry.													W					W,R						X				
Examine current challenges to the technical environment due to globalization, diversity, change and technology.																						Q						
Analyze management functions of planning, organizing, leading, controlling and their application within a technically focused organization.																						Q						
Examine current challenges to the technical environment due to globalization, diversity, change, and technology.																						Q						
Understand the special skills, responsibilities, roles, and attributes required of technical supervisors.																						Q						
Analyze management functions of planning, organizing, leading, controlling and their application within a technically focused organization.																						Q						
Demonstrate effective strategies for establishing organizational goals and strategies in technical organizations.																						Q						
Demonstrate problem analysis and decision making techniques within a technically based organization.																						Q						
Analyze motivational techniques in diverse technologically focused organizations.																						Q						
Describe effective communication and conflict resolution methods.																						Q						
Demonstrate and examine current theory for performance appraisal methods in technical organizations.																						Q						
Recognize the power of group dynamics and decision making, both positive and negative.																						Q						
Examine techniques for employee hiring processes, adequate staffing levels, introduction, training and evaluation.																						Q						
Identify different styles of leadership, and which are most effective.																							W					
Identify fundamentals of leadership and management, and know the difference between the two. They will be able to identify key components of effective organizational leadership.																							W					
Identify the importance of being leaders in the community, their discipline, at work, and at home.																							W					
Identify and differentiate strong historical leaders and their unique leadership styles in industry and society.																							W					
Identify why it is important to be a good follower.																							W					
Develop, plan, implement, and evaulate a project/activity within a group of peers.																							W					
Explain the relevancy cultural norms on leadership styles.																							W					
Assess the importance of ethical behavior in a leadership role.																							W					
Identify their own leadership philosophy, traits, styles, and tendencies.																							W					
Demonstrate critical thinking and leadership skills through the planning, implementation, and evaluation of a project or activities with a group of peers.																							W					
Identify management perspectives between union and non-union organizations and their impact upon technical organizations.													W					W,R										
Define the formation and influence of attitudes and how they can be changed.													W					W,R										
Identify and analyze various methods of organization and operation of business and information networking in different industry segments both nationally and internationally.													W															
Identify and understand the relationships of inter-related fields of study and how they integrate with business practices and information networking.													W					W,R						X	X	X	X	
Critically apply business management software and personal computer skills to solve complex problems in a variety of situations.							H,Q																					

			MATH 103 or 123	CJUS 101	A	ITEC 110	ITEC 120	ITEC 130	ITEC 290	B	ITEC 150	ITEC 220	ITEC 320	ITEC 330	ITEC 335	ITEC 345	ITEC 430	ITEC 435	ITEC 475	C	ITEC 390	ITEC 485	ITEC 308	ITEC 408	D				
Meets ITEC Outcomes: Critical Thinking, Technology, Management & Leadership, Communication & Professionalism	**5: INT Assessment of Policy, Issues and Regulatory Impact (S)** The INT graduate will be able to articulate the impact of the regulatory environment as well as policy and other issues upon the networking and telecommunications enterprise.																												
	Describe and discuss the importance of ethical behavior in the face of security and privacy information and know how to act accordingly.																		W,R		Q,W	W,P				X			
	Utilize the knowledge of the ever-changing technology regulations standards and rules to plan and strategize to an advantage in the business environment.																				Q,W	W,P						X	
	Understand, explain and develop a professional stance on developing issues within the current field.																		W,R			W,P				X	X	X	X
	Select, analyze and compose several reports regarding current industry issues utilizing appropriate sources.																		W,R		Q,W	W,P							
	Demonstrate the appropriate protocol, theory or configuration to accomplish the task.																W,H		W,R			W,P				X	X	X	X
	Devise an offensive hacking and network operation setup and then defend against it using ideas of phishing, transitive trust, obscurity, covert channels, hijacking, spoofing, buffer overflows and XSS attacks.																	W,H											
	Develop a case study that covers all aspects of a branch office network including: subnet/VLAN design; physical and logical security design; cost analysis of wiring; routing/switching equipment, and security equipment; and budget analysis.																W,H												
	Model fundamental security design principles (e.g. defense in-depth; layers) and how they are implemented in a business all the way from physical security up to policy.																W,H	W,H				W,P							
	Analyze how to design for remote access taking into consideration network and security design principles. Understand the differences between SSL VPN, WebVPN and other encrypted client VPNs (PPTP, L2TP, IPSec, OpenVPN, SSTP).																W,H					W,P							
	Model how data loss occurs; describe and discuss types of prevention techniques and security architectures in different types of scenarios.																	W,H				W,P							
	Compose an all-encompassing project which builds above and beyond technical fundmentals learned and then apply the project in a simulated environment.																					W,P							

References

- ABET accreditation criteria, **http://www.abet.org/accreditation/accreditation-criteria/**
- ACM (Association for Computing Machinery) curricular standards, **https://www.acm.org/education/curricula-recommendations**
- Association of Technology, Management & Applied Engineering (ATMAE), Policies, https://www.atmae.org/page/PoliciesStandards
- Association of Technology, Management & Applied Engineering (ATMAE), Documents and Forms, https://www.atmae.org/page/DocumentsForms
- Association of Technology, Management & Applied Engineering (ATMAE) Handbook, **https://cdn.ymaws.com/www.atmae.org/resource/resmgr/accred_2018/2019_Accreditation_Handbook.pdf**
- Center of Academic Excellence in Cyber Operations, https://www.nsa.gov/Resources/Students-Educators/centers-academic-excellence/cae-co-fundamental/
- Center of Academic Excellence in Cyber Operations with a specialization in Network Security Administration, https://www.iad.gov/NIETP/documents/Requirements/CAE_CDE_criteria.pdf
- Center of Academic Excellence in Cyber Operations specializations, https://www.iad.gov/NIETP/documents/Requirements/CAE-CD_2019_Specializations.pdf
- AACSB for the Management Information Systems (MIS) program, https://www.aacsb.edu/accreditation

Default Question Block

Dear Cyber Systems Advisory Board Member:
We need your assistance to help improve the Cyber Systems programs, including:
* INT (Information Networking & Telecom) program
* Computer Science Comprehensive (CSC) program
* Applied Computer Science (ACS) program
* Information Technology (IT) program
* Cyber Security Operations (CSO) program
* Management Information Systems (MIS)/Business Intelligence (BI) program

Your responses are essential to the continued improvement of the Cyber System programs, our ability to maintain accreditation with the Association of Technology, Management and Applied Engineering (ATMAE) for the INT program, and our ability to gain ABET accreditation for the Computer Science Comprehensive program.

We will have general questions and then questions related to separate programs. Your contribution of time to complete this survey is greatly appreciated and critical to the success of our programs.

Thank you,
UNK Cyber Systems Faculty

PROGRAM EDUCATIONAL OBJECTIVES: As a new Cyber Systems department, we adopted the old CSIT Program Educational Objectives* (PEOs) in fall 2018, and created new PEOs in spring 2019.

UNK Cyber System Departmental PEOs

The UNK Cyber Systems Department seeks to produce well-prepared cyber systems graduates who in their careers:

- ***Apply computing and cyber systems knowledge to real-world problems,***
- ***Keep current in their fields of expertise,***
- ***Communicate effectively with colleagues and other stakeholders,***
- ***Exhibit high standards of responsibility and ethics, and***
- ***Accumulate experiences in collaborating effectively as a team member.***

*__Program Educational Objectives__ are broad statements that describe what graduates are expected to attain within a few years of graduation. Program educational objectives are based on the needs of the program's constituencies, and should be consistent with the mission of the institution and accreditation body criteria, such as ABET for the CS Comprehensive program and ATMAE for the INT program.

PEOS RELATED MISSION: Program educational objectives should be consistent with the mission of the institution.

UNK Mission

The University of Nebraska at Kearney is a public, residential university committed to be one of the nation's premier undergraduate institutions with excellent graduate education, scholarship, and public service.

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
Please rate how well the CS Department Program Educational Objectives fit with the UNK Mission.	O	O	O	O	O

PEOS CONSISTENT WITH NEEDS OF CONSTITUENTS: In general, the Program Educational Objectives must be consistent with the needs of the Cyber System Department constituents*.

*Constituents are students, faculty, alumni, and industry partners and graduate program representatives who accept/hire graduates of the Cyber System programs. As a Advisory Council member, you represent the CS Department Constituents.

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
Please rate how well the CS Department PEOs fit with the needs of the CS Department constituents.	O	O	O	O	O

PEOs ALIGNED WITH CURRICULAR PROGRAMS: In general, the Program Educational Objectives must be aligned with the major programs delivered by the Cyber System Department.

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
Please rate how well the PEOs align with the CS Department's programs.	O	O	O	O	O

Computer Science Comprehensive (CSC) Program Constituents

If you are a constituent of the CS Comprehensive program, please answer this question.

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
For the CSC Program, please rate how well the PEOs are consistent with needs of the CS Comprehensive program constituents.	O	O	O	O	O

Computer Science Comprehensive (CSC) Program Constituents

If you are a constituent of the CS Comprehensive program and have reviewed the ABET CAC accreditation criteria, please answer this question.

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
For the CSC Program, please rate how well the PEOs are consistent with ABET accreditation criteria.	O	O	O	O	O

Information Networking and Telecommunications (INT) Program Constituents

If you are a constituent of the INT program, please answer this question.

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
For the INT Program,					

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
please rate how well the Program Educational Objectives are consistent with needs of the INT program and its industry partners.					

Please provide any additional feedback on the Cyber Systems Departmental Program Educational Objectives (PEOs), such as suggestions for revisions, items that are missing, ways the PEOs can be more consistent with your needs, etc:

INT PROGRAM ASSESSMENT: Within the INT program, we measure the INT program against 5 general program outcomes and many competencies.

If you are a constituent of the INT program, please take a few minutes to review and give us feedback as to their applicability and relevance.

For your reference, please click here to view the new Information Networking & Telecom major.

Learning outcomes and competencies for this major are linked below.

OUTCOME #1: INT Information Technology
The INT graduate will be able to demonstrate a current knowledge of information technology to support continuously evolving business applications or processes.

Please click here to view Outcome #1 and the list of competencies in their entirety.

Currently, we have adapted the INT program so that the graduates take coursework in the following information technology areas:

1. Basic programming
2. Office applications or data analytics
3. Systems & networking
4. Professional development (management, leadership, systems analysis and design, and/or systems admin)

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
Please rate how well					

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
the outcome, major changes and following competencies address needed requirements for this field					

Please respond below as to what changes you would suggest that would enhance Outcome #1, the major and competencies.

OUTCOME #2: INT Technical Design and Application
The INT graduate will be able to design, install, configure, secure and maintain information networks.

Please click here to view Outcome #2 and the list of competencies in their entirety.

We have currently re-worked the INT major so that the graduate has the following technical coursework in information networks:

1. Beginning networks
2. Advanced networks
3. Defensive security
4. Offensive security
5. Option of systems administration

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
Please rate how well the outcome, major and following competencies address needed requirements for this field					

Please respond below as to what changes you would suggest that would enhance Outcome #2, the major and competencies.

OUTCOME #3: INT Writing, Presenting & Participating

The INT graduate will be able to write, present and act as professionals in their discipline through the most appropriate form.

Please click here to view Outcome #3 and the list of competencies in their entirety.

Currently, the INT major has been re-worked, but the same professionalism coursework remains in the major. The student still takes part in the following coursework:

1. Preceptorial course: Visiting area businesses and forming a technical report on systems/networking with diagrams and managerial aspects
2. Management and leadership course
3. Capstone course with independent student project

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
Please rate how well the outcome, the major and following competencies address needed requirements for this field	O	O	O	O	O

Please respond below as to what changes you would suggest that would enhance Outcome #3, the major and competencies.

OUTCOME #4: INT Business & Technology Integration

The INT graduate will be able to assess and apply leadership fundamentals and business management practices as they apply to the networking and telecommunications industry.

Please click here to view Outcome #4 and the list of competencies in their entirety.

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
Please rate how well the outcome and following competencies address	O	O	O	O	O

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
competencies address needed requirements for this field					

Please respond below as to what changes you would suggest that would enhance Outcome #4 and competencies.

OUTCOME #5: INT Assessment of Policy, Issues and Regulatory Impact

The INT graduate will be able to articulate the impact of the regulatory environment as well as policy and other issues upon the networking and telecommunications enterprise.

Please click here to view Outcome #5 and the list of competencies in their entirety.

Currently, the INT program maintains the regulatory and law course in its major to address this section alongside of covering ethical IT behavior in the capstone course.

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
Please rate how well the outcome, the major and following competencies address needed requirements for this field	○	○	○	○	○

Please respond below as to what changes you would suggest that would enhance Outcome #5, the major and competencies.

CS COMPREHENSIVE (CSC) PROGRAM ASSESSMENT

STUDENT OUTCOMES: We measure the CSC program against the six ABET required student outcomes.

For your reference, please click here to view the new CSC major. (password: lopers)

All graduates from the UNK CSC program will have the ability to:

1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
3. Communicate effectively in a variety of professional contexts.

4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
6. Apply computer science theory and software development fundamentals to produce computing-based solutions.

If you are a constituent of the CS Comprehensive program, please feel free to provide feedback as to the department's ability to deliver CS Comprehensive graduates who meet these outcomes. (Optional)

Current and Future Aspects of the Technical Fields

Please provide any advise/suggestions on current and future aspects of the technical fields for which the Cyber Systems graduates are being prepared.

This could include skills that you need new employees to have, technologies that are important to cover in the curriculum, etc.

Please offer any comments or suggestions for the improvement of the Cyber Systems programs at UNK. These will be used in confidence to improve the programs within the Department of Cyber Systems.