Curriculum Committee
AGENDA
Monday, August 22, 2016
Williamson Dining Room
Noon

I. Call to Order

II. New Business

A. Election of the positions: Chair-Elect and Secretary (to review minutes for accuracy)

2016-17 Curriculum Committee members are:

Newly Elected for 2 Year Term:
Holly Ruth Gale (AH 2 year term)
Dr. Debra Hunter (BA 2 year term)
Dr. Shellie Hanna (ED 2 year term)
Dr. Cathi McMahan (EAS 2 year term)
Dr. Tennille Lasker-Scott (PS 2 year term)
Dr. Tom Limperis (NH 2 year term)

Dr. Jennifer Samson (at large; 1 year term)

Tammy Weaver (ex officio)
Vacant SGA members (ex officio)
Vacant SGA members (ex officio)

Completing Last Year of 2 Year Term:
Dr. David Osburn (AH 1 year term)
Dr. Nina Goza (BA 1 year term)
Dr. Lynn Walsh (ED 1 year term)
Dr. Malcom Rainey (EAS 1 year term)
Dr. John Jackson (NH 1 year term)
Dr. Jeremy Schwehm (PS 1 year term)

B. Curricular Items

College of Engineering and Applied Sciences - Department of Computer and Information Science

1. Add the following courses to the course descriptions:
   a. CSEC 1113: Introduction to Networking;
   b. CSEC 1213: Wireless and Cellular Security;
   c. CSEC 2113: Introduction to Information Systems;
   d. CSEC 2213: Forensics and Incident Response;
   e. CSEC 2223: Virtualization;
   f. CSEC 3113: Assembly Programming;
   g. CSEC 3123: Cyber Defense I:
   h. CSEC 3223: Programming Embedded Systems;
   i. CSEC 3233: Cyber Defense II;
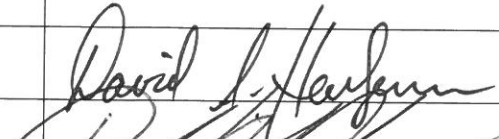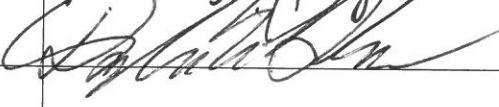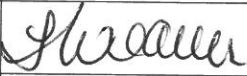
    j.   CSEC 3243: Computer Architecture;

    k.   CSEC 4123: Cryptography;

    l.   CSEC 4133: Large Scale Distributed Systems;

    m. CSEC 4143: Building Secure Software;

    n.   CSEC 4213: Information Systems Risk Management;

    o.   CSEC 4233: Legal Issues in Cybersecurity;

    p.   CSEC 4240: Software Security Analysis and Reverse Engineering Lab;

    q.   CSEC 4243: Software Security Analysis and Reverse Engineering; and

    r.   CSEC 4293: Cybersecurity Capstone Project/Internship; and

2. Add the Associate of Applied Science and Bachelor of Science in Cybersecurity.

College of eTech - Department of Professional Studies

1. Add PS 4643: Occupational Globalization and Diversity, to the course descriptions;

2. Modify the Curriculum in Professional Studies with specialty/concentrations in Agriculture Business, Criminal Justice, Industrial/Organizational Psychology, Interdisciplinary Studies, Public Relations, and Workforce Technology, as follows: add PS 4643: Occupational Globalization and Diversity, as an option in the 6 hours of Professional Studies Professional Core Electives;

3. Modify the Curriculum in Professional Studies with specialty/concentration in Applied Leadership, as follows: require PS 4543: Workplace Supervision, and PS 4643: Occupational Globalization and Diversity; and delete the 6 hours Professional Studies Professional Core Electives and footnote 4;

4. Add the specialty/concentration Child Development to the Curriculum in Professional Studies; and

5. Add the Certificate in Professional Leadership.

C. Meeting dates, time, and location

Arkansas Tech University
REQUEST FOR COURSE ADDITION

TO:	Curriculum Committee
FROM (Initiating Department):	**DEPARTMENT OF COMPUTER & INFORMATION SCIENCE**
DATE SUBMITTED:	6.30.2016

Title	Signature	Date
Department Head **Dr. David Hoelzeman**	*David S. Hoelzeman*	7-6-2016
Dean **Dr. Neal Barlow**	*[signature]*	9 Aug 16
Teacher Education Council (if applicable)		
Graduate Council (if applicable)		
Registrar **Ms. Tammy Weaver**	*[signature]*	8/10/16
Vice President for Academic Affairs **Dr. Mohammed Abdelrahman**		

Course Subject: (e.g., ACCT, ENGL) **CSEC**	Course Number: (e.g., 1003) **1113**	**Effective Term: Fall 2017** ○ Spring ● Summer I

Official Catalog Title: (If official title exceeds 30 characters, indicate Banner Title below)

Introduction to Networking

Banner Title: (limited to 30 characters, including spaces, capitalize all letters — this will display on the transcript)

Will this course be cross-listed with another existing course? If so, list course subject and number.
○ Yes ● No

Will this course be cross-listed with a course currently not in the undergraduate or graduate catalog?
If so, list course subject and number. ○ Yes ● No

Is this course repeatable for additional earned hours? ○ Yes ● No How many total hours?

Grading: ● Standard Letter ○ P/F ○ Other

Mode of Instruction (check appropriate box):

● 01 Lecture ○ 02 Lecture/Laboratory ○ 03 Laboratory only

○ 05 Practice Teaching ○ 06 Internship/Practicum ○ 07 Apprenticeship/Externship

○ 08 Independent Study ○ 09 Readings ○ 10 Special Topics

○ 12 Individual Lessons ○ 13 Applied Instruction ○ 16 Studio Course

○ 17 Dissertation ○ 18 Activity Course ○ 19 Seminar ○ 98 Other

Does this course require a fee? ○ Yes ● No How Much?		Select Fee Type

If selected other list fee type:	

☐ Elective   ☑ Major   ☐ Minor

(If major or minor course, you must complete the Request for Program Change form to add course to program.)

If course is required by major/minor, how frequently will course be offered?

Fall

For the proposed course, attach a syllabus in Word format that includes: **(Items a. through d. should be entered as they should appear in the catalog)**

a. Course subject
b. Course number
c. Catalog course title
d. Catalog description
    1. Arkansas Course Transfer System (ACTS) course number, if applicable
    2. Cross-listing
    3. Offered (e.g., Fall only, Spring only. Do not enter if offer course fall and spring)
    4. Prerequisites
    5. Co-requisites
    6. Description
    7. Notes (e.g., information not in description such as course may be repeated for credit)
    8. Contact Hours if different than lecture (e.g., Lecture three hours, laboratory three hours)
    9. Fees (e.g., $36 art fee)
e. Section for Name of instructor, office hours, contact information (telephone, email)
f. Text required for course
g. Bibliography (supplemental reading list)
h. Justification/rationale for the course
i. Course objectives
j. Description of how course meets general education objectives (courses included in the general education component should show how the course meets one or more of the objectives contained in General Education Objectives listed in undergraduate catalog)
k. Assessment methods (include grading policy with specific equivalents for A, B, C)
l. Policy on absences, cheating, plagiarism, etc.
m. Course content (outline of material to be covered in course).

Will this course require any special resources such as unusual maintenance costs, library resources, special software, distance learning equipment, etc.? **This course will require a dedicated classroom with dedicated equipment (computers and networking capability).**

Will this course require a special classroom (computer lab, smart classroom, or laboratory)? **dedicated lab**

Attach the Course Addition Assessment Form. The form is located on the Assessment & Institutional Effectiveness web page at http://www.atu.edu/assessment/

If this course will affect other departments, a Departmental Support Form for each affected department must be attached. The form is located on the Curriculum forms web page at http://www.atu.edu/registrar/curriculum_forms.php. **N/A**

Syllabus
Department of Computer & Information Science

CSEC 1113	**Introduction to Networking**
Section #	001
OFFERED	Fall
PRE-REQUISITE	None
CO-REQUISITES	None

DESCRIPTION

Computer and communications networks are the very environment in which cyber operations are conducted. An understanding of these networks is essential to any discussion of cyber operations activities.

Specific topics to be covered to satisfy this knowledge unit must minimally include:
- Routing, network, and application protocols including:
  - TCP/IP (versions 4 and 6)
  - ARP, BGP, SSL/TLS
  - DNS
  - SMTP
  - HTTP
- Network architectures
- Network security
- Wireless network technologies
- Network traffic analysis
- Protocol analysis (examining component-to-component communication to determine the protocol being used and what it is doing)
- Network mapping techniques (active and passive)

NOTES

None

COURSE INSTRUCTOR

Office: **Corley**   Phone: Email:

To be completed by faculty of record for this course

OFFICE HOURS

To be determined by faculty of record for this course

TEXTBOOK   *Introduction to Networking with Network+*, T. Pintello, Wiley Publishing
ISBN : 978-0-470-48732-7 (paperback)
ISBN : 978-0-470-57182-8 (etext)

BIBLIOGRAPHY   There is **no** REQUIRED supplemental reading list for this course.

JUSTIFICATION   The Internet is a network of networks. To be a knowledgeable, effective cybersecurity specialist, students must gain experience using networks.

OBJECTIVES   After completing this course, the learner will be able to:
- explain how networks work at the infrastructure and network and applications layers.
- explain how networks transfer data
- explain how network protocols work to enable communication
- explain how the lower-level network layers support the upper ones.
- explain how the major network protocols enable communication and data transfer.

COURSE TOPICS   Topics include:
- Routing, network, and application protocols including:
  - TCP/IP (versions 4 and 6)
  - ARP, BGP, SSL/TLS
  - DNS
  - SMTP
- **Network architectures**
- **Network security**
- **Wireless network technologies**
- **Network traffic analysis**
- **Protocol analysis (examining component-to-component communication to determine the protocol being used and what it is doing)**
- **Network mapping techniques (active and passive)**

GENERAL EDUCATION REQUIREMENTS   This course does not meet any of the General Education requirements.

ASSESSMENT   The final grade will consist of 100 percentage points, with the following breakdown:

Homework, Labs, & Assignments	20%
Exams, including Final Exam	80%

Total	*100%*

The following percentage table will be used to assign scores:

90-100% - A   80-89% - B   70-79% - C   60-69% - D   Below 60% - F

ATTENDANCE

The policy of the University in regard to class absences may be stated as the considered belief that regular class attendance is essential to the maximum growth and development of the student, and that students, in their own interest, are therefore responsible for attending all classes for which they are enrolled.

COURSE CONDUCT

Respect your peers. Students are expected to respect the rights of others. Students must conduct themselves in a professional manner, and maintain an atmosphere that does not distract other students from learning. Students whose behavior the instructor deems to be disruptive will be asked to leave. This includes, but is not limited to, cell phones ringing, talking on a cell phone or text messaging, use of a laptop computer in a distracting manner, consuming food or beverage, and/or having conversations with other students that are not part of the class instruction. If for some reason you feel that one or more of these items are necessary, you must get express permission from the instructor beforehand. A student who is requested to leave will not be excused from missing any class or class activities.

PLAGIARISM & CHEATING

Refer to the rules set forth in the student handbook. Students are expected to do their **OWN** work. **Consider your actions carefully:** there will be no tolerance for conduct that even gives the appearance of cheating. Any questions regarding the policy of cheating or conduct in this class should be clarified with the instructor. Cheating will result in a negative score (deduction from the final course grade) and will be reported to appropriate governing bodies, e.g. the CIS ethics committee.

SCHEDULE (to be determined by faculty teaching the course)

Week			Exercises
1	Syllabus, introduction to networking		The instructor of record will determine the assignments/exercises and point value for each weekly topic.
2	Networking infrastructure		

3	Network layers		
4	Application Protocols		
5	Application Protocols		
6	Network Security		
7	Network Security		
8	Network Security		
9	Network Security		
10	Wireless Network Technologies		
11	Wireless Network Technologies		
12	Network Traffic Analysis		
13	Protocol Analysis		
14	Protocol Analysis		
15	Network Mapping		

Se Arkansas Tech University

Course Addition

Assessment Form

Our Mission
Arkansas Tech University, a state-supported institution of higher education, is dedicated to nurturing scholastic development, integrity, and professionalism. The University offers a wide range of traditional and innovative programs which provide a solid educational foundation for life-long learning to a diverse community of learners.

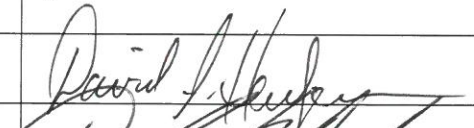| Provide an answer for each question. Your answers are to be typed single spaced. |
| --- |
| **CSEC 1113 Introduction to Networking** |
| a. How does this course fit with the university mission? **This course is a required course for the proposed BS in Cybersecurity.   This course supports the University's mission by being innovative and rigorous for students as they are educated to become professionals in the field of Cybersecurity.** |
| b. If this course is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable. **The Bachelor of Science in Cybersecurity is not accredited by an accrediting body. However, the Department of Homeland Security provides requirements for programs in Cybersecurity to be designated as a Center of Excellence. This proposed program is rigorous and meets these requirements. This course is a mandated requirement to qualify for designation as a Center of Excellence. (https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)** |
| Provide up to three student learning outcomes students will achieve after completing this course? **1. Students will be able to explain how networks work at the infrastructure and network application levels. 2. Students will be able to explain how networks transfer data. 3. Students will be able to explain how network protocols work to enable communication.** |
| c. What assessment tool or measure will you use to assess student learning? **Quizzes, tests, assignments, research paper, hands-on completion of tasks, and presentations** |
| d. What will students demonstrate, represent, or produce to provide evidence of their learning? **Students will demonstrate their understanding of concepts by actually completing assigned tasks during class so the professor can observe the students completing the task. In addition, students will complete quizzes, tests, assignments, and a presentation.** |
| e. Provide an example or examples of student learning assessment evidence which supports the addition of this course. **To become a Center of Excellence for Cybersecurity for** |

	Homeland Security, this is a mandated course that must be included. To be a qualified cybersecurity student, the student must be trained extensively in networking. (https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)
f.	How does this course fit in the current state of the discipline? Include Arkansas institutional comparisons. If Arkansas educational institutions do not have the course or program provide comparative examples from regional educational institutions. **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included in this degree.**

Arkansas Tech University
REQUEST FOR COURSE ADDITION

TO:	Curriculum Committee
FROM (Initiating Department):	**Department of Computer & Information Science**
DATE SUBMITTED:	6.30.2016

Title	Signature	Date
Department Head **Dr. David Hoelzeman**	*David F. Hoelzeman*	7-6-2016
Dean **Dr. Neal Barlow**	*[signature]*	9 Aug 16
Teacher Education Council (if applicable)		
Graduate Council (if applicable)		
Registrar **Ms. Tammy Weaver**	*[signature]*	8/10/16
Vice President for Academic Affairs **Dr. Mohammed Abdelrahman**		

Course Subject: (e.g., ACCT, ENGL)	Course Number: (e.g., 1003)	Effective Term: **Fall 2017**
CSEC	**1213**	○ Spring ● **Summer I**

Official Catalog Title: (If official title exceeds 30 characters, indicate Banner Title below)

Wireless and Cellular Security

Banner Title: (limited to 30 characters, including spaces, capitalize all letters — this will display on the transcript)

Will this course be cross-listed with another existing course? If so, list course subject and number.

○ Yes ● No

Will this course be cross-listed with a course currently not in the undergraduate or graduate catalog?

If so, list course subject and number. ○ Yes ● No

Is this course repeatable for additional earned hours? ○ Yes ● No How many total hours?

Grading: ● Standard Letter ○ P/F ○ Other

Mode of Instruction (check appropriate box):

● 01 Lecture ○ 02 Lecture/Laboratory ○ 03 Laboratory only

○ 05 Practice Teaching ○ 06 Internship/Practicum ○ 07 Apprenticeship/Externship

○ 08 Independent Study ○ 09 Readings ○ 10 Special Topics

○ 12 Individual Lessons ○ 13 Applied Instruction ○ 16 Studio Course

○ 17 Dissertation ○ 18 Activity Course ○ 19 Seminar ○ 98 Other

Does this course require a fee? ○ Yes ● No How Much? [　　　] Select Fee Type	
If selected other list fee type: [　　　　　]	

Elective	☑ Major	☐ Minor

(If major or minor course, you must complete the Request for Program Change form to add course to program.)

If course is required by major/minor, how frequently will course be offered?

Spring

For the proposed course, attach a syllabus in Word format that includes: **(Items a. through d. should be entered as they should appear in the catalog)**

a. Course subject
b. Course number
c. Catalog course title
d. Catalog description
    1. Arkansas Course Transfer System (ACTS) course number, if applicable
    2. Cross-listing
    3. Offered (e.g., Fall only, Spring only. Do not enter if offer course fall and spring)
    4. Prerequisites
    5. Co-requisites
    6. Description
    7. Notes (e.g., information not in description such as course may be repeated for credit)
    8. Contact Hours if different than lecture (e.g., Lecture three hours, laboratory three hours)
    9. Fees (e.g., $36 art fee)
e. Section for Name of instructor, office hours, contact information (telephone, email)
f. Text required for course
g. Bibliography (supplemental reading list)
h. Justification/rationale for the course
i. Course objectives
j. Description of how course meets general education objectives (courses included in the general education component should show how the course meets one or more of the objectives contained in General Education Objectives listed in undergraduate catalog)
k. Assessment methods (include grading policy with specific equivalents for A, B, C)
l. Policy on absences, cheating, plagiarism, etc.
m. Course content (outline of material to be covered in course).

Will this course require any special resources such as unusual maintenance costs, library resources, special software, distance learning equipment, etc.? **This course will require a dedicated classroom with dedicated equipment.**

Will this course require a special classroom (computer lab, smart classroom, or laboratory)? **dedicated lab**

Attach the Course Addition Assessment Form. The form is located on the Assessment & Institutional Effectiveness web page at http://www.atu.edu/assessment/

If this course will affect other departments, a Departmental Support Form for each affected department must be attached. The form is located on the Curriculum forms web page at http://www.atu.edu/registrar/curriculum_forms.php. **N/A**

Syllabus
Department of Computer & Information Science

CSEC 1213 **Wireless and Cellular Security**

Section # 001

OFFERED Spring

PRE-REQUISITE CSEC 1113 Introduction to Networking

CO-REQUISITES None

DESCRIPTION An overview of wireless and mobile security providing students with practical and theoretical experiences. Topics include threat analysis, security infrastructure, security services, wireless network security components. Topics include, but not limited to:

- Overview of smart phone technologies
- Overview of embedded operating systems (e.g., iOS, Android)
- Wireless technologies (mobile: GSM, WCDMA, CDMA2000, LTE; and Internet: 802.11b/g/n)
- Infrastructure components (e.g., fiber optic network, evolved packet core, PLMN)
- Mobile protocols (SS7, RR, MM, CC)
- Mobile logical channel descriptions (BCCH, SDCCH, RACH, AGCH, etc.)
- Mobile registration procedures
- Mobile encryptions standards
- Mobile identifiers (IMSI, IMEI, MSISDN, ESN, Global Title, E.164)
- Mobile and Location-based Services

NOTES None

COURSE **Office: Corley** **Phone:** **Email:**
INSTRUCTOR All to be completed by faculty of record for this course

OFFICE HOURS To be determined by the faculty of record for this course

TEXTBOOK *Introduction to Wireless and Mobile Systems*, D. Pgrawal, Cengage Learning ISBN: 10: 135058135; ISBN: 13:9781305087132

BIBLIOGRAPHY There is **no** REQUIRED supplemental reading list for this course.

JUSTIFICATION Using wireless and mobile technologies is rapidly increasing. This course

will provide students with a deep understanding of the key technologies which enable the delivery of broadband communications and to the related security issues.

OBJECTIVES   After completing this course, the learner will be able to:
- understand the requirements to build a secure and robust wireless network.
- understand various attack methods used to target and exploit wireless network systems in intrusion detection process and countermeasures.
- explain the major standards and protocols for wireless and mobile systems and applications.
- Strategically design, implement, and maintain wireless and mobile networks.
- demonstrate skills to perform troubleshooting and performance tuning.
- describe the unique security and operational attributes in the wireless and mobile environment and their effects on network communications.
- identify the unique security implications of these effects and how to mitigate security issues associated with them.

Course Topics: Topics include:
- smart phone technologies
- embedded operating systems (e.g., iOS, Android, Windows, etc.)
- wireless technologies (GSM, WCDMA, CDMA2000, LTE, and Internet: 802.11b/g/n)
- infrastructure components
    - fiber optic network
    - evolved packet core
    - PLMN
- mobile protocol
- mobile logical channel descriptions to include, but not limited to:
    - BCCH
    - SDCCH
    - RACH
    - AGCH
- mobile registration procedures
- mobile encryption standards
- mobile identifiers to include, but not limited to:
    - IMSI
    - IMEI
    - MSISDN
    - ESN
    - Global Title, E.164
- mobile and location-based services
- building a secure and robust wireless network

- various attack methods for wireless technology
- design, implement and maintain wireless and mobile networks
- troubleshooting and performance tuning for wireless and mobile networks
- mitigation of security issues associated with mobile security

GENERAL EDUCATION REQUIREMENTS

This course does not meet any of the General Education requirements.

ASSESSMENT

The final grade will consist of 100 percentage points, with the following breakdown:

Homework, Labs, and Assignments	20%
Exams, including Final Exam	80%
Total	*100%*

The following percentage table will be used to assign scores:

90-100% - A   80-89% - B   70-79% - C   60-69% - D   Below 60% - F

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who is requested to leave will not be excused from missing any class or class activities.

PLAGIARISM & CHEATING   Refer to the rules set forth in the student handbook. Students are expected to do their **OWN** work. **Consider your actions carefully**: there will be no tolerance for conduct that even gives the appearance of cheating. Any questions regarding the policy of cheating or conduct in this class should be clarified with the instructor. Cheating will result in a negative score (deduction from the final course grade) and will be reported to appropriate governing bodies, e.g. the CIS ethics committee.

SCHEDULE

Week			Exercises
1	Syllabus, introduction to smart phone technologies		The instructor of record will determine the assignments/exercises and point value for each weekly topic.
2	Smart phone technologies, embedded mobile operating systems		
3	Embedded mobile operating systems		
4	Wireless technologies		
5	Infrastructure components		
6	Infrastructure technologies		
7	Mobile protocol and building secure and robust networks		
8	Mobile logical channel descriptions		
9	Mobile registration procedures		
10	Mobile encryption standards		
11	Mobile identifiers		
12	Mobile and location-based services		
13	Attack strategies and mitigation of security issues		

14	Designing, implementing, and maintenance of mobile and technologies		
15	Attack methods for wireless technologies		

Arkansas Tech University

Course Addition

Assessment Form

Our Mission
Arkansas Tech University, a state-supported institution of higher education, is dedicated to nurturing scholastic development, integrity, and professionalism. The University offers a wide range of traditional and innovative programs which provide a solid educational foundation for life-long learning to a diverse community of learners.

Provide an answer for each question. Your answers are to be typed single spaced.

CSEC 1213 Wireless and Cellular Security

a. How does this course fit with the university mission? **This course is a required course for the proposed BS in Cybersecurity. This course supports the University's mission by being innovative and rigorous for students as they are educated to become professionals in the field of Cybersecurity.**

b. If this course is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable. **The Bachelor of Science in Cybersecurity is not accredited by an accrediting body. However, the Department of Homeland Security provides requirements for programs in Cybersecurity to be designated as a Center of Excellence. This proposed program is rigorous and meets these requirements. This course is a mandated requirement to qualify for designation as a Center of Excellence. (https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)**

Provide up to three student learning outcomes students will achieve after completing this course? **1. Students will be able to understand the requirements to build a secure and robust wireless network. 2. Students will be able to understand various attack methods used to target and exploit wireless network systems in intrusion detection process and countermeasures. 3. Students will be able to explain the major standards and protocols for wireless and mobile systems and applications.**
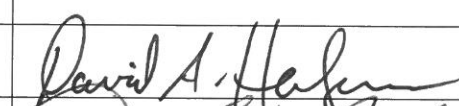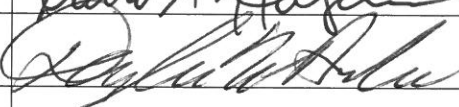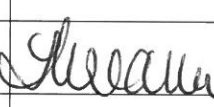
c. What assessment tool or measure will you use to assess student learning? **Quizzes, tests, assignments, research paper, hands-on completion of tasks, and presentations**

d. What will students demonstrate, represent, or produce to provide evidence of their learning? **Students will demonstrate their understanding of concepts by actually completing assigned tasks during class so the professor can observe the students completing the task. In addition, students will complete quizzes, tests, assignments, and a presentation.**

e. Provide an example or examples of student learning assessment evidence which supports the addition of this course. **To become a Center of Excellence for Cybersecurity for**

	Homeland Security, this is a mandated course that must be included. To be a qualified cybersecurity student, the student must be trained extensively in wireless security because the use of wireless is dramatically increasing. (https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)
f.	How does this course fit in the current state of the discipline? Include Arkansas institutional comparisons. If Arkansas educational institutions do not have the course or program provide comparative examples from regional educational institutions. **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included in this degree.**

Arkansas Tech University
REQUEST FOR COURSE ADDITION

TO:	Curriculum Committee
FROM (Initiating Department):	**Department of Computer & Information Science**
DATE SUBMITTED:	6.30.2016

Title	Signature	Date
Department Head **Dr. David Hoelzeman**	*David A. Hoelzeman*	7-6-2016
Dean **Dr. Neal Barlow**	*signature*	9 Aug 16
Teacher Education Council (if applicable)		
Graduate Council (if applicable)		
Registrar **Ms. Tammy Weaver**	*signature*	8/10/16
Vice President for Academic Affairs **Dr. Mohammed Abdelrahman**		

Course Subject: (e.g., ACCT, ENGL) **CSEC**	Course Number: (e.g., 1003) **2113**	Effective Term: **Fall 2017** ◯ Spring ⦿ **Summer I**

Official Catalog Title: (If official title exceeds 30 characters, indicate Banner Title below)

Introduction to Information Systems

Banner Title: (limited to 30 characters, including spaces, capitalize all letters — this will display on the transcript)

Intro to Info Systems

Will this course be cross-listed with another existing course? If so, list course subject and number.

◯ Yes ⦿ No

Will this course be cross-listed with a course currently not in the undergraduate or graduate catalog?

If so, list course subject and number.   ◯ Yes ⦿ No

Is this course repeatable for additional earned hours?   ◯ Yes ⦿ No How many total hours?

Grading: ⦿ Standard Letter   ◯ P/F   ◯ Other

Mode of Instruction (check appropriate box):

⦿ 01 Lecture   ◯ 02 Lecture/Laboratory   ◯ 03 Laboratory only

◯ 05 Practice Teaching   ◯ 06 Internship/Practicum   ◯ 07 Apprenticeship/Externship

◯ 08 Independent Study   ◯ 09 Readings   ◯ 10 Special Topics

◯ 12 Individual Lessons   ◯ 13 Applied Instruction   ◯ 16 Studio Course

◯ 17 Dissertation   ◯ 18 Activity Course   ◯ 19 Seminar   ◯ 98 Other

Does this course require a fee? ○ Yes ◉ No How Much? [   ] Select Fee Type

If selected other list fee type: [   ]

☐ Elective ☑ Major ☐ Minor

(If major or minor course, you must complete the Request for Program Change form to add course to program.)

If course is required by major/minor, how frequently will course be offered?
Every Fall

For the proposed course, attach a syllabus in Word format that includes: **(Items a. through d. should be entered as they should appear in the catalog)**

a. Course subject
b. Course number
c. Catalog course title
d. Catalog description
    1. Arkansas Course Transfer System (ACTS) course number, if applicable
    2. Cross-listing
    3. Offered (e.g., Fall only, Spring only. Do not enter if offer course fall and spring)
    4. Prerequisites
    5. Co-requisites
    6. Description
    7. Notes (e.g., information not in description such as course may be repeated for credit)
    8. Contact Hours if different than lecture (e.g., Lecture three hours, laboratory three hours)
    9. Fees (e.g., $36 art fee)
e. Section for Name of instructor, office hours, contact information (telephone, email)
f. Text required for course
g. Bibliography (supplemental reading list)
h. Justification/rationale for the course
i. Course objectives
j. Description of how course meets general education objectives (courses included in the general education component should show how the course meets one or more of the objectives contained in General Education Objectives listed in undergraduate catalog)
k. Assessment methods (include grading policy with specific equivalents for A, B, C)
l. Policy on absences, cheating, plagiarism, etc.
m. Course content (outline of material to be covered in course).

Will this course require any special resources such as unusual maintenance costs, library resources, special software, distance learning equipment, etc.? **No**

Will this course require a special classroom (computer lab, smart classroom, or laboratory)? **No**

Attach the Course Addition Assessment Form. The form is located on the Assessment & Institutional Effectiveness web page at http://www.atu.edu/assessment/

If this course will affect other departments, a Departmental Support Form for each affected department must be attached. The form is located on the Curriculum forms web page at http://www.atu.edu/registrar/curriculum_forms.php. **N/A**

Syllabus
Department of Computer & Information Science

CSEC 2113	**Introduction to Information Systems**
Section #	001
OFFERED	Fall
PRE-REQUISITE	None
CO-REQUISITES	None
DESCRIPTION	Introduction to the infrastructure of information technology and systems. Topics include computer hardware and software, communication and networks, databases, e-commerce technology, design and development of information systems, Cloud computing, information security, privacy, ethics, and social impact.
NOTES	None
COURSE INSTRUCTOR	**Office** **Phone:** **Email:** To be completed by the faculty of record for this course
OFFICE HOURS	To be determined by faculty of record for this course
TEXTBOOK	*Introduction to Information Systems*, R. Rainer, Wiley Publishing ISBN : 978-1-118-67436-9 (paperback); ISBN : 978-1-118-80213-7 (etext)
BIBLIOGRAPHY	There is **no** REQUIRED supplemental reading list for this course.
JUSTIFICATION	The Internet is a network of networks. To be a knowledgeable, effective cybersecurity specialist, students must gain experience using networks.
OBJECTIVES	After completing this course, the learner will be able to: • describe the major components and their functionality of a computer system. • describe the major components and their function of an information system. • describe the major components and their functionality of a network. • use university and departmental computing resources. • build a simple relational database.

- build a simple web site and describe how the web supports e-commerce.
- identify mechanisms for securing data in a networked environment.
- identify ethical issues related to privacy and security.
- define and employ technical terms related to information technology.
- explain Cloud computing and the security vulnerabilities associated.

COURSE TOPICS

Topics include:
- Introduction to information systems
- Major components of an information system
- Terms/definitions associated with information systems
- Computer hardware
- Computer software
- Networks
  - Components
  - Functionality
- Relational databases
- Website development and components of a website
- eCommerce technology
- Security
- Ethics
- Cloud Computing
- Design and implementation of an information system

GENERAL EDUCATION REQUIREMENTS

This course does not meet any of the General Education requirements.

ASSESSMENT

The final grade will consist of 100 percentage points, with the following breakdown:

Homework, Labs, and Assignments	**20%**
Exams, including Final Exam	**80%**
Total	*100%*

The following percentage table will be used to assign scores:

90-100% - A   80-89% - B   70-79% - C   60-69% - D   Below 60% - F

ATTENDANCE The policy of the University in regard to class absences may be stated as the considered belief that regular class attendance is essential to the maximum growth and development of the student, and that students, in their own interest, are therefore responsible for attending all classes for which they are enrolled.

COURSE CONDUCT **Respect your peers.** Students are expected to respect the rights of others. Students must conduct themselves in a professional manner, and maintain an atmosphere that does not distract other students from learning. Students whose behavior the instructor deems to be disruptive will be asked to leave. This includes, but is not limited to, cell phones ringing, talking on a cell phone or text messaging, use of a laptop computer in a distracting manner, consuming food or beverage, and/or having conversations with other students that are not part of the class instruction. If for some reason you feel that one or more of these items are necessary, you must get express permission from the instructor beforehand. A student who is requested to leave will not be excused from missing any class or class activities.

PLAGIARISM & CHEATING Refer to the rules set forth in the student handbook. Students are expected to do their own work. **Consider your actions carefully**: there will be no tolerance for conduct that even gives the appearance of cheating. Any questions regarding the policy of cheating or conduct in this class should be clarified with the instructor. Cheating will result in a negative score (deduction from the final course grade) and will be reported to appropriate governing bodies, e.g. the CIS ethics committee.

SCHEDULE

Week			Exercises
1	Syllabus, introduction to information systems		The instructor of record will determine the assignments/exercises and point value for each weekly topic.
2	Major components of an information system		
3	Terms associated with information systems		
4	Computer hardware		
5	Computer software		

6	Network (components and functionality)		
7	Relational databases		
8	Website development and components of a website		
9	e-Commerce technology		
10	Security		
11	Security		
12	Ethics		
13	Cloud Computing		
14	Design and implementation of an information system		
15	Design and implementation of an information system		

Arkansas Tech University

Course Addition

Assessment Form

Our Mission
Arkansas Tech University, a state-supported institution of higher education, is dedicated to nurturing scholastic development, integrity, and professionalism. The University offers a wide range of traditional and innovative programs which provide a solid educational foundation for life-long learning to a diverse community of learners.

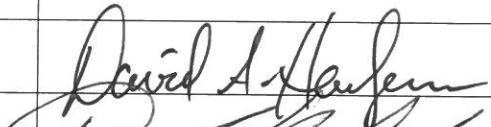| Provide an answer for each question. Your answers are to be typed single spaced. |
| --- |
| ## CSEC 2113 Introduction to Information Systems |
| a. How does this course fit with the university mission? **This course is a required course for the proposed BS in Cybersecurity. This course supports the University's mission by being innovative and rigorous for students as they are educated to become professionals in the field of Cybersecurity.** |
| b. If this course is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable. **The Bachelor of Science in Cybersecurity is not accredited by an accrediting body. However, the Department of Homeland Security provides requirements for programs in Cybersecurity to be designated as a Center of Excellence. This proposed program is rigorous and meets these requirements. This course is a mandated requirement to qualify for designation as a Center of Excellence. (https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)** |
| Provide up to three student learning outcomes students will achieve after completing this course? **1. Students will be able to describe the major components and their functionality of a computer system. 2. Students will be able to describe the major components and their function of an information system. 3. Students will be able to describe the major components and their functionality of a network.** |
| c. What assessment tool or measure will you use to assess student learning? **Quizzes, tests, assignments, and a research paper.** |
| d. What will students demonstrate, represent, or produce to provide evidence of their learning? **Students will complete quizzes, tests, assignments.** |
| e. Provide an example or examples of student learning assessment evidence which supports the addition of this course. **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included. To be a qualified cybersecurity student, the student must be trained extensively in information systems.** |

	(https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)
f.	How does this course fit in the current state of the discipline? Include Arkansas institutional comparisons. If Arkansas educational institutions do not have the course or program provide comparative examples from regional educational institutions. **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included in this degree.**

Arkansas Tech University
REQUEST FOR COURSE ADDITION

TO:	Curriculum Committee
FROM (Initiating Department):	**Department of Computer & Information Science**
DATE SUBMITTED:	6.30.2016

Title	Signature	Date
Department Head **Dr. David Hoelzeman**	*David A. Hoelzeman*	7-6-2016
Dean **Dr. Neal Barlow**	*[signature]*	8 Aug 16
Teacher Education Council (if applicable)		
Graduate Council (if applicable)		
Registrar **Ms. Tammy Weaver**	*[signature]*	8/10/16
Vice President for Academic Affairs **Dr. Mohammed Abdelrahman**		

Course Subject: (e.g., ACCT, ENGL) **CSEC**	Course Number: (e.g., 1003) **2213**	Effective Term: **Fall 2017** ○ Spring ● **Summer I**

Official Catalog Title: (If official title exceeds 30 characters, indicate Banner Title below)

Forensics and Incident Response

Banner Title: (limited to 30 characters, including spaces, capitalize all letters — this will display on the transcript)

Forensics/Incident Response

Will this course be cross-listed with another existing course? If so, list course subject and number.

○ Yes ● No

Will this course be cross-listed with a course currently not in the undergraduate or graduate catalog?

If so, list course subject and number. ○ Yes ● No

Is this course repeatable for additional earned hours? ○ Yes ● No How many total hours?

Grading: ● Standard Letter ○ P/F ○ Other

Mode of Instruction (check appropriate box):

● 01 Lecture ○ 02 Lecture/Laboratory ○ 03 Laboratory only

○ 05 Practice Teaching ○ 06 Internship/Practicum ○ 07 Apprenticeship/Externship

○ 08 Independent Study ○ 09 Readings ○ 10 Special Topics

○ 12 Individual Lessons ○ 13 Applied Instruction ○ 16 Studio Course

○ 17 Dissertation ○ 18 Activity Course ○ 19 Seminar ○ 98 Other

Does this course require a fee? ○ Yes ● No How Much? [ ]			Select Fee Type

If selected other list fee type: [ ]

☐ Elective ☑ Major ☐ Minor

(If major or minor course, you must complete the Request for Program Change form to add course to program.)

If course is required by major/minor, how frequently will course be offered?

Spring

For the proposed course, attach a syllabus in Word format that includes: **(Items a. through d. should be entered as they should appear in the catalog)**

a. Course subject
b. Course number
c. Catalog course title
d. Catalog description
    1. Arkansas Course Transfer System (ACTS) course number, if applicable
    2. Cross-listing
    3. Offered (e.g., Fall only, Spring only. Do not enter if offer course fall and spring)
    4. Prerequisites
    5. Co-requisites
    6. Description
    7. Notes (e.g., information not in description such as course may be repeated for credit)
    8. Contact Hours if different than lecture (e.g., Lecture three hours, laboratory three hours)
    9. Fees (e.g., $36 art fee)
e. Section for Name of instructor, office hours, contact information (telephone, email)
f. Text required for course
g. Bibliography (supplemental reading list)
h. Justification/rationale for the course
i. Course objectives
j. Description of how course meets general education objectives (courses included in the general education component should show how the course meets one or more of the objectives contained in General Education Objectives listed in undergraduate catalog)
k. Assessment methods (include grading policy with specific equivalents for A, B, C)
l. Policy on absences, cheating, plagiarism, etc.
m. Course content (outline of material to be covered in course).

Will this course require any special resources such as unusual maintenance costs, library resources, special software, distance learning equipment, etc.? **Yes**

Will this course require a special classroom (computer lab, smart classroom, or laboratory)? **dedicated lab**

Attach the Course Addition Assessment Form. The form is located on the Assessment & Institutional Effectiveness web page at http://www.atu.edu/assessment/

If this course will affect other departments, a Departmental Support Form for each affected department must be attached. The form is located on the Curriculum forms web page at http://www.atu.edu/registrar/curriculum_forms.php. **N/A**

Syllabus
Department of Computer & Information Science

CSEC 2213	**Forensics and Incident Response**
Section #	001
OFFERED	Spring
PRE-REQUISITE	CSEC 1113 Introduction to Networking
CO-REQUISITES	None

DESCRIPTION   This course teaches the fundamentals of incident response and digital forensics. An overview of operating systems will then lead to a systematic approach to incident response will be reviewed, focusing on a six step process (Preparation, Identification, Containment, Eradication, Recovery, Lessons Learned.)   Preservation of data (dd, FTK imager, DumpIt,) Data recovery (Scalpel, Foremost,) forensic analysis (Sleuthkit, SIFT workstation, Volatiilty, RegRipper, Supertimeline,) Network Forensics (tcpdump, Wireshark, nfsen,) and legal aspects of both investigation and preservation will be discussed.

NOTES   None

COURSE   Office: Phone: Email:
INSTRUCTOR   To be completed by the faculty of record for this course

OFFICE HOURS   To be determined by faculty of record for this course

TEXTBOOK   *Computer Forensics and Cyber Crime*, M. Britz, Pearson Publishing
ISBN-13: 9780133036091; ISBN-13: 9780132677714

BIBLIOGRAPHY   There is **no** REQUIRED supplemental reading list for this course.

JUSTIFICATION   As the world increasingly relies on computers to interact and to conduct business, the ability to conduct a thorough forensic investigation and to report on that investigation are critical.

OBJECTIVES   After completing this course, the learner will be able to:
- analyze a variety of operating systems and applications for computer evidence.
- understand and correctly use forensic software and tools.
- understand the basics of network forensics and incident response.

COURSE TOPICS

Topics include:

- introduction to digital forensics
- introduction to incident response
- overview of operating systems
  - Windows
  - Mac
  - Linux/Unix
- Incident response
  - preparation
  - identification
  - containment
  - eradication
  - recovery
  - lessons learned
- forensics software and tools
- preservation of data
- data recovery
- network forensics
- legal aspects of digital investigations

GENERAL EDUCATION REQUIREMENTS

This course does not meet any of the General Education requirements.

ASSESSMENT

The final grade will consist of 100 percentage points, with the following breakdown:

Homework, Labs, and Assignments	20%
Exams, including final	80%
Total	*100%*

The following percentage table will be used to assign scores:

90-100% - A   80-89% - B   70-79% - C   60-69% - D   Below 60% - F

ATTENDANCE

The policy of the University in regard to class absences may be stated as the considered belief that regular class attendance is essential to the maximum growth and development of the student, and that students, in

their own interest, are therefore responsible for attending all classes for which they are enrolled.

COURSE CONDUCT

Respect your peers. Students are expected to respect the rights of others. Students must conduct themselves in a professional manner, and maintain an atmosphere that does not distract other students from learning. Students whose behavior the instructor deems to be disruptive will be asked to leave. This includes, but is not limited to, cell phones ringing, talking on a cell phone or text messaging, use of a laptop computer in a distracting manner, consuming food or beverage, and/or having conversations with other students that are not part of the class instruction. If for some reason you feel that one or more of these items are necessary, you must get express permission from the instructor beforehand. A student who is requested to leave will not be excused from missing any class or class activities.

PLAGIARISM & CHEATING

Refer to the rules set forth in the student handbook. Students are expected to do their own work. **Consider your actions carefully**: there will be no tolerance for conduct that even gives the appearance of cheating. Any questions regarding the policy of cheating or conduct in this class should be clarified with the instructor. Cheating will result in a negative score (deduction from the final course grade) and will be reported to appropriate governing bodies, e.g. the CIS ethics committee.

SCHEDULE

Week			Exercises
1	Syllabus, introduction to digital forensics		The instructor of record will determine the assignments/exercises and point value for each weekly topic.
2	Introduction to incident response		
3	Overview of operating systems		
4	Overview of operating systems		
5	Overview of operating systems		

6	Incident Response		
7	Incident Response		
8	Incident Response		
9	Incident Response		
10	Forensic Software/tools		
11	Forensic Software/tools		
12	Data Recovery and preservation of data		
13	Network forensics		
14	Legal aspects of digital investigations		
15	Legal aspects of digital investigations		

Arkansas Tech University

Course Addition

Assessment Form

Our Mission
Arkansas Tech University, a state-supported institution of higher education, is dedicated to nurturing scholastic development, integrity, and professionalism. The University offers a wide range of traditional and innovative programs which provide a solid educational foundation for life-long learning to a diverse community of learners.

Provide an answer for each question. Your answers are to be typed single spaced.

CSEC 2213 Forensics and Incident Response

a. How does this course fit with the university mission? **This course is a required course for the proposed BS in Cybersecurity. This course supports the University's mission by being innovative and rigorous for students as they are educated to become professionals in the field of Cybersecurity.**

b. If this course is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable. **The Bachelor of Science in Cybersecurity is not accredited by an accrediting body. However, the Department of Homeland Security provides requirements for programs in Cybersecurity to be designated as a Center of Excellence. This proposed program is rigorous and meets these requirements. This course is a mandated requirement to qualify for designation as a Center of Excellence. (https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)**

Provide up to three student learning outcomes students will achieve after completing this course? **1. Students will be able to analyze a variety of operating systems and applications for computer evidence. 2. Students will be able to understand and correctly use forensic software and tools. 3. Students will be able to understand the basics of network forensics and incident response.**

c. What assessment tool or measure will you use to assess student learning? **Quizzes, tests, assignments, and a research paper.**

d. What will students demonstrate, represent, or produce to provide evidence of their learning? **Students will complete quizzes, tests, assignments.**
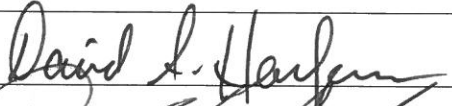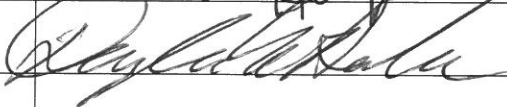
e. Provide an example or examples of student learning assessment evidence which supports the addition of this course. **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included. To be a qualified cybersecurity student, the student must be trained extensively in forensics and incident**

	response. (https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)
f.	How does this course fit in the current state of the discipline? Include Arkansas institutional comparisons. If Arkansas educational institutions do not have the course or program provide comparative examples from regional educational institutions. **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included in this degree.**

Arkansas Tech University
REQUEST FOR COURSE ADDITION

TO:	Curriculum Committee
FROM (Initiating Department):	**Department of Computer & Information Science**
DATE SUBMITTED:	6.30.2016

Title	Signature	Date
Department Head **Dr. David Hoelzeman**	*David L. Hazen*	7-6-2016
Dean **Dr. Neal Barlow**	*[signature]*	9 Aug 16
Teacher Education Council (if applicable)		
Graduate Council (if applicable)		
Registrar **Ms. Tammy Weaver**	*[signature]*	8/10/16
Vice President for Academic Affairs **Dr. Mohammed Abdelrahman**		

Course Subject: (e.g., ACCT, ENGL)	Course Number: (e.g., 1003)	Effective Term: **Fall 2017**
CSEC	**2223**	◌ Spring ⦿ **Summer I**

Official Catalog Title: (If official title exceeds 30 characters, indicate Banner Title below)

Virtualization

Banner Title: (limited to 30 characters, including spaces, capitalize all letters — this will display on the transcript)

Will this course be cross-listed with another existing course? If so, list course subject and number.

◌ Yes ⦿ No

Will this course be cross-listed with a course currently not in the undergraduate or graduate catalog?
If so, list course subject and number. ◌ Yes ⦿ No

Is this course repeatable for additional earned hours? ◌ Yes ⦿ No How many total hours?

Grading: ⦿ Standard Letter   ◌ P/F   ◌ Other

Mode of Instruction (check appropriate box):

⦿ 01 Lecture   ◌ 02 Lecture/Laboratory   ◌ 03 Laboratory only

◌ 05 Practice Teaching ◌ 06 Internship/Practicum   ◌ 07 Apprenticeship/Externship

◌ 08 Independent Study ◌ 09 Readings   ◌ 10 Special Topics

◌ 12 Individual Lessons ◌ 13 Applied Instruction   ◌ 16 Studio Course

◌ 17 Dissertation   ◌ 18 Activity Course   ◌ 19 Seminar   ◌ 98 Other

Does this course require a fee? ○ Yes ● No	How Much?		Select Fee Type

If selected other list fee type:

☐ Elective   ☑ Major   ☐ Minor

(If major or minor course, you must complete the Request for Program Change form to add course to program.)

If course is required by major/minor, how frequently will course be offered?
Spring

For the proposed course, attach a syllabus in Word format that includes: **(Items a. through d. should be entered as they should appear in the catalog)**
a. Course subject
b. Course number
c. Catalog course title
d. Catalog description
    1. Arkansas Course Transfer System (ACTS) course number, if applicable
    2. Cross-listing
    3. Offered (e.g., Fall only, Spring only. Do not enter if offer course fall and spring)
    4. Prerequisites
    5. Co-requisites
    6. Description
    7. Notes (e.g., information not in description such as course may be repeated for credit)
    8. Contact Hours if different than lecture (e.g., Lecture three hours, laboratory three hours)
    9. Fees (e.g., $36 art fee)
e. Section for Name of instructor, office hours, contact information (telephone, email)
f. Text required for course
g. Bibliography (supplemental reading list)
h. Justification/rationale for the course
i. Course objectives
j. Description of how course meets general education objectives (courses included in the general education component should show how the course meets one or more of the objectives contained in General Education Objectives listed in undergraduate catalog)
k. Assessment methods (include grading policy with specific equivalents for A, B, C)
l. Policy on absences, cheating, plagiarism, etc.
m. Course content (outline of material to be covered in course).

Will this course require any special resources such as unusual maintenance costs, library resources, special software, distance learning equipment, etc.? **Yes**

Will this course require a special classroom (computer lab, smart classroom, or laboratory)?
dedicated lab

Attach the Course Addition Assessment Form. The form is located on the Assessment & Institutional Effectiveness web page at http://www.atu.edu/assessment/

If this course will affect other departments, a Departmental Support Form for each affected department must be attached. The form is located on the Curriculum forms web page at http://www.atu.edu/registrar/curriculum_forms.php. **N/A**

Syllabus

Department of Computer & Information Science

CSEC 2223	**Virtualization**
Section #	001
OFFERED	Spring
PRE-REQUISITE	None
CO-REQUISITES	COMS 2703 Survey of Operating Systems CSEC 1113 Introduction to Networking

DESCRIPTION

Virtualization technology has rapidly spread to encompass workstations, servers, infrastructure devices, storage, and networks, and as such has become critical to cyber operations. Specific topics to be covered in this knowledge unit must minimally include, but are not limited to:

- Virtualization techniques
  Virtual machine architectures
  Uses of virtualization for:
    - Security
    - Efficiency
    - Simplicity
    - Resource savings (space, admin overhead)

NOTES

None

COURSE INSTRUCTOR

Office: Corley   **Phone:**   **Email:**
To be determined by the faculty of record for this course

OFFICE HOURS

To be determined by the faculty of record for this course

TEXTBOOK

Data Center Virtualization Fundamentals: Understanding Techniques for Highly Efficient Data Centers, G. Santana, Pearson Publishing
ISBN-13: 9781587143243 (paperback); ISBN-13: 9780133096446 (etext)

BIBLIOGRAPHY

There is **no** REQUIRED supplemental reading list for this course.

JUSTIFICATION

Virtualization technology has rapidly spread to encompass workstations, servers, infrastructure devices, storage, and networks, and as such has become critical to cyber operations.

OBJECTIVES	After completing this course, the learner will be able to:

- demonstrate knowledge of virtualization technologies.
- install server and desktop virtualization.
- virtual machine installation, configuration, and administration.
- converting a server to a virtual server.
- describe backup, recovery, disaster recovery, business continuity, and replication concepts.
- monitor system resource usage and utilization.
- demonstrate understanding of network troubleshooting.

COURSE TOPICS

Topics include:
- introduction to virtualization
- virtualization techniques
- virtual machine architectures
- uses of virtualization
  - security
  - efficiency
  - simplicity
  - resource savings
- installation of virtual server
- installation of virtual desktop
- virtual machine
  - installation
  - configuration
  - administration
- converting a server to a virtual server
- virtual machines
  - backup
  - recovery
  - disaster recovery
  - business continuity
  - replication
- administration
- network troubleshooting

GENERAL EDUCATION REQUIREMENTS

This course does not meet any of the General Education requirements.

ASSESSMENT

The final grade will consist of 100 percentage points, with the following breakdown:

Homework, Labs, and Assignments	20%
Exams, including Final Exam	80%
Total	*100%*

The following percentage table will be used to assign scores:

90-100% - A   80-89% - B   70-79% - C   60-69% - D   Below 60% - F

ATTENDANCE

The policy of the University in regard to class absences may be stated as the considered belief that regular class attendance is essential to the maximum growth and development of the student, and that students, in their own interest, are therefore responsible for attending all classes for which they are enrolled.

COURSE CONDUCT

Respect your peers. Students are expected to respect the rights of others. Students must conduct themselves in a professional manner, and maintain an atmosphere that does not distract other students from learning. Students whose behavior the instructor deems to be disruptive will be asked to leave. This includes, but is not limited to, cell phones ringing, talking on a cell phone or text messaging, use of a laptop computer in a distracting manner, consuming food or beverage, and/or having conversations with other students that are not part of the class instruction. If for some reason you feel that one or more of these items are necessary, you must get express permission from the instructor beforehand. A student who is requested to leave will not be excused from missing any class or class activities.

PLAGIARISM & CHEATING

Refer to the rules set forth in the student handbook. Students are expected to do their **OWN** work. **Consider your actions carefully:** there will be no tolerance for conduct that even gives the appearance of cheating. Any questions regarding the policy of cheating or conduct in this class should be clarified with the instructor. Cheating will result in a negative score (deduction from the final course grade) and will be reported to appropriate governing bodies, e.g. the CIS ethics committee.

SCHEDULE

Week			Exercises
1	Syllabus, introduction to virtualization		The instructor of record will determine the assignments/exercises and point value for each weekly topic.
2	Virtualization techniques		
3	Virtualization techniques		
4	Virtual machine architectures		
5	Virtual machine architectures		
6	Uses of virtualization		
7	Installation of virtual server		
8	Installation of virtual desktop		
9	Virtual machine: Installation Configuration Administration		
10	Converting a server to a virtual server		
11	Virtual machine: Backup, recovery, disaster recovery, business continuity, and replication		
12	Administration		
13	Administration		
14	Network troubleshooting		
15	Network troubleshooting		

Arkansas Tech University

Course Addition

Assessment Form

Our Mission
Arkansas Tech University, a state-supported institution of higher education, is dedicated to nurturing scholastic development, integrity, and professionalism. The University offers a wide range of traditional and innovative programs which provide a solid educational foundation for life-long learning to a diverse community of learners.

Provide an answer for each question. Your answers are to be typed single spaced.
CSEC 2223 Virtualization
a. How does this course fit with the university mission? **This course is a required course for the proposed BS in Cybersecurity. This course supports the University's mission by being innovative and rigorous for students as they are educated to become professionals in the field of Cybersecurity.**
b. If this course is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable. **The Bachelor of Science in Cybersecurity is not accredited by an accrediting body. However, the Department of Homeland Security provides requirements for programs in Cybersecurity to be designated as a Center of Excellence. This proposed program is rigorous and meets these requirements. This course is a mandated requirement to qualify for designation as a Center of Excellence. (https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)**
Provide up to three student learning outcomes students will achieve after completing this course? **1. Students will be able to demonstrate knowledge of virtualization technologies. 2. Students will be able to install server and desktop virtualization. 3. Students will be able to convert a server to a virtual server.**
c. What assessment tool or measure will you use to assess student learning? **Quizzes, tests, assignments, and a research paper.**
d. What will students demonstrate, represent, or produce to provide evidence of their learning? **Students will complete quizzes, tests, assignments.**
e. Provide an example or examples of student learning assessment evidence which supports the addition of this course. **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included. To be a qualified cybersecurity student, the student must be trained extensively in virtualization.**

	(https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)
f.	How does this course fit in the current state of the discipline? Include Arkansas institutional comparisons. If Arkansas educational institutions do not have the course or program provide comparative examples from regional educational institutions. . **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included in this degree. The use of virtualization is dramatically increasing.**

Arkansas Tech University
REQUEST FOR COURSE ADDITION

TO:	Curriculum Committee
FROM (Initiating Department):	**Department of Computer & Information Science**
DATE SUBMITTED:	6.30.2016

Title	Signature	Date
Department Head **Dr. David Hoelzeman**	*David L. Hoelzeman*	7-6-2016
Dean **Dr. Neal Barlow**	*(signature)*	9 Aug/6
Teacher Education Council (if applicable)		
Graduate Council (if applicable)		
Registrar **Ms. Tammy Weaver**	*(signature)*	8/10/16
Vice President for Academic Affairs **Dr. Mohammed Abdelrahman**		

Course Subject: (e.g., ACCT, ENGL) **CSEC**	Course Number: (e.g., 1003) **3113**	Effective Term: **Fall 2017** ◌ Spring ◉ **Summer I**

Official Catalog Title: (If official title exceeds 30 characters, indicate Banner Title below)

Assembly Programming

Banner Title: (limited to 30 characters, including spaces, capitalize all letters — this will display on the transcript)

Will this course be cross-listed with another existing course? If so, list course subject and number.
◌ Yes ◉ No

Will this course be cross-listed with a course currently not in the undergraduate or graduate catalog?
If so, list course subject and number. ◌ Yes ◉ No

Is this course repeatable for additional earned hours? ◌ Yes ◉ No How many total hours?

Grading: ◉ Standard Letter ◌ P/F ◌ Other

Mode of Instruction (check appropriate box):

◉ 01 Lecture　　◌ 02 Lecture/Laboratory　　◌ 03 Laboratory only

◌ 05 Practice Teaching　　◌ 06 Internship/Practicum　　◌ 07 Apprenticeship/Externship

◌ 08 Independent Study　　◌ 09 Readings　　◌ 10 Special Topics

◌ 12 Individual Lessons　　◌ 13 Applied Instruction　　◌ 16 Studio Course

◌ 17 Dissertation　　◌ 18 Activity Course　　◌ 19 Seminar　　◌ 98 Other

Does this course require a fee? ○ Yes ⦿ No How Much? [ ]	Select Fee Type

If selected other list fee type: [ ]

☐ Elective ☑ Major ☐ Minor
(If major or minor course, you must complete the Request for Program Change form to add course to program.)

If course is required by major/minor, how frequently will course be offered?
Fall

For the proposed course, attach a syllabus in Word format that includes: **(Items a. through d. should be entered as they should appear in the catalog)**
a. Course subject
b. Course number
c. Catalog course title
d. Catalog description
1. Arkansas Course Transfer System (ACTS) course number, if applicable
2. Cross-listing
3. Offered (e.g., Fall only, Spring only. Do not enter if offer course fall and spring)
4. Prerequisites
5. Co-requisites
6. Description
7. Notes (e.g., information not in description such as course may be repeated for credit)
8. Contact Hours if different than lecture (e.g., Lecture three hours, laboratory three hours)
9. Fees (e.g., $36 art fee)
e. Section for Name of instructor, office hours, contact information (telephone, email)
f. Text required for course
g. Bibliography (supplemental reading list)
h. Justification/rationale for the course
i. Course objectives
j. Description of how course meets general education objectives (courses included in the general education component should show how the course meets one or more of the objectives contained in General Education Objectives listed in undergraduate catalog)
k. Assessment methods (include grading policy with specific equivalents for A, B, C)
l. Policy on absences, cheating, plagiarism, etc.
m. Course content (outline of material to be covered in course).

Will this course require any special resources such as unusual maintenance costs, library resources, special software, distance learning equipment, etc.? **No**

Will this course require a special classroom (computer lab, smart classroom, or laboratory)? **No**

Attach the Course Addition Assessment Form. The form is located on the Assessment & Institutional Effectiveness web page at http://www.atu.edu/assessment/

If this course will affect other departments, a Departmental Support Form for each affected department must be attached. The form is located on the Curriculum forms web page at http://www.atu.edu/registrar/curriculum_forms.php. **N/A**

Syllabus
Department of Computer & Information Science

CSEC 3113	**Assembly Programming**
Section #	001
OFFERED	Fall
PRE-REQUISITE	COMS 2104 Foundations of Computer Programming COMS 2903 Discrete Structures for Technical Majors
CO-REQUISITES	None
DESCRIPTION	An introduction to the study of the basic structure and language of machines. Topics include basic concepts of Boolean algebra, number systems, language, addressing techniques, data representation, file organization, symbolic coding and assembly systems, use of macros, batch operation and job handling.
NOTES	None

COURSE INSTRUCTOR	**Office:** **Phone:** **Email:** To be determined by the faculty of record for this course
OFFICE HOURS	To be determined by the faculty of record for this course
TEXTBOOK	*Assembly Language Step-by-Step*; J. Duntemann, Wiley Publishing ISBN: 978-0-470-49702-9
BIBLIOGRAPHY JUSTIFICATION	There is **no** REQUIRED supplemental reading list for this course. Trained cybersecurity experts need to understand the basic microprocessor and small computer architecture and organization because they can control the operation through use of very low-level assembly programming. The information learned in this course will supplement the student's knowledge of high-level programming languages.

OBJECTIVES   After completing this course, the learner will be able to:
- identify the major components of a computer, describe the steps involved in assembling, linking, and executing a program.
- given a request to perform a certain task (for example: keyboard program in assembly language to perform the given task and run them.
- trace machine execution as an aid in program debugging.

COURSE TOPICS   Topics include:

- basic structure of a computer
- basic language of a computer
- basic concepts of Boolean algebra
- number systems
- addressing techniques
- data representation
- file organization
- symbolic coding and assembly systems
- use of macros
- batch operation
- job handling
- steps involved in assembling, linking, and execution of a program
- performance of assigned task in assembly programming with end result of a program that runs correctly

GENERAL EDUCATION REQUIREMENTS

This course does not meet any of the General Education requirements.

ASSESSMENT

The final grade will consist of 100 percentage points, with the following breakdown:

Homework, Labs, and Assignments	20%
Exams, including Final Exam	80%
Total	*100%*

The following percentage table will be used to assign scores:

90-100% - A   80-89% - B   70-79% - C   60-69% - D   Below 60% - F

ATTENDANCE

The policy of the University in regard to class absences may be stated as the considered belief that regular class attendance is essential to the maximum growth and development of the student, and that students, in their own interest, are therefore responsible for attending all classes for which they are enrolled.

COURSE CONDUCT

Respect your peers. Students are expected to respect the rights of others. Students must conduct themselves in a professional manner, and maintain an atmosphere that does not distract other students from learning. Students whose behavior the instructor deems to be disruptive will be asked to leave. This includes, but is not limited to, cell phones ringing,

talking on a cell phone or text messaging, use of a laptop computer in a distracting manner, consuming food or beverage, and/or having conversations with other students that are not part of the class instruction. If for some reason you feel that one or more of these items are necessary, you must get express permission from the instructor beforehand. A student who is requested to leave will not be excused from missing any class or class activities.

PLAGIARISM & CHEATING

Refer to the rules set forth in the student handbook. Students are expected to do their **OWN** work. **Consider your actions carefully**: there will be no tolerance for conduct that even gives the appearance of cheating. Any questions regarding the policy of cheating or conduct in this class should be clarified with the instructor. Cheating will result in a negative score (deduction from the final course grade) and will be reported to appropriate governing bodies, e.g. the CIS ethics committee.

SCHEDULE

Week			Exercises
1	Syllabus, introduction to basic structure of a computer		The instructor of record will determine the assignments/exercises and point value for each weekly topic.
2	Basic structure of a computer		
3	Basic language of a computer		
4	Concepts of Boolean algebra		
5	Number system2		
6	Addressing techniques		
7	Data representation		
8	File organization		
9	Symbolic coding and assembly systems		
10	Use of macros		
11	Batch operation		
12	Job handling		

13	Steps involved in assembling, linking, and execution of a program		
14	Performance of assigned tasks in assembly programming with the end result of a program that runs correctly		
15	Performance of assigned tasks in assembly programming with the end result of a program that runs correctly		

Arkansas Tech University

Course Addition

Assessment Form

Our Mission
Arkansas Tech University, a state-supported institution of higher education, is dedicated to nurturing scholastic development, integrity, and professionalism. The University offers a wide range of traditional and innovative programs which provide a solid educational foundation for life-long learning to a diverse community of learners.

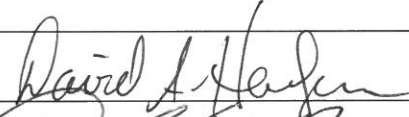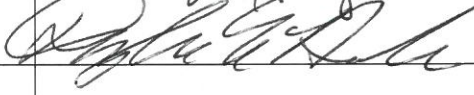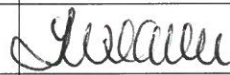| Provide an answer for each question. Your answers are to be typed single spaced. |
| --- |
| ## CSEC 3113 Assembly Programming |
| a. How does this course fit with the university mission? **This course is a required course for the proposed BS in Cybersecurity. This degree supports the University's mission by being innovative and rigorous as individuals are educated to become professionals in the field of Cybersecurity.** |
| b. If this course is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable. **The Bachelor of Science in Cybersecurity is not accredited by an accrediting body. However, the Department of Homeland Security provides requirements for programs in Cybersecurity to be designated as a Center of Excellence. This proposed program is rigorous and meets these requirements. This course is a mandated requirement to qualify for designation as a Center of Excellence. (https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)** |
| Provide up to three student learning outcomes students will achieve after completing this course? **1. Students will be able to identify the major components of a computer and describe the steps involved in assembling, linking, and executing a program. 2. Students will be able to trace machine execution as an aid in program debugging. 3. Students will be able to write a program in assembly language to perform assigned tasks.** |
| c. What assessment tool or measure will you use to assess student learning? **Quizzes, tests, assignments, research paper, hands-on completion of tasks, and presentations** |
| d. What will students demonstrate, represent, or produce to provide evidence of their learning? **Students will demonstrate their understanding of concepts by actually completing assigned tasks during class so the professor can observe the students completing the task. In addition, students will complete quizzes, tests, assignments, and a presentation.** |

e.	Provide an example or examples of student learning assessment evidence which supports the addition of this course. **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included. To be a qualified cybersecurity student, the student must be trained extensively in networking. (https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)**
f.	How does this course fit in the current state of the discipline? Include Arkansas institutional comparisons. If Arkansas educational institutions do not have the course or program provide comparative examples from regional educational institutions. **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included in this degree.**

Arkansas Tech University
REQUEST FOR COURSE ADDITION

TO:	Curriculum Committee
FROM (Initiating Department):	**Department of Computer & Information Science**
DATE SUBMITTED:	6.30.2016

Title	Signature	Date
Department Head **Dr. David Hoelzeman**	*David A. Hoelzeman*	7-6-2016
Dean **Dr. Neal Barlow**	*signature*	9 Aug 16
Teacher Education Council (if applicable)		
Graduate Council (if applicable)		
Registrar **Ms. Tammy Weaver**	*signature*	8/10/16
Vice President for Academic Affairs **Dr. Mohammed Abdelrahman**		

Course Subject: (e.g., ACCT, ENGL)	Course Number: (e.g., 1003)	Effective Term: **Fall 2017**
CSEC	**3123**	◯ Spring ⦿ **Summer I**

Official Catalog Title: (If official title exceeds 30 characters, indicate Banner Title below)

Cyber Defense I

Banner Title: (limited to 30 characters, including spaces, capitalize all letters — this will display on the transcript)

Will this course be cross-listed with another existing course? If so, list course subject and number.

◯ Yes ⦿ No

Will this course be cross-listed with a course currently not in the undergraduate or graduate catalog?

If so, list course subject and number. ◯ Yes ⦿ No

Is this course repeatable for additional earned hours? ◯ Yes ⦿ No How many total hours?

Grading: ⦿ Standard Letter ◯ P/F ◯ Other

Mode of Instruction (check appropriate box):

⦿ 01 Lecture   ◯ 02 Lecture/Laboratory   ◯ 03 Laboratory only

◯ 05 Practice Teaching   ◯ 06 Internship/Practicum   ◯ 07 Apprenticeship/Externship

◯ 08 Independent Study   ◯ 09 Readings   ◯ 10 Special Topics

◯ 12 Individual Lessons   ◯ 13 Applied Instruction   ◯ 16 Studio Course

◯ 17 Dissertation   ◯ 18 Activity Course   ◯ 19 Seminar   ◯ 98 Other

Does this course require a fee? ◯ Yes ◉ No How Much? [   ] Select Fee Type
If selected other list fee type: [   ]

☐ Elective	☑ Major	☐ Minor

(If major or minor course, you must complete the Request for Program Change form to add course to program.)

If course is required by major/minor, how frequently will course be offered?

Fall

For the proposed course, attach a syllabus in Word format that includes: **(Items a. through d. should be entered as they should appear in the catalog)**

a. Course subject
b. Course number
c. Catalog course title
d. Catalog description
    1. Arkansas Course Transfer System (ACTS) course number, if applicable
    2. Cross-listing
    3. Offered (e.g., Fall only, Spring only. Do not enter if offer course fall and spring)
    4. Prerequisites
    5. Co-requisites
    6. Description
    7. Notes (e.g., information not in description such as course may be repeated for credit)
    8. Contact Hours if different than lecture (e.g., Lecture three hours, laboratory three hours)
    9. Fees (e.g., $36 art fee)
e. Section for Name of instructor, office hours, contact information (telephone, email)
f. Text required for course
g. Bibliography (supplemental reading list)
h. Justification/rationale for the course
i. Course objectives
j. Description of how course meets general education objectives (courses included in the general education component should show how the course meets one or more of the objectives contained in General Education Objectives listed in undergraduate catalog)
k. Assessment methods (include grading policy with specific equivalents for A, B, C)
l. Policy on absences, cheating, plagiarism, etc.
m. Course content (outline of material to be covered in course).

Will this course require any special resources such as unusual maintenance costs, library resources, special software, distance learning equipment, etc.? **Yes**

Will this course require a special classroom (computer lab, smart classroom, or laboratory)?
a dedicated lab

Attach the Course Addition Assessment Form. The form is located on the Assessment & Institutional Effectiveness web page at http://www.atu.edu/assessment/

If this course will affect other departments, a Departmental Support Form for each affected department must be attached. The form is located on the Curriculum forms web page at http://www.atu.edu/registrar/curriculum_forms.php. **N/A**

Syllabus
Department of Computer & Information Science

CSEC 3123	**Cyber Defense I**
Section #	001
OFFERED	Fall
PRE-REQUISITE	CSEC 2223 Virtualization
CO-REQUISITES	None

DESCRIPTION

This course introduces the fundamental principles of cyber defense. Topics covered include: security fundamental principles, vulnerability assessment, intrusion detection, cryptography protocols, network defense, trust relationships, and legal and ethical issues in computer security. A balance between theory and current practice will be presented. Topics to be covered include, but are not limited to:

- identification of reconnaissance operations
- anomaly/intrusion detection
- anomaly identification
- identification of command and control operations
- identification of data exfiltration activities
- identifying malicious code based on signatures, behavior and artifacts
- network security techniques and components (e.g., firewalls, IDS, etc.)
- cryptography (include PKI cryptography) and its uses in cybersecurity
- malicious activity detection
- system security architectures and concepts
- defense in depth
- virtualization.

NOTES

None

COURSE INSTRUCTOR

Office: Phone: Email:
To be determined by the faculty of record for this course

OFFICE HOURS

To be determined by the faculty of record for this course

TEXTBOOK

Cyber Threat!: How to Manage the Growing Risk of Cyber Attacks, M. Ulsch, Wiley Publishing; 978-1-118-83635-4

BIBLIOGRAPHY

There is **no** REQUIRED supplemental reading list for this course.

JUSTIFICATION	To be competent in the field of cybersecurity, it is essential that graduates have a thorough understanding of cybersecurity and of techniques to detect and to protect networks and computing systems.

OBJECTIVES

After completing this course, the learner will be able to:

- describe methods used to defend computer systems and networks.
- identify vulnerabilities and determine appropriate measures to reduce or eliminate vulnerabilities.
  describe basic use of cryptography.
- discuss and implement examples of layers of cyber defense.
- understand legal and ethical issues associated with cyber defense.

COURSE TOPICS

Topics include

- identification of reconnaissance operations
- anomaly/intrusion detection
- anomaly identification
- identification of command and control operations
- identification of data exfiltration activities
- identifying malicious code based on signatures, behavior and artifacts
- network security techniques and components (e.g., firewalls, IDS, etc.)
- cryptography (include PKI cryptography) and its uses in cybersecurity
- malicious activity detection
- system security architectures and concepts
- defense in depth
- virtualization

GENERAL EDUCATION REQUIREMENTS

This course does not meet any of the General Education requirements.

ASSESSMENT

The final grade will consist of 100 percentage points, with the following breakdown:

Homework, Labs, and Assignments	**20%**
Exams, including Final Exam	**80%**
Total	*100%*

The following percentage table will be used to assign scores:

90-100% - A   80-89% - B   70-79% - C   60-69% - D   Below 60% - F

ATTENDANCE

The policy of the University in regard to class absences may be stated as the considered belief that regular class attendance is essential to the maximum growth and development of the student, and that students, in their own interest, are therefore responsible for attending all classes for which they are enrolled.

COURSE CONDUCT

Respect your peers. Students are expected to respect the rights of others. Students must conduct themselves in a professional manner, and maintain an atmosphere that does not distract other students from learning. Students whose behavior the instructor deems to be disruptive will be asked to leave. This includes, but is not limited to, cell phones ringing, talking on a cell phone or text messaging, use of a laptop computer in a distracting manner, consuming food or beverage, and/or having conversations with other students that are not part of the class instruction. If for some reason you feel that one or more of these items are necessary, you must get express permission from the instructor beforehand. A student who is requested to leave will not be excused from missing any class or class activities.

PLAGIARISM & CHEATING

Refer to the rules set forth in the student handbook. Students are expected to do their **OWN** work. **Consider your actions carefully**: there will be no tolerance for conduct that even gives the appearance of cheating. Any questions regarding the policy of cheating or conduct in this class should be clarified with the instructor. Cheating will result in a negative score (deduction from the final course grade) and will be reported to appropriate governing bodies, e.g. the CIS ethics committee.

SCHEDULE

Week			Exercises
1	Syllabus, introduction to cyber defense		The instructor of record will determine the assignments/exercises and point value for each weekly topic.
2	Identification of reconnaissance operations		
3	Anomaly/intrusion detection		
4	Anomaly/intrusion detection		

5	Anomaly identification		
6	Identification of command and control operations		
7	Identification of data exfiltration activities		
8	Identifying malicious code		
9	Identifying malicious code		
10	Network security		
11	Cryptography		
12	System security architectures and concepts		
13	Defense		
14	Defense		
15	Virtualization		

Arkansas Tech University

Course Addition

Assessment Form

Our Mission
Arkansas Tech University, a state-supported institution of higher education, is dedicated to nurturing scholastic development, integrity, and professionalism. The University offers a wide range of traditional and innovative programs which provide a solid educational foundation for life-long learning to a diverse community of learners.

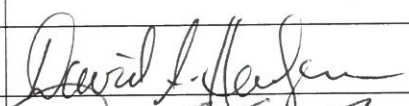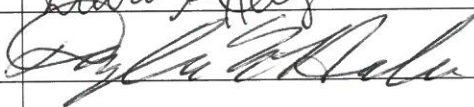| Provide an answer for each question. Your answers are to be typed single spaced. |
|---|
| **CSEC 3123 Cyber Defense I** |
| a. How does this course fit with the university mission? **This course is a required course for the proposed BS in Cybersecurity. This course supports the University's mission by being innovative and rigorous for students as they are educated to become professionals in the field of Cybersecurity.** |
| b. If this course is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable. **The Bachelor of Science in Cybersecurity is not accredited by an accrediting body. However, the Department of Homeland Security provides requirements for programs in Cybersecurity to be designated as a Center of Excellence. This proposed program is rigorous and meets these requirements. This course is a mandated requirement to qualify for designation as a Center of Excellence. (https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)** |
| Provide up to three student learning outcomes students will achieve after completing this course? **1. Students will be able to describe methods used to defend computer systems and networks. 2. Students will be able to identify vulnerabilities and determine appropriate measures to reduce or eliminate vulnerabilities. Students will be able to discuss and implement examples of layers of cyber defense.** |
| c. What assessment tool or measure will you use to assess student learning? **Quizzes, tests, assignments, and a research paper.** |
| d. What will students demonstrate, represent, or produce to provide evidence of their learning? **Students will complete quizzes, tests, assignments.** |
| e. Provide an example or examples of student learning assessment evidence which supports the addition of this course. **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included. To be a qualified cybersecurity student, the student must be trained extensively in cyber defense.** |

	(https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)
f.	How does this course fit in the current state of the discipline? Include Arkansas institutional comparisons. If Arkansas educational institutions do not have the course or program provide comparative examples from regional educational institutions. **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included in this degree.**

Arkansas Tech University
REQUEST FOR COURSE ADDITION

TO:	Curriculum Committee
FROM (Initiating Department):	**Department of Computer & Information Science**
DATE SUBMITTED:	6.30.2016

Title	Signature	Date
Department Head **Dr. David Hoelzeman**	*[signature]*	7-6-2016
Dean **Dr. Neal Barlow**	*[signature]*	9 Aug 16
Teacher Education Council (if applicable)		
Graduate Council (if applicable)		
Registrar **Ms. Tammy Weaver**	*[signature]*	8/10/16
Vice President for Academic Affairs **Dr. Mohammed Abdelrahman**		

Course Subject: (e.g., ACCT, ENGL) **CSEC**	Course Number: (e.g., 1003) **3223**	Effective Term: **Fall 2017** ○ Spring ● Summer I

Official Catalog Title: (If official title exceeds 30 characters, indicate Banner Title below)

Programming Embedded Systems

Banner Title: (limited to 30 characters, including spaces, capitalize all letters — this will display on the transcript)

Will this course be cross-listed with another existing course? If so, list course subject and number.

○ Yes ● No

Will this course be cross-listed with a course currently not in the undergraduate or graduate catalog?
If so, list course subject and number. ○ Yes ● No

Is this course repeatable for additional earned hours? ○ Yes ● No How many total hours?

Grading: ● Standard Letter ○ P/F ○ Other

Mode of Instruction (check appropriate box):

● 01 Lecture   ○ 02 Lecture/Laboratory   ○ 03 Laboratory only

○ 05 Practice Teaching ○ 06 Internship/Practicum   ○ 07 Apprenticeship/Externship

○ 08 Independent Study ○ 09 Readings   ○ 10 Special Topics

○ 12 Individual Lessons ○ 13 Applied Instruction   ○ 16 Studio Course

○ 17 Dissertation   ○ 18 Activity Course   ○ 19 Seminar   ○ 98 Other

Does this course require a fee?	○ Yes	◉ No	How Much?		Select Fee Type

If selected other list fee type: |

☐ Elective   ☑ Major   ☐ Minor

(If major or minor course, you must complete the Request for Program Change form to add course to program.)

If course is required by major/minor, how frequently will course be offered?

| Spring

For the proposed course, attach a syllabus in Word format that includes: **(Items a. through d. should be entered as they should appear in the catalog)**

a. Course subject
b. Course number
c. Catalog course title
d. Catalog description
    1. Arkansas Course Transfer System (ACTS) course number, if applicable
    2. Cross-listing
    3. Offered (e.g., Fall only, Spring only. Do not enter if offer course fall and spring)
    4. Prerequisites
    5. Co-requisites
    6. Description
    7. Notes (e.g., information not in description such as course may be repeated for credit)
    8. Contact Hours if different than lecture (e.g., Lecture three hours, laboratory three hours)
    9. Fees (e.g., $36 art fee)
e. Section for Name of instructor, office hours, contact information (telephone, email)
f. Text required for course
g. Bibliography (supplemental reading list)
h. Justification/rationale for the course
i. Course objectives
j. Description of how course meets general education objectives (courses included in the general education component should show how the course meets one or more of the objectives contained in General Education Objectives listed in undergraduate catalog)
k. Assessment methods (include grading policy with specific equivalents for A, B, C)
l. Policy on absences, cheating, plagiarism, etc.
m. Course content (outline of material to be covered in course).

Will this course require any special resources such as unusual maintenance costs, library resources, special software, distance learning equipment, etc.? **No**

Will this course require a special classroom (computer lab, smart classroom, or laboratory)?
No

Attach the Course Addition Assessment Form. The form is located on the Assessment & Institutional Effectiveness web page at http://www.atu.edu/assessment/

If this course will affect other departments, a Departmental Support Form for each affected department must be attached. The form is located on the Curriculum forms web page at http://www.atu.edu/registrar/curriculum_forms.php. **N/A**

Syllabus
Department of Computer & Information Science

CSEC 3223	**Programming Embedded Systems**
Section #	None
OFFERED	Spring
PRE-REQUISITE	COMS 2213 Data Structures CSEC 3113 Assembly Programming
CO-REQUISITES	None
DESCRIPTION	The course involves the design, coding, debugging, and implementation of programs for securing embedded systems. Embedded software vulnerabilities and secure programming methods are introduced through hands-on projects. Buffer overflow attacks are discussed. After completing the course content mapped to this knowledge unit, students will be able to develop programs that can be embedded into an OS kernel, such as a device driver, with the required complexity and sophistication to implement exploits for discovered vulnerabilities. Students will be able to write a program that implements a network stack to manage network communications.
NOTES	None
COURSE INSTRUCTOR	**Office:** **Phone:** **Email:** To be determined by the faculty of record for this course
OFFICE HOURS	To be determined by the faculty of record for this course
TEXTBOOK	*Programming Embedded Systems: With C and GNU Development Tools*, 2nd edition, M. Barr, O'Reilly Publishing, ISBN-13: 978-0596009830 ISBN-10: 0596009836
BIBLIOGRAPHY	There is **no** REQUIRED supplemental reading list for this course.
JUSTIFICATION	Students need to gain an understanding of the process of writing low-level programs that interact directly with a computer's operating system and hardware.

OBJECTIVES

After completing this course, the learner will be able to:
- use a computer to input, compile, and run a C program within an embedded system.
- trace by hand C code that includes assignments, selections, loops, and procedures.
- write a program or procedure given its input/output specifications.
- implement iterative methods for numerical calculation and data processing.
- design and implement a secure program for an embedded system.

COURSE TOPICS

Topics include:
- designing programs for securing embedded systems
- coding programs for securing embedded systems
- implementing programs for securing embedded systems
- vulnerabilities associated with embedded systems
- buffer overflow attacks
- development of programs that can be embedded into the OS kernel
- tracing by hand C code that includes assignments, selections, loops, and procedures
- write a program or procedure given its input/output specifications
- implementation of iterative methods for numerical calculations and data processing

GENERAL EDUCATION REQUIREMENTS

This course does not meet any of the General Education requirements.

ASSESSMENT

The final grade will consist of 100 percentage points, with the following breakdown:

Homework, Labs, & Assignments	**20%**
Exams, including Final Exam	**80%**
Total	*100%*

The following percentage table will be used to assign scores:

90-100% - A   80-89% - B   70-79% - C   60-69% - D   Below 60% - F

ATTENDANCE   The policy of the University in regard to class absences may be stated as the considered belief that regular class attendance is essential to the maximum growth and development of the student, and that students, in their own interest, are therefore responsible for attending all classes for which they are enrolled.

COURSE CONDUCT   **Respect your peers.** Students are expected to respect the rights of others. Students must conduct themselves in a professional manner, and maintain an atmosphere that does not distract other students from learning. Students whose behavior the instructor deems to be disruptive will be asked to leave. This includes, but is not limited to, cell phones ringing, talking on a cell phone or text messaging, use of a laptop computer in a distracting manner, consuming food or beverage, and/or having conversations with other students that are not part of the class instruction. If for some reason you feel that one or more of these items are necessary, you must get express permission from the instructor beforehand. A student who is requested to leave will not be excused from missing any class or class activities.

PLAGIARISM & CHEATING   Refer to the rules set forth in the student handbook. Students are expected to do their **OWN** work. **Consider your actions carefully**: there will be no tolerance for conduct that even gives the appearance of cheating. Any questions regarding the policy of cheating or conduct in this class should be clarified with the instructor. Cheating will result in a negative score (deduction from the final course grade) and will be reported to appropriate governing bodies, e.g. the CIS ethics committee.

SCHEDULE

Week			Exercises
1	Syllabus, introduction to programming embedded systems		The instructor of record will determine the assignments/exercises and point value for each weekly topic.
2	Designing programs for securing embedded systems		
3	Designing programs for securing embedded systems		
4	Coding programs for securing embedded systems		

5	Implementing programs for securing embedded systems		
6	Vulnerabilities		
7	Buffer overflow attacks		
8	Development of programs that can be embedded into the OS kernel		
9	Development of program that can be embedded into the OS kernel		
10	Tracking by hand C code that includes assignments, selections, loops, and procedures		
11	Write a program or procedure given its input/output specifications		
12	Write a program or procedure given its input/output specifications		
13	Implementation of iterative methods for numerical calculations and data processing		
14	Implementation of iterative methods for numerical calculations and data processing		
15	Implementation of iterative methods for numerical calculations and data processing		

Arkansas Tech University

Course Addition

Assessment Form

Our Mission
Arkansas Tech University, a state-supported institution of higher education, is dedicated to nurturing scholastic development, integrity, and professionalism. The University offers a wide range of traditional and innovative programs which provide a solid educational foundation for life-long learning to a diverse community of learners.

Provide an answer for each question. Your answers are to be typed single spaced.

CSEC 3223 Programming Embedded Systems

a. How does this course fit with the university mission? **This course is a required course for the proposed BS in Cybersecurity. This course supports the University's mission by being innovative and rigorous for students as they are educated to become professionals in the field of Cybersecurity.**

b. If this course is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable. **The Bachelor of Science in Cybersecurity is not accredited by an accrediting body. However, the Department of Homeland Security provides requirements for programs in Cybersecurity to be designated as a Center of Excellence. This proposed program is rigorous and meets these requirements. This course is a mandated requirement to qualify for designation as a Center of Excellence. (https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)**

Provide up to three student learning outcomes students will achieve after completing this course? **1. Students will be able to use a computer to input, compile, and run a C program within an embedded system. 2. Students will be able to trace by hand C code that includes assignments, selections, loops, and procedures. 3. Students will be able to write a program or procedure given its input/output specifications.**

c. What assessment tool or measure will you use to assess student learning? **Quizzes, tests, assignments, and a research paper.**

d. What will students demonstrate, represent, or produce to provide evidence of their learning? **Students will complete quizzes, tests, assignments.**
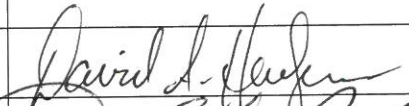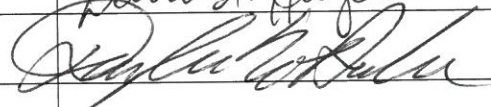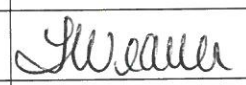
e. Provide an example or examples of student learning assessment evidence which supports the addition of this course. **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included. To be a qualified cybersecurity student, the student must understand C programming.**

	(https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)
f.	How does this course fit in the current state of the discipline? Include Arkansas institutional comparisons. If Arkansas educational institutions do not have the course or program provide comparative examples from regional educational institutions. . **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included in this degree.**

Arkansas Tech University
REQUEST FOR COURSE ADDITION

TO:	Curriculum Committee
FROM (Initiating Department):	**Department of Computer & Information Science**
DATE SUBMITTED:	6.30.2016

Title	Signature	Date
Department Head **Dr. David Hoelzeman**	*David A. Hoelzeman*	7-6-2016
Dean **Dr. Neal Barlow**	*signature*	9 Aug 16
Teacher Education Council (if applicable)		
Graduate Council (if applicable)		
Registrar **Ms. Tammy Weaver**	*S Weaver*	8/10/16
Vice President for Academic Affairs **Dr. Mohammed Abdelrahman**		

Course Subject: (e.g., ACCT, ENGL) **CSEC**	Course Number: (e.g., 1003) **3233**	Effective Term: **Fall 2017** ⚪ Spring ⦿ **Summer I**

Official Catalog Title: (If official title exceeds 30 characters, indicate Banner Title below)

Cyber Defense II

Banner Title: (limited to 30 characters, including spaces, capitalize all letters — this will display on the transcript)

Will this course be cross-listed with another existing course? If so, list course subject and number.

⚪ Yes ⦿ No

Will this course be cross-listed with a course currently not in the undergraduate or graduate catalog?

If so, list course subject and number. ⚪ Yes ⦿ No

Is this course repeatable for additional earned hours? ⚪ Yes ⦿ No How many total hours?

Grading: ⦿ Standard Letter ⚪ P/F ⚪ Other

Mode of Instruction (check appropriate box):

⦿ 01 Lecture ⚪ 02 Lecture/Laboratory ⚪ 03 Laboratory only

⚪ 05 Practice Teaching ⚪ 06 Internship/Practicum ⚪ 07 Apprenticeship/Externship

⚪ 08 Independent Study ⚪ 09 Readings ⚪ 10 Special Topics

⚪ 12 Individual Lessons ⚪ 13 Applied Instruction ⚪ 16 Studio Course

⚪ 17 Dissertation ⚪ 18 Activity Course ⚪ 19 Seminar ⚪ 98 Other

Does this course require a fee? ○ Yes ● No How Much? [ ]	Select Fee Type

If selected other list fee type: [   ]

☐ Elective   ☑ Major   ☐ Minor

(If major or minor course, you must complete the Request for Program Change form to add course to program.)

If course is required by major/minor, how frequently will course be offered?
_____

Spring

For the proposed course, attach a syllabus in Word format that includes: **(Items a. through d. should be entered as they should appear in the catalog)**

a. Course subject
b. Course number
c. Catalog course title
d. Catalog description
    1. Arkansas Course Transfer System (ACTS) course number, if applicable
    2. Cross-listing
    3. Offered (e.g., Fall only, Spring only. Do not enter if offer course fall and spring)
    4. Prerequisites
    5. Co-requisites
    6. Description
    7. Notes (e.g., information not in description such as course may be repeated for credit)
    8. Contact Hours if different than lecture (e.g., Lecture three hours, laboratory three hours)
    9. Fees (e.g., $36 art fee)
e. Section for Name of instructor, office hours, contact information (telephone, email)
f. Text required for course
g. Bibliography (supplemental reading list)
h. Justification/rationale for the course
i. Course objectives
j. Description of how course meets general education objectives (courses included in the general education component should show how the course meets one or more of the objectives contained in General Education Objectives listed in undergraduate catalog)
k. Assessment methods (include grading policy with specific equivalents for A, B, C)
l. Policy on absences, cheating, plagiarism, etc.
m. Course content (outline of material to be covered in course).

Will this course require any special resources such as unusual maintenance costs, library resources, special software, distance learning equipment, etc.? **No**

Will this course require a special classroom (computer lab, smart classroom, or laboratory)?
No

Attach the Course Addition Assessment Form. The form is located on the Assessment & Institutional Effectiveness web page at http://www.atu.edu/assessment/

If this course will affect other departments, a Departmental Support Form for each affected department must be attached. The form is located on the Curriculum forms web page at http://www.atu.edu/registrar/curriculum_forms.php. **N/A**

Syllabus
Department of Computer & Information Science

CSEC 3233	**Cyber Defense II**
Section #	001
OFFERED	Spring
PRE-REQUISITE	**CSEC 3213 Cyber Defense I**
CO-REQUISITES	None
DESCRIPTION	This course introduces penetration testing for the purposes of learning about cyber security vulnerabilities. Topics include: vulnerability taxonomies, buffer overflow attacks, password attacks, trust relationship exploitation, race condition exploitations, and local vs remote exploitations. The topics will be enhanced with hands-on examples using Linux.
NOTES	None
COURSE INSTRUCTOR	**Office:** **Phone:** **Email:** To be determined by the faculty of record for this course
OFFICE HOURS	To be determined by the faculty of record for this course
TEXTBOOK	*Department of Defense Sponsored Information Security Research*: New Methods for Protecting Against Cyber Threats; C. Wang; Wiley Publishing; ISBN: 978-0-470-12857-2
BIBLIOGRAPHY JUSTIFICATION	There is **no** REQUIRED supplemental reading list for this course. Trained cybersecurity experts need to understand the underlying principles and techniques involved with penetration testing. The entire penetration testing process.
OBJECTIVES	After completing this course, the learner will be able to: • understand legal and ethical issues associated with hacking. • describe vulnerability taxonomies. • identify vulnerabilities and how the vulnerabilities can be exploited. • understand how to adapt vulnerabilities to be applied to alternative contexts.

- apply security design principles to reduce or eliminate vulnerabilities.

GENERAL EDUCATION REQUIREMENTS

This course does not meet any of the General Education requirements.

ASSESSMENT

The final grade will consist of 100 percentage points, with the following breakdown:

Homework, Labs, & Assignments	20%
Exams, including Final Exam	80%
Total	*100%*

The following percentage table will be used to assign scores:

90-100% - A   80-89% - B   70-79% - C   60-69% - D   Below 60% - F

ATTENDANCE

The policy of the University in regard to class absences may be stated as the considered belief that regular class attendance is essential to the maximum growth and development of the student, and that students, in their own interest, are therefore responsible for attending all classes for which they are enrolled.

COURSE CONDUCT

Respect your peers. Students are expected to respect the rights of others. Students must conduct themselves in a professional manner, and maintain an atmosphere that does not distract other students from learning. Students whose behavior the instructor deems to be disruptive will be asked to leave. This includes, but is not limited to, cell phones ringing, talking on a cell phone or text messaging, use of a laptop computer in a distracting manner, consuming food or beverage, and/or having conversations with other students that are not part of the class instruction. If for some reason you feel that one or more of these items are necessary, you must get express permission from the instructor beforehand. A student who is requested to leave will not be excused from missing any class or class activities.

PLAGIARISM & CHEATING

Refer to the rules set forth in the student handbook. Students are expected to do their **OWN** work. **Consider your actions carefully**: there will be no tolerance for conduct that even gives the appearance of cheating.

Any questions regarding the policy of cheating or conduct in this class should be clarified with the instructor. Cheating will result in a negative score (deduction from the final course grade) and will be reported to appropriate governing bodies, e.g. the CIS ethics committee.

SCHEDULE

Week			Exercises
1	Syllabus, introduction to cyber defense		The instructor of record will determine the assignments/exercises and point value for each weekly topic.
2	Vulnerabilities taxonomies		
3	Vulnerabilities taxonomies		
4	Vulnerabilities taxonomies		
5	Identification of vulnerabilities		
6	Adapt vulnerabilities to be applied to alternative contexts		
7	Adapt vulnerabilities to be applied to alternative contexts		
8	Security design principles		
9	Application of security design principles		
10	Application of security design principles		
11	Legal and ethical issues		
12	Legal and ethical issues		
13	Labs		
14	Labs		
15	Labs		

Arkansas Tech University

Course Addition

Assessment Form

Our Mission
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Provide an answer for each question. Your answers are to be typed single spaced.
CSEC 3233 Cyber Defense II
a. How does this course fit with the university mission? **This course is a required course for the proposed BS in Cybersecurity. This course supports the University's mission by being innovative and rigorous for students as they are educated to become professionals in the field of Cybersecurity.**
b. If this course is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable. **The Bachelor of Science in Cybersecurity is not accredited by an accrediting body. However, the Department of Homeland Security provides requirements for programs in Cybersecurity to be designated as a Center of Excellence. This proposed program is rigorous and meetings the requirements to become a Center of Excellence. This course is a mandated requirement to qualify for designation as a Center of Excellence. (https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)**
Provide up to three student learning outcomes students will achieve after completing this course? **1. Students will be able to understand legal and ethical issues associated with hacking. 2. Students will be able to describe vulnerability taxonomies. 3. Students will be able to identify vulnerabilities and how the vulnerabilities can be exploited.**
c. What assessment tool or measure will you use to assess student learning? **Quizzes, tests, assignments, and a research paper.**
d. What will students demonstrate, represent, or produce to provide evidence of their learning? **Students will complete quizzes, tests, assignments.**
e. Provide an example or examples of student learning assessment evidence which supports the addition of this course. **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included. To be a qualified cybersecurity student, the student must be trained extensively in penetration testing since most systems are running on a network.**

(https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)

f.	How does this course fit in the current state of the discipline? Include Arkansas institutional comparisons. If Arkansas educational institutions do not have the course or program provide comparative examples from regional educational institutions. **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included in this degree.**

Arkansas Tech University
REQUEST FOR COURSE ADDITION

TO:	Curriculum Committee
FROM (Initiating Department):	**Department of Computer & Information Science**
DATE SUBMITTED:	6.30.2016

Title	Signature	Date
Department Head **Dr. David Hoelzeman**	*David L. Hoelzeman*	7-6-2016
Dean **Dr. Neal Barlow**	*(signature)*	9 Aug 16
Teacher Education Council (if applicable)		
Graduate Council (if applicable)		
Registrar **Ms. Tammy Weaver**	*Weaver*	8/10/16
Vice President for Academic Affairs **Dr. Mohammed Abdelrahman**		

Course Subject: (e.g., ACCT, ENGL)	Course Number: (e.g., 1003)	Effective Term: **Fall 2017**
CSEC	**3243**	☐ Spring ☉ **Summer I**

Official Catalog Title: (If official title exceeds 30 characters, indicate Banner Title below)

Computer Architecture

Banner Title: (limited to 30 characters, including spaces, capitalize all letters — this will display on the transcript)

Computer Architecture

Will this course be cross-listed with another existing course? If so, list course subject and number.

☐ Yes ☉ No

Will this course be cross-listed with a course currently not in the undergraduate or graduate catalog?

If so, list course subject and number. ☐ Yes ☉ No

Is this course repeatable for additional earned hours? ☐ Yes ☉ No   How many total hours?

Grading: ☉ Standard Letter ☐ P/F ☐ Other

Mode of Instruction (check appropriate box):

☉ 01 Lecture   ☐ 02 Lecture/Laboratory   ☐ 03 Laboratory only

☐ 05 Practice Teaching   ☐ 06 Internship/Practicum   ☐ 07 Apprenticeship/Externship

☐ 08 Independent Study   ☐ 09 Readings   ☐ 10 Special Topics

☐ 12 Individual Lessons   ☐ 13 Applied Instruction   ☐ 16 Studio Course

☐ 17 Dissertation   ☐ 18 Activity Course   ☐ 19 Seminar   ☐ 98 Other

Does this course require a fee? ⦾ Yes ⦿ No How Much? [ ]	Select Fee Type

If selected other list fee type: [ ]

☐ Elective   ☑ Major   ☐ Minor

(If major or minor course, you must complete the Request for Program Change form to add course to program.)

If course is required by major/minor, how frequently will course be offered?

Spring

For the proposed course, attach a syllabus in Word format that includes: **(Items a. through d. should be entered as they should appear in the catalog)**

a. Course subject
b. Course number
c. Catalog course title
d. Catalog description
    1. Arkansas Course Transfer System (ACTS) course number, if applicable
    2. Cross-listing
    3. Offered (e.g., Fall only, Spring only. Do not enter if offer course fall and spring)
    4. Prerequisites
    5. Co-requisites
    6. Description
    7. Notes (e.g., information not in description such as course may be repeated for credit)
    8. Contact Hours if different than lecture (e.g., Lecture three hours, laboratory three hours)
    9. Fees (e.g., $36 art fee)
e. Section for Name of instructor, office hours, contact information (telephone, email)
f. Text required for course
g. Bibliography (supplemental reading list)
h. Justification/rationale for the course
i. Course objectives
j. Description of how course meets general education objectives (courses included in the general education component should show how the course meets one or more of the objectives contained in General Education Objectives listed in undergraduate catalog)
k. Assessment methods (include grading policy with specific equivalents for A, B, C)
l. Policy on absences, cheating, plagiarism, etc.
m. Course content (outline of material to be covered in course).

Will this course require any special resources such as unusual maintenance costs, library resources, special software, distance learning equipment, etc.? **No**

Will this course require a special classroom (computer lab, smart classroom, or laboratory)?
No

Attach the Course Addition Assessment Form. The form is located on the Assessment & Institutional Effectiveness web page at http://www.atu.edu/assessment/

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Syllabus
Department of Computer & Information Science

CSEC 3243   **Computer Architecture**

Section #   001

OFFERED   **Spring**

PRE-REQUISITE   COMS 3703 Operating Systems

CO-REQUISITES   ELEG 2130 Digital Logic Design Lab
ELEG 2134 Digital Logic Design

DESCRIPTION   Introduction to computer architecture. Aspects of computer systems, such as pipelining, memory hierarchy, and input/output systems. Performance metrics. Examines each component of a complicated computer system.

Topics include:
- performance evaluation
- instruction set architecture
- machine arithmetic
- data paths and pipelining
- memory hierarchy
- branch prediction
- scheduling techniques
- multiprocessors.

NOTES   None

COURSE INSTRUCTOR   Office: Phone: Email:
To be determined by the instructor of record

OFFICE HOURS   To be determined by the instructor of record

TEXTBOOK   *Computer Organization and Architecture*, 10th edition; W. Stallings, Pearson Publishing; ISBN-13: 9780134102290 (paperback)
ISBN-13: 9780134102061 (etext)

BIBLIOGRAPHY JUSTIFICATION   There is **no** REQUIRED supplemental reading list for this course.
Basic understanding of computer architecture is essential to cybersecurity.

OBJECTIVES   After completing this course, the learner will be able to:
- understand processor design concepts in modern computer architecture.

understand and evaluate constraints and tradeoffs in microprocessor design.
- use digital logic, Verilog, C, and some assembly for implementation and evaluation.
- enable you to design and build a mini computer.
- enable you to understand, use, and modify computer architecture simulation tools.

GENERAL EDUCATION REQUIREMENTS

This course does not meet any of the General Education requirements.

ASSESSMENT

The final grade will consist of 100 percentage points, with the following breakdown:

Homework, Labs, & Assignments	20%
Exams, including Final Exam	80%
Total	*100%*

The following percentage table will be used to assign scores:

90-100% - A   80-89% - B   70-79% - C   60-69% - D   Below 60% - F

ATTENDANCE

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COURSE CONDUCT

Respect your peers. Students are expected to respect the rights of others. Students must conduct themselves in a professional manner, and maintain an atmosphere that does not distract other students from learning. Students whose behavior the instructor deems to be disruptive will be asked to leave. This includes, but is not limited to, cell phones ringing, talking on a cell phone or text messaging, use of a laptop computer in a distracting manner, consuming food or beverage, and/or having conversations with other students that are not part of the class instruction. If for some reason you feel that one or more of these items are necessary, you must get express permission from the instructor beforehand. A student who is requested to leave will not be excused from missing any class or class activities.

PLAGIARISM & CHEATING

Refer to the rules set forth in the student handbook. Students are expected to do their **OWN** work. **Consider your actions carefully**: there will be no tolerance for conduct that even gives the appearance of cheating. Any questions regarding the policy of cheating or conduct in this class should be clarified with the instructor. Cheating will result in a negative score (deduction from the final course grade) and will be reported to appropriate governing bodies, e.g. the CIS ethics committee.

SCHEDULE

Week			Exercises
1	Syllabus, introduction to Computer Architecture		The instructor of record will determine the assignments/exercises and point value for each weekly topic.
2	Introduction to computer architecture		
3	Performance evaluation		
4	Instruction set architecture		
5	Instruction set architecture		
6	Machine arithmetic		
7	Data paths		
8	Pipelining		
9	Memory hierarchy		
10	Branch Prediction		
11	Scheduling techniques		
12	Scheduling techniques		
13	Multiprocessors		
14	Design and build mini computer		
15	Design and build mini computer		

Arkansas Tech University

Course Addition

Assessment Form

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Provide an answer for each question. Your answers are to be typed single spaced.
CSEC 3243 Computer Architecture
a. How does this course fit with the university mission? **This course is a required course for the proposed BS in Cybersecurity. This course supports the University's mission by being innovative and rigorous for students as they are educated to become professionals in the field of Cybersecurity.**
b. If this course is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable. **The Bachelor of Science in Cybersecurity is not an accredited by an accrediting body. However, the Department of Homeland Security provides requirements for programs in Cybersecurity to be designated as a Center of Excellence. This proposed program is rigorous and meets these requirements. This course is a mandated requirement to qualify for designation as a Center of Excellence. (https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)**
Provide up to three student learning outcomes students will achieve after completing this course? **1. Students will be able to understand processor design concepts in modern computer architecture. 2. Students will be able to understand and evaluate constraints and tradeoffs in microprocessor design. 4. Students will be able to use digital logic, Verilog, C, and some assembly for implementation and evaluation.**
c. What assessment tool or measure will you use to assess student learning? **Quizzes, tests, assignments, and a research paper.**
d. What will students demonstrate, represent, or produce to provide evidence of their learning? **Students will complete quizzes, tests, assignments.**
e. Provide an example or examples of student learning assessment evidence which supports the addition of this course. **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included. To be a qualified cybersecurity student, the student must acquire an extensive knowledge of computer**
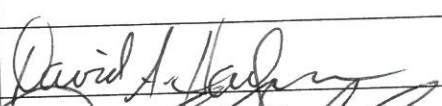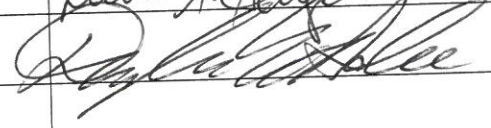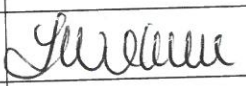
	architecture to support an understanding of how a system can be attacked. (https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)
f.	How does this course fit in the current state of the discipline? Include Arkansas institutional comparisons. If Arkansas educational institutions do not have the course or program provide comparative examples from regional educational institutions. **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included in this degree.**

Arkansas Tech University
REQUEST FOR COURSE ADDITION

TO:	Curriculum Committee	
FROM (Initiating Department):	**Department of Computer & Information Science**	
DATE SUBMITTED:	6.30.2016	

Title	Signature	Date
Department Head **Dr. David Hoelzeman**	*David A. Hoelzeman*	7-6-2016
Dean **Dr. Neal Barlow**	*[signature]*	8 Aug 16
Teacher Education Council (if applicable)		
Graduate Council (if applicable)		
Registrar **Ms. Tammy Weaver**	*[signature]*	8/10/16
Vice President for Academic Affairs **Dr. Mohammed Abdelrahman**		

Course Subject: (e.g., ACCT, ENGL)	Course Number: (e.g., 1003)	Effective Term: **Fall 2017**
CSEC	**4123**	○ Spring ◉ **Summer I**

Official Catalog Title: (If official title exceeds 30 characters, indicate Banner Title below)

Cryptography

Banner Title: (limited to 30 characters, including spaces, capitalize all letters — this will display on the transcript)

Will this course be cross-listed with another existing course? If so, list course subject and number.

○ Yes ◉ No

Will this course be cross-listed with a course currently not in the undergraduate or graduate catalog?
If so, list course subject and number.   ○ Yes ◉ No

Is this course repeatable for additional earned hours? ○ Yes ◉ No How many total hours?

Grading: ◉ Standard Letter   ○ P/F   ○ Other

Mode of Instruction (check appropriate box):

◉ 01 Lecture   ○ 02 Lecture/Laboratory   ○ 03 Laboratory only

○ 05 Practice Teaching   ○ 06 Internship/Practicum   ○ 07 Apprenticeship/Externship

○ 08 Independent Study   ○ 09 Readings   ○ 10 Special Topics

○ 12 Individual Lessons   ○ 13 Applied Instruction   ○ 16 Studio Course

○ 17 Dissertation   ○ 18 Activity Course   ○ 19 Seminar   ○ 98 Other

Does this course require a fee? ○ Yes ● No How Much?			Select Fee Type

If selected other list fee type:

☐ Elective   ☑ Major   ☐ Minor

(If major or minor course, you must complete the Request for Program Change form to add course to program.)

If course is required by major/minor, how frequently will course be offered?

Fall

For the proposed course, attach a syllabus in Word format that includes: **(Items a. through d. should be entered as they should appear in the catalog)**

a. Course subject
b. Course number
c. Catalog course title
d. Catalog description
    1. Arkansas Course Transfer System (ACTS) course number, if applicable
    2. Cross-listing
    3. Offered (e.g., Fall only, Spring only. Do not enter if offer course fall and spring)
    4. Prerequisites
    5. Co-requisites
    6. Description
    7. Notes (e.g., information not in description such as course may be repeated for credit)
    8. Contact Hours if different than lecture (e.g., Lecture three hours, laboratory three hours)
    9. Fees (e.g., $36 art fee)
e. Section for Name of instructor, office hours, contact information (telephone, email)
f. Text required for course
g. Bibliography (supplemental reading list)
h. Justification/rationale for the course
i. Course objectives
j. Description of how course meets general education objectives (courses included in the general education component should show how the course meets one or more of the objectives contained in General Education Objectives listed in undergraduate catalog)
k. Assessment methods (include grading policy with specific equivalents for A, B, C)
l. Policy on absences, cheating, plagiarism, etc.
m. Course content (outline of material to be covered in course).

Will this course require any special resources such as unusual maintenance costs, library resources, special software, distance learning equipment, etc.? **No**

Will this course require a special classroom (computer lab, smart classroom, or laboratory)?
No

Attach the Course Addition Assessment Form. The form is located on the Assessment & Institutional Effectiveness web page at http://www.atu.edu/assessment/

If this course will affect other departments, a Departmental Support Form for each affected department must be attached. The form is located on the Curriculum forms web page at http://www.atu.edu/registrar/curriculum_forms.php. **N/A**

Syllabus

Department of Computer & Information Science

CSEC 4123	Applied Cryptography
Section #	001
OFFERED	Fall
PRE-REQUISITE	CSEC 3223 Programming Embedded Systems
CO-REQUISITES	None

DESCRIPTION This course covers multiple cryptography protocols and their application to cybersecurity. Techniques in modern cryptography will be presented such as stream ciphers, DES, AES, block ciphers, etc. The course will discuss the level of security that various protocols provide and how to select an appropriate protocol for a specific application with an understanding of the limitations of key management systems, such as symmetric and asymmetric encryption, will be presented. Select protocols will be implemented in the C programming language.

NOTES None

COURSE INSTRUCTOR **Office:**   **Phone:**   **Email:**
To be determined by the faculty of record for this course

OFFICE HOURS To be determined by the faculty of record for this course

TEXTBOOK *Cryptography and Network Security: Principles and Practice*, 7th edition
Pearson Publishing; ISBN-13: 9780134444284

BIBLIOGRAPHY There is **no** REQUIRED supplemental reading list for this course.

JUSTIFICATION Students need an understanding in how cryptography can be used to solve security problems. Understanding attacks and vulnerabilities is critical to the cybersecurity expert.

OBJECTIVES After completing this course, the learner will be able to:
- identify features and limits of various cryptographic algorithms.
- compare key management systems and their classifications such as symmetric and asymmetric keys.

- select an appropriate cryptographic algorithm for a specified application.
- understand real-world cryptographic algorithms such as data encryption security and RSA public-key systems.
- implement cryptographic algorithms in the C programming language.

COURSE TOPICS

Topics include:
- modern cryptography
- stream ciphers
- DES
- AES
- block ciphers
- security
- symmetric encryption
- asymmetric encryption
- cryptographic algorithms
- data encryption security
- RSA public-key systems

GENERAL EDUCATION REQUIREMENTS

This course does not meet any of the General Education requirements.

ASSESSMENT

The final grade will consist of 100 percentage points, with the following breakdown:

Homework, Labs, & Assignments	**20%**
Exams, including Final Exam	**80%**
Total	*100%*

The following percentage table will be used to assign scores:

90-100% - A   80-89% - B   70-79% - C   60-69% - D   Below 60% - F

ATTENDANCE

The policy of the University in regard to class absences may be stated as the considered belief that regular class attendance is essential to the maximum growth and development of the student, and that students, in their own interest, are therefore responsible for attending all classes for which they are enrolled.

COURSE CONDUCT

Respect your peers. Students are expected to respect the rights of others. Students must conduct themselves in a professional manner, and maintain an atmosphere that does not distract other students from learning. Students whose behavior the instructor deems to be disruptive will be asked to leave. This includes, but is not limited to, cell phones ringing, talking on a cell phone or text messaging, use of a laptop computer in a distracting manner, consuming food or beverage, and/or having conversations with other students that are not part of the class instruction. If for some reason you feel that one or more of these items are necessary, you must get express permission from the instructor beforehand. A student who is requested to leave will not be excused from missing any class or class activities.

PLAGIARISM & CHEATING

Refer to the rules set forth in the student handbook. Students are expected to do their **OWN** work. **Consider your actions carefully**: there will be no tolerance for conduct that even gives the appearance of cheating. Any questions regarding the policy of cheating or conduct in this class should be clarified with the instructor. Cheating will result in a negative score (deduction from the final course grade) and will be reported to appropriate governing bodies, e.g. the CIS ethics committee.

SCHEDULE

Week			Exercises
1	Syllabus and introduction to cryptography		The instructor of record will determine the assignments/exercises and point value for each weekly topic.
2	Modern cryptography		
3	Modern cryptography		
4	Stream ciphers		
5	DES		
6	AES		
7	Block ciphers		
8	Security		
9	Security		
10	Symmetric encryption		

11	Asymmetric encryption		
12	Cryptographic algorithms		
13	Cryptographic algorithms		
14	Cryptographic algorithms		
15	Data encryption		

Arkansas Tech University

Course Addition

Assessment Form

Our Mission
Arkansas Tech University, a state-supported institution of higher education, is dedicated to nurturing scholastic development, integrity, and professionalism. The University offers a wide range of traditional and innovative programs which provide a solid educational foundation for life-long learning to a diverse community of learners.

Provide an answer for each question. Your answers are to be typed single spaced.

CSEC 4123 Cryptography

a. How does this course fit with the university mission? **This course is a required course for the proposed BS in Cybersecurity. This course supports the University's mission by being innovative and rigorous for students as they are educated to become professionals in the field of Cybersecurity.**

b. If this course is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable. **The Bachelor of Science in Cybersecurity is not accredited by an accrediting body. However, the Department of Homeland Security provides requirements for programs in Cybersecurity to be designated as a Center of Excellence. This proposed program is rigorous and meets these requirements. This course is a mandated requirement to qualify for designation as a Center of Excellence.**

Provide up to three student learning outcomes students will achieve after completing this course? **1. Students will be able to identify features and limits of various cryptographic algorithms. Students will be able to compare key management systems and their classifications such as symmetric and asymmetric keys. 3. Students will be able to select an appropriate cryptographic algorithm for a specified application.**

c. What assessment tool or measure will you use to assess student learning? **Quizzes, tests, assignments, and a research paper.**

d. What will students demonstrate, represent, or produce to provide evidence of their learning? **Students will complete quizzes, tests, assignments.**
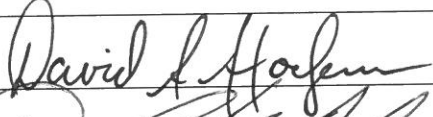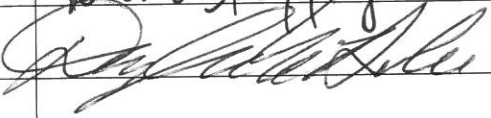
e. Provide an example or examples of student learning assessment evidence which supports the addition of this course. **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included. To be a qualified cybersecurity student, the student must understand how malicious software can be hidden in common documents, photos, etc.**

	(https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)
f.	How does this course fit in the current state of the discipline? Include Arkansas institutional comparisons. If Arkansas educational institutions do not have the course or program provide comparative examples from regional educational institutions. **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included in this degree.**

Arkansas Tech University
REQUEST FOR COURSE ADDITION

TO:	Curriculum Committee	
FROM (Initiating Department):	**Department of Computer & Information Science**	
DATE SUBMITTED:	6.30.2016	

Title	Signature	Date
Department Head **Dr. David Hoelzeman**	*David A Hoelzeman*	7-6-2016
Dean **Dr. Neal Barlow**		9 Aug 16
Teacher Education Council (if applicable)		
Graduate Council (if applicable)		
Registrar **Ms. Tammy Weaver**	*Suzanne*	8/10/16
Vice President for Academic Affairs **Dr. Mohammed Abdelrahman**		

Course Subject: (e.g., ACCT, ENGL) **CSEC**	Course Number: (e.g., 1003) **4133**	Effective Term: **Fall 2017** ○ Spring ● **Summer I**

Official Catalog Title: (If official title exceeds 30 characters, indicate Banner Title below)

Large Scale Distributed Systems

Banner Title: (limited to 30 characters, including spaces, capitalize all letters — this will display on the transcript)

Large Scale Distributed Sys.

Will this course be cross-listed with another existing course? If so, list course subject and number.

○ Yes ● No

Will this course be cross-listed with a course currently not in the undergraduate or graduate catalog? If so, list course subject and number. ○ Yes ● No

Is this course repeatable for additional earned hours? ○ Yes ● No How many total hours?

Grading: ● Standard Letter ○ P/F ○ Other

Mode of Instruction (check appropriate box):

● 01 Lecture ○ 02 Lecture/Laboratory ○ 03 Laboratory only

○ 05 Practice Teaching ○ 06 Internship/Practicum ○ 07 Apprenticeship/Externship

○ 08 Independent Study ○ 09 Readings ○ 10 Special Topics

○ 12 Individual Lessons ○ 13 Applied Instruction ○ 16 Studio Course

○ 17 Dissertation ○ 18 Activity Course ○ 19 Seminar ○ 98 Other

Does this course require a fee?   ○ Yes   ● No   How Much? [   ]   Select Fee Type

If selected other list fee type: [   ]

☐ Elective   ☑ Major   ☐ Minor

(If major or minor course, you must complete the Request for Program Change form to add course to program.)

If course is required by major/minor, how frequently will course be offered?

Fall

For the proposed course, attach a syllabus in Word format that includes: **(Items a. through d. should be entered as they should appear in the catalog)**

a. Course subject
b. Course number
c. Catalog course title
d. Catalog description
    1. Arkansas Course Transfer System (ACTS) course number, if applicable
    2. Cross-listing
    3. Offered (e.g., Fall only, Spring only. Do not enter if offer course fall and spring)
    4. Prerequisites
    5. Co-requisites
    6. Description
    7. Notes (e.g., information not in description such as course may be repeated for credit)
    8. Contact Hours if different than lecture (e.g., Lecture three hours, laboratory three hours)
    9. Fees (e.g., $36 art fee)
e. Section for Name of instructor, office hours, contact information (telephone, email)
f. Text required for course
g. Bibliography (supplemental reading list)
h. Justification/rationale for the course
i. Course objectives
j. Description of how course meets general education objectives (courses included in the general education component should show how the course meets one or more of the objectives contained in General Education Objectives listed in undergraduate catalog)
k. Assessment methods (include grading policy with specific equivalents for A, B, C)
l. Policy on absences, cheating, plagiarism, etc.
m. Course content (outline of material to be covered in course).

Will this course require any special resources such as unusual maintenance costs, library resources, special software, distance learning equipment, etc.? **No**

Will this course require a special classroom (computer lab, smart classroom, or laboratory)?
No

Attach the Course Addition Assessment Form. The form is located on the Assessment & Institutional Effectiveness web page at http://www.atu.edu/assessment/

If this course will affect other departments, a Departmental Support Form for each affected department must be attached. The form is located on the Curriculum forms web page at http://www.atu.edu/registrar/curriculum_forms.php. **N/A**

Syllabus
Department of Computer & Information Science

CSEC 4133	**Large Scale Distributed Systems**
Section #	001
OFFERED	Fall
PRE-REQUISITE	CSEC 3223 Programming Embedded Systems
CO-REQUISITES	None

DESCRIPTION

This course will provide an overview to large scale distributed systems. Topics include:

- concepts of distributed systems: threads, concurrency, dead/live lock, consistency, scalability, fault tolerant, etc.
- design and development of large scale distributed systems that include: TCP/IP, UDP, network data transfer, synchronization, threads, distributed locking, etc.
- basic distributed algorithms that can be applied in practical systems.
- different kinds of cloud computing architecture models, services, and security issues.
- components (logical and physical) of cloud architecture.
- data paths within a given cloud design.

NOTES None

COURSE INSTRUCTOR

Office: **Phone:**   **Email:**
To be determined by the faculty of record for this course

OFFICE HOURS To be determined by the faculty of record for this course

TEXTBOOK *Large Scale Network-Centric Distributed Systems*; H. Sarbazi-Azad; Wiley Publishing; ISBN: 978-0-470-93688-7

BIBLIOGRAPHY There is **no** REQUIRED supplemental reading list for this course.

JUSTIFICATION Students need to understand scalability, replication, consistency, storage, services, issues, and programming modules to be competent as cybersecurity experts.

OBJECTIVES

After completing this course, the learner will be able to:
- demonstrate an ability to design and develop large scale distributed systems.
- understand the different components of cloud computing architecture models, and security issues.
- explain the components, both logical and physical, of cloud architecture.
- demonstrate the ability to discuss data paths within a given cloud design.

COURSE TOPICS

Topics include:
- concepts of distributed systems
- threads
- concurrency
- dead/live lock
- consistency
- scalability
- fault tolerance
- design and implement large scale distributed system
- basic distributed algorithms that can be applied in practical systems
- cloud computing architecture, services, and security issues
- components of cloud computing
- data paths within a given cloud design

GENERAL EDUCATION REQUIREMENTS

This course does not meet any of the General Education requirements.

ASSESSMENT

The final grade will consist of 100 percentage points, with the following breakdown:

Homework, Labs, & Assignments	20%
Exams, including Final Exam	80%
Total	*100%*

The following percentage table will be used to assign scores:

90-100% - A   80-89% - B   70-79% - C   60-69% - D   Below 60% - F

ATTENDANCE   The policy of the University in regard to class absences may be stated as the considered belief that regular class attendance is essential to the maximum growth and development of the student, and that students, in their own interest, are therefore responsible for attending all classes for which they are enrolled.

COURSE CONDUCT   **Respect your peers.** Students are expected to respect the rights of others. Students must conduct themselves in a professional manner, and maintain an atmosphere that does not distract other students from learning. Students whose behavior the instructor deems to be disruptive will be asked to leave. This includes, but is not limited to, cell phones ringing, talking on a cell phone or text messaging, use of a laptop computer in a distracting manner, consuming food or beverage, and/or having conversations with other students that are not part of the class instruction. If for some reason you feel that one or more of these items are necessary, you must get express permission from the instructor beforehand. A student who is requested to leave will not be excused from missing any class or class activities.

PLAGIARISM & CHEATING   Refer to the rules set forth in the student handbook. Students are expected to do their **OWN** work. **Consider your actions carefully**: there will be no tolerance for conduct that even gives the appearance of cheating. Any questions regarding the policy of cheating or conduct in this class should be clarified with the instructor. Cheating will result in a negative score (deduction from the final course grade) and will be reported to appropriate governing bodies, e.g. the CIS ethics committee.

SCHEDULE

Week			Exercises
1	Syllabus, introduction to large scale distributed systems		The instructor of record will determine the assignments/exercises and point value for each weekly topic.
2	concepts of distributed systems		
3	threads		
4	concurrency		
5	Dead/live lock		
6	consistency		

7	scalability		
8	fault tolerance		
9	basic distributed algorithms		
10	cloud computing architecture		
11	components of cloud computing		
12	data paths		
13	design and implement large scale distributed systems		
14	design and implement large scale distributed systems		
15	design and implement large scale distributed systems		

Arkansas Tech University

Course Addition

Assessment Form

Our Mission
Arkansas Tech University, a state-supported institution of higher education, is dedicated to nurturing scholastic development, integrity, and professionalism. The University offers a wide range of traditional and innovative programs which provide a solid educational foundation for life-long learning to a diverse community of learners.

Provide an answer for each question. Your answers are to be typed single spaced.
CSEC 4133 Large Scale Distributed Systems
a. How does this course fit with the university mission? **This course is a required course for the proposed BS in Cybersecurity. This course supports the University's mission by being innovative and rigorous for students as they are educated to become professionals in the field of Cybersecurity.**
b. If this course is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable. **The Bachelor of Science in Cybersecurity is not accredited by an accrediting body. However, the Department of Homeland Security provides requirements for programs in Cybersecurity to be designated as a Center of Excellence. This proposed program is rigorous and meets these requirements. This course is a mandated requirement for this designation. (https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)**
Provide up to three student learning outcomes students will achieve after completing this course? **1. Students will be able to demonstrate an ability to design and develop large scale distributed systems. 2. Students will be able to understand the different components of cloud computing architecture models, and security issues. 3. Students will be able to explain components, both logical and physical, of cloud computing.**
c. What assessment tool or measure will you use to assess student learning? **Quizzes, tests, assignments, and a research paper.**
d. What will students demonstrate, represent, or produce to provide evidence of their learning? **Students will complete quizzes, tests, assignments.**
e. Provide an example or examples of student learning assessment evidence which supports the addition of this course. **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included. Networks are a collection of multiple processors joined. The cybersecurity expert must possess a thorough understand of how large scale distributed systems work.**

	(https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)
f.	How does this course fit in the current state of the discipline? Include Arkansas institutional comparisons. If Arkansas educational institutions do not have the course or program provide comparative examples from regional educational institutions. . **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included in this degree.**

Arkansas Tech University
REQUEST FOR COURSE ADDITION

TO:	Curriculum Committee
FROM (Initiating Department):	**Department of Computer & Information Science**
DATE SUBMITTED:	6.30.2016

Title	Signature	Date
Department Head **Dr. David Hoelzeman**	*David S. Hoelzeman*	7-6-2016
Dean **Dr. Neal Barlow**	*signature*	9 Aug 16
Teacher Education Council (if applicable)		
Graduate Council (if applicable)		
Registrar **Ms. Tammy Weaver**	*signature*	8/10/16
Vice President for Academic Affairs **Dr. Mohammed Abdelrahman**		

Course Subject: (e.g., ACCT, ENGL) **CSEC**	Course Number: (e.g., 1003) **4143**	Effective Term: **Fall 2017** ⊙ Spring ⊙ **Summer I**

Official Catalog Title: (If official title exceeds 30 characters, indicate Banner Title below)

Building Secure Software

Banner Title: (limited to 30 characters, including spaces, capitalize all letters — this will display on the transcript)

Building Secure Software

Will this course be cross-listed with another existing course? If so, list course subject and number.

⊙ Yes ⊙ No

Will this course be cross-listed with a course currently not in the undergraduate or graduate catalog?

If so, list course subject and number. ⊙ Yes ⊙ No

Is this course repeatable for additional earned hours? ⊙ Yes ⊙ No How many total hours?

Grading: ⊙ Standard Letter ⊙ P/F ⊙ Other

Mode of Instruction (check appropriate box):

⊙ 01 Lecture ⊙ 02 Lecture/Laboratory ⊙ 03 Laboratory only

⊙ 05 Practice Teaching ⊙ 06 Internship/Practicum ⊙ 07 Apprenticeship/Externship

⊙ 08 Independent Study ⊙ 09 Readings ⊙ 10 Special Topics

⊙ 12 Individual Lessons ⊙ 13 Applied Instruction ⊙ 16 Studio Course

⊙ 17 Dissertation ⊙ 18 Activity Course ⊙ 19 Seminar ⊙ 98 Other

Does this course require a fee? ☐ Yes ☑ No How Much? [   ] Select Fee Type

If selected other list fee type: [   ]

☐ Elective   ☑ Major   ☐ Minor

(If major or minor course, you must complete the Request for Program Change form to add course to program.)

If course is required by major/minor, how frequently will course be offered?

Fall

For the proposed course, attach a syllabus in Word format that includes: **(Items a. through d. should be entered as they should appear in the catalog)**

a. Course subject
b. Course number
c. Catalog course title
d. Catalog description
    1. Arkansas Course Transfer System (ACTS) course number, if applicable
    2. Cross-listing
    3. Offered (e.g., Fall only, Spring only. Do not enter if offer course fall and spring)
    4. Prerequisites
    5. Co-requisites
    6. Description
    7. Notes (e.g., information not in description such as course may be repeated for credit)
    8. Contact Hours if different than lecture (e.g., Lecture three hours, laboratory three hours)
    9. Fees (e.g., $36 art fee)
e. Section for Name of instructor, office hours, contact information (telephone, email)
f. Text required for course
g. Bibliography (supplemental reading list)
h. Justification/rationale for the course
i. Course objectives
j. Description of how course meets general education objectives (courses included in the general education component should show how the course meets one or more of the objectives contained in General Education Objectives listed in undergraduate catalog)
k. Assessment methods (include grading policy with specific equivalents for A, B, C)
l. Policy on absences, cheating, plagiarism, etc.
m. Course content (outline of material to be covered in course).

Will this course require any special resources such as unusual maintenance costs, library resources, special software, distance learning equipment, etc.? **No**

Will this course require a special classroom (computer lab, smart classroom, or laboratory)?
No

Attach the Course Addition Assessment Form. The form is located on the Assessment & Institutional Effectiveness web page at http://www.atu.edu/assessment/

If this course will affect other departments, a Departmental Support Form for each affected department must be attached. The form is located on the Curriculum forms web page at http://www.atu.edu/registrar/curriculum_forms.php. **N/A**

Syllabus
Department of Computer & Information Science

CSEC 4143	**Building Secure Software**
Section #	None
OFFERED	Fall
PRE-REQUISITE	**COMS2213 Data Structures**
CO-REQUISITES	None
DESCRIPTION	This course introduces reverse engineering techniques in general and reverse engineering for software specification recovery, malware analysis, and communications in particular. Tools and hands-on lab exercises will be applied to safely perform static and dynamic analysis of software of unknown origin to fully understand the software's functionality, recover the software specification, and discover data used by the software.
NOTES	None

COURSE INSTRUCTOR

Office: Phone: Email:
To be determined by the faculty of record for this course

OFFICE HOURS   To be determined by the faculty of record for this course

TEXTBOOK   *Secure Software Development: A Security Programmer's Guide*; 1st edition; Cengage Publishing; ISBN-10: 1418065471; ISBN-13: 9781418065478

BIBLIOGRAPHY   There is **no** REQUIRED supplemental reading list for this course.

JUSTIFICATION   People around the world now depend vitally on computers in all aspects of life. This course will teach students how to prevent vulnerabilities from being in software during the design phase.

OBJECTIVES   After completing this course, the learner will be able to:
- demonstrate knowledge in the methods that lead to the development of robust, secure software.
- understand secure programming principles and practices.
- demonstrate 'good' constructive techniques (What process might provide for 'good code.')
- demonstrate common tools utilized in reverse engineering, including but not limited to: disassemblers, debuggers, virtualization-based

sandbox environments, process and file activity monitors, and network activity monitors.

- understand the classes of well-known software defects, how they manifest themselves in various languages, and show that they are capable of authoring programs that are free from defects.
- demonstrate an understanding of reverse engineering techniques and techniques for software specific recovery.
- demonstrate an understanding for malware analysis.
- demonstrate an understanding of reverse engineering communications.

COURSE TOPICS

Topics include:
- reverse engineering techniques
- malware analysis
- static analysis of software
- dynamic analysis of software
- techniques for software specific recovery
- discover data used by software
- methods to develop robust, secure software
- secure programming principles and practices
- good program code
- common tools in reverse engineering
- classes of software
- reverse engineering communications

GENERAL EDUCATION REQUIREMENTS

This course does not meet any of the General Education requirements.

ASSESSMENT

The final grade will consist of 100 percentage points, with the following breakdown:

Homework, Labs, & Assignments	20%
Exams, including Final Exam	80%
Total	*100%*

The following percentage table will be used to assign scores:

90-100% - A   80-89% - B   70-79% - C   60-69% - D   Below 60% - F

ATTENDANCE

The policy of the University in regard to class absences may be stated as the considered belief that regular class attendance is essential to the maximum growth and development of the student, and that students, in their own interest, are therefore responsible for attending all classes for which they are enrolled.

COURSE CONDUCT

Respect your peers. Students are expected to respect the rights of others. Students must conduct themselves in a professional manner, and maintain an atmosphere that does not distract other students from learning. Students whose behavior the instructor deems to be disruptive will be asked to leave. This includes, but is not limited to, cell phones ringing, talking on a cell phone or text messaging, use of a laptop computer in a distracting manner, consuming food or beverage, and/or having conversations with other students that are not part of the class instruction. If for some reason you feel that one or more of these items are necessary, you must get express permission from the instructor beforehand. A student who is requested to leave will not be excused from missing any class or class activities.

PLAGIARISM & CHEATING

Refer to the rules set forth in the student handbook. Students are expected to do their **OWN** work. **Consider your actions carefully**: there will be no tolerance for conduct that even gives the appearance of cheating. Any questions regarding the policy of cheating or conduct in this class should be clarified with the instructor. Cheating will result in a negative score (deduction from the final course grade) and will be reported to appropriate governing bodies, e.g. the CIS ethics committee.

SCHEDULE

Week			Exercises
1	Syllabus and introduction to secure software		The instructor of record will determine the assignments/exercises and point value for each weekly topic.
2	Reverse engineering techniques		
3	Malware analysis		
4	Malware analysis		
5	Static analysis of software		
6	Dynamic analysis of software		

7	Techniques for software specific recovery		
8	Techniques for software specific recovery		
9	Discover data used by software		
10	Methods to develop robust, secure software		
11	Secure programming principles and practices		
12	Good program code		
13	Common tools in reverse engineering		
14	Classes of software		
15	Reverse engineering communications		

Arkansas Tech University

Course Addition

Assessment Form

Our Mission
Arkansas Tech University, a state-supported institution of higher education, is dedicated to nurturing scholastic development, integrity, and professionalism. The University offers a wide range of traditional and innovative programs which provide a solid educational foundation for life-long learning to a diverse community of learners.

Provide an answer for each question. Your answers are to be typed single spaced.
CSEC 4143 Building Secure Software
a. How does this course fit with the university mission? **This course is a required course for the proposed BS in Cybersecurity. This course supports the University's mission by being innovative and rigorous for students as they are educated to become professionals in the field of Cybersecurity.**
b. If this course is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable. **The Bachelor of Science in Cybersecurity is not accredited by an accrediting body. However, the Department of Homeland Security provides requirements for programs in Cybersecurity to be designated as a Center of Excellence. This proposed program is rigorous and meets these requirements. This course is a mandated requirement to qualify for designation.**
Provide up to three student learning outcomes students will achieve after completing this course? **1. Students will be able to demonstrate knowledge in the methods that lead to the development of robust, secure software. 2. Students will be able to understand secure programming principles and practices. 3. Students will be able to demonstrate 'good' constructive techniques (What process might provide for 'good code?')**
c. What assessment tool or measure will you use to assess student learning? **Quizzes, tests, assignments, and a research paper.**
d. What will students demonstrate, represent, or produce to provide evidence of their learning? **Students will complete quizzes, tests, assignments.**
e. Provide an example or examples of student learning assessment evidence which supports the addition of this course. **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included. To be a qualified cybersecurity student, the student must understand how to build secure software because it is instrumental in understanding how to protect a system.**
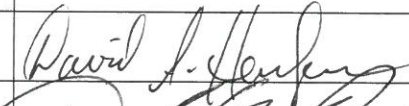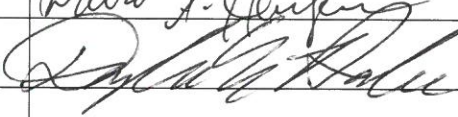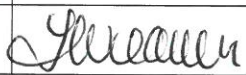
	(https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)
f.	How does this course fit in the current state of the discipline? Include Arkansas institutional comparisons. If Arkansas educational institutions do not have the course or program provide comparative examples from regional educational institutions. **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included in this degree.**

Arkansas Tech University
REQUEST FOR COURSE ADDITION

TO:	Curriculum Committee
FROM (Initiating Department):	**Department of Computer & Information Science**
DATE SUBMITTED:	6.30.2016

Title	Signature	Date
Department Head **Dr. David Hoelzeman**	*David A. Hoelzeman*	7-6-2016
Dean **Dr. Neal Barlow**	*David G. Barlow*	9 Aug 16
Teacher Education Council (if applicable)		
Graduate Council (if applicable)		
Registrar **Ms. Tammy Weaver**	*Weaver*	8/10/16
Vice President for Academic Affairs **Dr. Mohammed Abdelrahman**		

Course Subject: (e.g., ACCT, ENGL) **CSEC**	Course Number: (e.g., 1003) **4213**	Effective Term: **Fall 2017** ◌ Spring ◉ **Summer I**

Official Catalog Title: (If official title exceeds 30 characters, indicate Banner Title below)

Information Systems Risk Management

Banner Title: (limited to 30 characters, including spaces, capitalize all letters — this will display on the transcript)

IS Risk Management

Will this course be cross-listed with another existing course? If so, list course subject and number.

◌ Yes ◉ No

Will this course be cross-listed with a course currently not in the undergraduate or graduate catalog?
If so, list course subject and number. ◌ Yes ◉ No

Is this course repeatable for additional earned hours? ◌ Yes ◉ No How many total hours?

Grading: ◉ Standard Letter ◌ P/F ◌ Other

Mode of Instruction (check appropriate box):

◌ 01 Lecture ◉ 02 Lecture/Laboratory ◌ 03 Laboratory only

◌ 05 Practice Teaching ◌ 06 Internship/Practicum ◌ 07 Apprenticeship/Externship

◌ 08 Independent Study ◌ 09 Readings ◌ 10 Special Topics

◌ 12 Individual Lessons ◌ 13 Applied Instruction ◌ 16 Studio Course

◌ 17 Dissertation ◌ 18 Activity Course ◌ 19 Seminar ◌ 98 Other

Does this course require a fee? ○ Yes ● No How Much?		Select Fee Type

If selected other list fee type:	

☐ Elective	☑ Major	☐ Minor

(If major or minor course, you must complete the Request for Program Change form to add course to program.)

If course is required by major/minor, how frequently will course be offered?

Spring

For the proposed course, attach a syllabus in Word format that includes: **(Items a. through d. should be entered as they should appear in the catalog)**

a. Course subject
b. Course number
c. Catalog course title
d. Catalog description
    1. Arkansas Course Transfer System (ACTS) course number, if applicable
    2. Cross-listing
    3. Offered (e.g., Fall only, Spring only. Do not enter if offer course fall and spring)
    4. Prerequisites
    5. Co-requisites
    6. Description
    7. Notes (e.g., information not in description such as course may be repeated for credit)
    8. Contact Hours if different than lecture (e.g., Lecture three hours, laboratory three hours)
    9. Fees (e.g., $36 art fee)
e. Section for Name of instructor, office hours, contact information (telephone, email)
f. Text required for course
g. Bibliography (supplemental reading list)
h. Justification/rationale for the course
i. Course objectives
j. Description of how course meets general education objectives (courses included in the general education component should show how the course meets one or more of the objectives contained in General Education Objectives listed in undergraduate catalog)
k. Assessment methods (include grading policy with specific equivalents for A, B, C)
l. Policy on absences, cheating, plagiarism, etc.
m. Course content (outline of material to be covered in course).

Will this course require any special resources such as unusual maintenance costs, library resources, special software, distance learning equipment, etc.? **No**

Will this course require a special classroom (computer lab, smart classroom, or laboratory)? **No**

Attach the Course Addition Assessment Form. The form is located on the Assessment & Institutional Effectiveness web page at http://www.atu.edu/assessment/

If this course will affect other departments, a Departmental Support Form for each affected department must be attached. The form is located on the Curriculum forms web page at http://www.atu.edu/registrar/curriculum_forms.php. **N/A**

Syllabus
Department of Computer & Information Science

CSEC 4213	**Information Systems Risk Management**
Section #	001
OFFERED	Spring
PRE-REQUISITE	CSEC 2113 Introduction to Information Systems CSEC 2213 Forensics and Incident Response
CO-REQUISITES	None
DESCRIPTION	This course provides an overview for Information Security and Assurance to allow students to understand the key issues associated with protecting information assets, determining the levels of protection and response to security incidents, and designing a consistent, reasonable information security system, with appropriate intrusion detection and reporting features. Topics include but are not limited to: • inspection and protection of information assets. • detection of and reaction to threats to information assets. • examination of pre- and post- incident procedures.
NOTES	None
COURSE INSTRUCTOR	**Office:** **Phone:** **Email:** To be completed by the faculty of record
OFFICE HOURS	To be completed by the faculty of record
TEXTBOOK	*Information Security and IT Risk Management*; M. Agrawal; Wiley Publishing; ISBN : 978-1-118-33589-5 (paperback); ISBN : 978-1-118-80309-7 (etext)
BIBLIOGRAPHY	There is **no** REQUIRED supplemental reading list for this course.
JUSTIFICATION	In today's world of rapid information flows, rising volatility, regulatory concerns and oversight, prudent management increasingly requires understanding and measuring risk.

OBJECTIVES   After completing this course, the learner will be able to:
- identify classes of possible threats and the consequences associated with each threat.
- demonstrate an understanding of the required actions to mitigate the threat.
- Review pre- and post- incident procedures.

COURSE TOPICS   Topics include:
- Key issues associated with protecting information assets
- Levels of protection and threats
- Response to security incidents
- Designing a consistent, secure information system
- Intrusion detection
- Reaction to threats
- Pre-incident procedures
- Post-incident procedures
- Mitigate threats

GENERAL EDUCATION REQUIREMENTS   This course does not meet any of the General Education requirements.

ASSESSMENT   The final grade will consist of 100 percentage points, with the following breakdown:

Homework, Labs, & Assignments	20%
Exams, including Final Exam	80%
Total	*100%*

The following percentage table will be used to assign scores:

90-100% - A   80-89% - B   70-79% - C   60-69% - D   Below 60% - F

ATTENDANCE   The policy of the University in regard to class absences may be stated as the considered belief that regular class attendance is essential to the maximum growth and development of the student, and that students, in their own interest, are therefore responsible for attending all classes for which they are enrolled.

COURSE   **Respect your peers.** Students are expected to respect the rights of others.

CONDUCT

Students must conduct themselves in a professional manner, and maintain an atmosphere that does not distract other students from learning. Students whose behavior the instructor deems to be disruptive will be asked to leave. This includes, but is not limited to, cell phones ringing, talking on a cell phone or text messaging, use of a laptop computer in a distracting manner, consuming food or beverage, and/or having conversations with other students that are not part of the class instruction. If for some reason you feel that one or more of these items are necessary, you must get express permission from the instructor beforehand. A student who is requested to leave will not be excused from missing any class or class activities.

PLAGIARISM & CHEATING

Refer to the rules set forth in the student handbook. Students are expected to do their **OWN** work. **Consider your actions carefully**: there will be no tolerance for conduct that even gives the appearance of cheating. Any questions regarding the policy of cheating or conduct in this class should be clarified with the instructor. Cheating will result in a negative score (deduction from the final course grade) and will be reported to appropriate governing bodies, e.g. the CIS ethics committee.

SCHEDULE

Week			Exercises
1	Syllabus and introduction to information systems risk management		The instructor of record will determine the assignments/exercises and point value for each weekly topic.
2	Information systems risk management		
3	Protecting information assets		
4	Levels of protection and threats		
5	Level of protection and threats		
6	Response to security incidents		
7	Designing a secure system		
8	Designing a secure system		

9	Intrusion detection		
10	Intrusion detection		
11	Reaction to threats		
12	Pre-incident procedures		
13	Post-incident procedures		
14	Mitigation of threats		
15	Mitigation of threats		

Arkansas Tech University

Course Addition

Assessment Form

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Provide an answer for each question. Your answers are to be typed single spaced.

CSEC 4213 Information Systems Risk Management

a. How does this course fit with the university mission? **This course is a required course for the proposed BS in Cybersecurity. This course supports the University's mission by being innovative and rigorous for students as they are educated to become professionals in the field of Cybersecurity.**

b. If this course is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable. **The Bachelor of Science in Cybersecurity is not accredited by an accrediting body. However, the Department of Homeland Security provides requirements for programs in Cybersecurity to be designated as a Center of Excellence. This proposed program is rigorous and meets these requirements. This course is a mandated requirement to qualify for designation as a Center of Excellence. (https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)**

Provide up to three student learning outcomes students will achieve after completing this course? **1. Students will be able to identify classes of possible threats and the consequences associated with each threat. 2. Students will be able to demonstrate an understanding of the required actions to mitigate the threat. 3. Students will be able to review pre- and post-incident procedures.**

c. What assessment tool or measure will you use to assess student learning? **Quizzes, tests, assignments, and a research paper.**

d. What will students demonstrate, represent, or produce to provide evidence of their learning? **Students will complete quizzes, tests, assignments.**
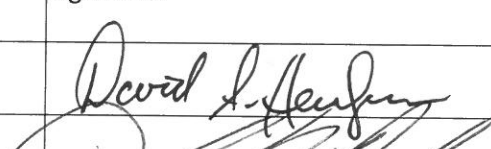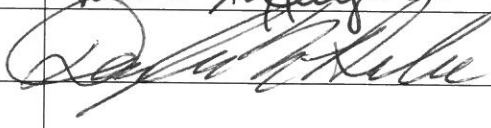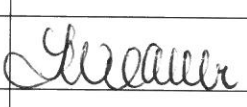
e. Provide an example or examples of student learning assessment evidence which supports the addition of this course. **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included. Data is an organization's most valuable asset that is housed in an information system. The**

	cybersecurity expert must have a thorough understanding of the risks associated with it. (https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)
f.	How does this course fit in the current state of the discipline? Include Arkansas institutional comparisons. If Arkansas educational institutions do not have the course or program provide comparative examples from regional educational institutions. . **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included in this degree.**

Arkansas Tech University
REQUEST FOR COURSE ADDITION

TO:	Curriculum Committee
FROM (Initiating Department):	**Department of Computer & Information Science**
DATE SUBMITTED:	6.30.2016

Title	Signature	Date
Department Head **Dr. David Hoelzeman**	*David A. Hoelzeman*	7-6-2016
Dean **Dr. Neal Barlow**	*signature*	9 Aug 16
Teacher Education Council (if applicable)		
Graduate Council (if applicable)		
Registrar **Ms. Tammy Weaver**	*Weaver*	8/10/16
Vice President for Academic Affairs **Dr. Mohammed Abdelrahman**		

Course Subject: (e.g., ACCT, ENGL)	Course Number: (e.g., 1003)	Effective Term: **Fall 2017**
CSEC	**4233**	☐ Spring ☑ **Summer I**

Official Catalog Title: (If official title exceeds 30 characters, indicate Banner Title below)

Legal Issues in Cybersecurity

Banner Title: (limited to 30 characters, including spaces, capitalize all letters — this will display on the transcript)

Legal Issues in Cybersecurity

Will this course be cross-listed with another existing course? If so, list course subject and number.

☐ Yes ☑ No

Will this course be cross-listed with a course currently not in the undergraduate or graduate catalog?
If so, list course subject and number. ☐ Yes ☑ No

Is this course repeatable for additional earned hours? ☐ Yes ☑ No How many total hours? ____

Grading: ☑ Standard Letter   ☐ P/F   ☐ Other ____

Mode of Instruction (check appropriate box):

☐ 01 Lecture ☑ 02 Lecture/Laboratory ☐ 03 Laboratory only

☐ 05 Practice Teaching ☐ 06 Internship/Practicum ☐ 07 Apprenticeship/Externship

☐ 08 Independent Study ☐ 09 Readings ☐ 10 Special Topics

☐ 12 Individual Lessons ☐ 13 Applied Instruction ☐ 16 Studio Course

☐ 17 Dissertation ☐ 18 Activity Course ☐ 19 Seminar ☐ 98 Other

Does this course require a fee? ⚪ Yes ⦿ No How Much?		Select Fee Type
If selected other list fee type:		

☐ Elective	☑ Major	☐ Minor

(If major or minor course, you must complete the Request for Program Change form to add course to program.)

If course is required by major/minor, how frequently will course be offered?

Spring

For the proposed course, attach a syllabus in Word format that includes: **(Items a. through d. should be entered as they should appear in the catalog)**

a. Course subject
b. Course number
c. Catalog course title
d. Catalog description
  1. Arkansas Course Transfer System (ACTS) course number, if applicable
  2. Cross-listing
  3. Offered (e.g., Fall only, Spring only. Do not enter if offer course fall and spring)
  4. Prerequisites
  5. Co-requisites
  6. Description
  7. Notes (e.g., information not in description such as course may be repeated for credit)
  8. Contact Hours if different than lecture (e.g., Lecture three hours, laboratory three hours)
  9. Fees (e.g., $36 art fee)
e. Section for Name of instructor, office hours, contact information (telephone, email)
f. Text required for course
g. Bibliography (supplemental reading list)
h. Justification/rationale for the course
i. Course objectives
j. Description of how course meets general education objectives (courses included in the general education component should show how the course meets one or more of the objectives contained in General Education Objectives listed in undergraduate catalog)
k. Assessment methods (include grading policy with specific equivalents for A, B, C)
l. Policy on absences, cheating, plagiarism, etc.
m. Course content (outline of material to be covered in course).

Will this course require any special resources such as unusual maintenance costs, library resources, special software, distance learning equipment, etc.? **No**

Will this course require a special classroom (computer lab, smart classroom, or laboratory)?
No

Attach the Course Addition Assessment Form. The form is located on the Assessment & Institutional Effectiveness web page at http://www.atu.edu/assessment/

If this course will affect other departments, a Departmental Support Form for each affected department must be attached. The form is located on the Curriculum forms web page at http://www.atu.edu/registrar/curriculum_forms.php. **N/A**

Syllabus
Department of Computer & Information Science

CSEC 4233	**Legal Issues in Cybersecurity**
Section #	None
OFFERED	Spring
PRE-REQUISITE	Junior Standing in CS, IS, IT, or Cybersecurity
CO-REQUISITES	None

DESCRIPTION

This course will provide a high-level explanation of the legal issues governing the authorized conduct of cyber operations and the use of related tools, techniques, technology and data. Both international and U.S. laws that operations in cyberspace must be in compliance, will be introduced.

Specific topics to be covered in this knowledge unit must minimally include:

- International Law
  - Jus ad bellum
    - United Nations Charter
  - Jus in bello
    - Hague Conventions
    - Geneva Conventions
- U.S. Laws
  - Constitution
    - Article I (Legislative Branch)
    - Article II (Presidency)
    - Article III (Judiciary)
    - Amendment 4 (Search and Seizure)
    - Article 14 (Due Process)
  - Statutory Laws
    - Title 10 (Armed Forces)
    - Title 50 (Espionage and Covert Action)
    - Title 18 (Crimes)
      - 18 USC 1030 (Computer Fraud and Abuse Act)
      - 18 USC 2510-22 Electronic Communications Privacy Act
      - 18 USC 2701-12 Stored Communications Act
      - 18 USC 1831-32 Economic Espionage Acts

This course will provide a high-level explanation of the legal issues governing the authorized conduct of cyber operations and the use of related tools, techniques, technology and data. Both international and U.S. laws that operations in cyberspace must be in compliance, will be introduced. Specific topics to be covered in this knowledge unit must minimally include:

International Law: Jus ad bellum, United Nations Charter; Jus in bello, Hague and Geneva Conventions.

U.S. Laws: Constitution, Article I (Legislative Branch), Article II (Presidency), Article III (Judiciary), Amendment 4 (Search and Seizure), and Article 14 (Due Process); Statutory Laws: Title 10 (Armed Forces), Title 50 (Espionage and Covert Action), and Title 18 (Crimes) 18 USC 1030 (Computer Fraud and Abuse Act), 18 USC 2510-22 Electronic Communications Privacy Act, 18 USC 2701-12 Stored Communications Act, 18 USC 1831-32 Economic Espionage Acts.

NOTES	None

COURSE INSTRUCTOR OFFICE HOURS	**Office: Corley** **Phone:** **Email:** To be determined by the faculty of record for this course To be determined by the faculty of record for this course

TEXTBOOK   *Cybersecurity Law*, J. Kosseff; Wiley Publishing; ISBN: 978-1-119-23150-9

BIBLIOGRAPHY   There is **no** REQUIRED supplemental reading list for this course.

JUSTIFICATION   The ability to secure information within a modern enterprise large or small is a growing challenge. Threats to information security are global, persistent, and increasingly sophisticated. Long gone are the days when managers could hope to secure the enterprise through ad hoc means.

OBJECTIVES   After completing this course, the learner will be able to:
- given a cyber operations scenario, students will be able to explain the authorities applicable to the scenario.
- provide a high-level explanation of the legal issues governing the authorized conduct of cyber operations and the use of related tools, techniques, technology and data.

GENERAL EDUCATION REQUIREMENTS   This course does not meet any of the General Education requirements.

ASSESSMENT   The final grade will consist of 100 percentage points, with the following breakdown:

Homework, Labs, & Assignments	**20%**
Exams, including Final Exam	**80%**
Total	*100%*

The following percentage table will be used to assign scores:

90-100% - A   80-89% - B   70-79% - C   60-69% - D   Below 60% - F

ATTENDANCE

The policy of the University in regard to class absences may be stated as the considered belief that regular class attendance is essential to the maximum growth and development of the student, and that students, in their own interest, are therefore responsible for attending all classes for which they are enrolled.

COURSE CONDUCT

Respect your peers. Students are expected to respect the rights of others. Students must conduct themselves in a professional manner, and maintain an atmosphere that does not distract other students from learning. Students whose behavior the instructor deems to be disruptive will be asked to leave. This includes, but is not limited to, cell phones ringing, talking on a cell phone or text messaging, use of a laptop computer in a distracting manner, consuming food or beverage, and/or having conversations with other students that are not part of the class instruction. If for some reason you feel that one or more of these items are necessary, you must get express permission from the instructor beforehand. A student who is requested to leave will not be excused from missing any class or class activities.

PLAGIARISM & CHEATING

Refer to the rules set forth in the student handbook. Students are expected to do their **OWN** work. **Consider your actions carefully**: there will be no tolerance for conduct that even gives the appearance of cheating. Any questions regarding the policy of cheating or conduct in this class should be clarified with the instructor. Cheating will result in a negative score (deduction from the final course grade) and will be reported to appropriate governing bodies, e.g. the CIS ethics committee.

SCHEDULE

Week			Exercises
1	Syllabus and introduction to legal issues in cybersecurity		The instructor of record will determine the assignments/exercises and point value for each weekly topic.
2	International Law		
3	International Law		
4	U. S. Laws		
5	U. s. Laws		
6	U. s. Laws		
7	Statutory Laws		

8	Laws and cyber operations		
9	Laws and cyber operations		
10	Tools		
11	Techniques		
12	Techniques		
13	Technology		
14	Technology		
15	Technology		

Arkansas Tech University

Course Addition

Assessment Form

Our Mission
Arkansas Tech University, a state-supported institution of higher education, is dedicated to nurturing scholastic development, integrity, and professionalism. The University offers a wide range of traditional and innovative programs which provide a solid educational foundation for life-long learning to a diverse community of learners.

Provide an answer for each question. Your answers are to be typed single spaced.
CSEC 4233 Legal Issues in Cybersecurity
a. How does this course fit with the university mission? **This course is a required course for the proposed BS in Cybersecurity. This course supports the University's mission by being innovative and rigorous for students as they are educated to become professionals in the field of Cybersecurity.**
b. If this course is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable. **The Bachelor of Science in Cybersecurity is not accredited by an accrediting body. However, the Department of Homeland Security provides requirements for programs in Cybersecurity to be designated as a Center of Excellence. This proposed program is rigorous and meets these requirements for designation. This course is a mandated requirement to qualify for this designation. (https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)**
Provide up to three student learning outcomes students will achieve after completing this course? **1. Students will be able to explain the authorities applicable to a scenario, given a cyber operations scenario. 2. Students will be able to provide a high-level explanation of the legal issues governing the authorized conduct of cyber operations and the use of related tools, techniques, technology and data.**
c. What assessment tool or measure will you use to assess student learning? **Quizzes, tests, assignments, and a research paper.**
d. What will students demonstrate, represent, or produce to provide evidence of their learning? **Students will complete quizzes, tests, assignments.**
e. Provide an example or examples of student learning assessment evidence which supports the addition of this course. **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included. To be a qualified cybersecurity student, the student must be knowledgeable in the laws that are applicable**

	to the field. (https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)
f.	How does this course fit in the current state of the discipline? Include Arkansas institutional comparisons. If Arkansas educational institutions do not have the course or program provide comparative examples from regional educational institutions. **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included in this degree.**

Arkansas Tech University
REQUEST FOR COURSE ADDITION

TO:	Curriculum Committee
FROM (Initiating Department):	**Department of Computer & Information Science**
DATE SUBMITTED:	6.30.2016

Title	Signature	Date
Department Head **Dr. David Hoelzeman**	*David S. Hoelzeman*	7-6-2016
Dean **Dr. Neal Barlow**		9 Aug 16
Teacher Education Council (if applicable)		
Graduate Council (if applicable)		
Registrar **Ms. Tammy Weaver**	*Tammy*	8/10/16
Vice President for Academic Affairs **Dr. Mohammed Abdelrahman**		

Course Subject: (e.g., ACCT, ENGL)	Course Number: (e.g., 1003)	Effective Term: **Fall 2017**
CSEC	**4240**	○ Spring ● **Summer I**

Official Catalog Title: (If official title exceeds 30 characters, indicate Banner Title below)

Software Security Analysis and Reverse Engineering Lab

Banner Title: (limited to 30 characters, including spaces, capitalize all letters — this will display on the transcript)

Software Sec Analysis & Rev En

Will this course be cross-listed with another existing course? If so, list course subject and number.
○ Yes ● No

Will this course be cross-listed with a course currently not in the undergraduate or graduate catalog?
If so, list course subject and number. ○ Yes ● No

Is this course repeatable for additional earned hours? ○ Yes ● No How many total hours?

Grading: ● Standard Letter ○ P/F ○ Other

Mode of Instruction (check appropriate box):

○ 01 Lecture ● 02 Lecture/Laboratory ○ 03 Laboratory only

○ 05 Practice Teaching ○ 06 Internship/Practicum ○ 07 Apprenticeship/Externship

○ 08 Independent Study ○ 09 Readings ○ 10 Special Topics

○ 12 Individual Lessons ○ 13 Applied Instruction ○ 16 Studio Course

○ 17 Dissertation ○ 18 Activity Course ○ 19 Seminar ○ 98 Other

Does this course require a fee?　○ Yes　◉ No　How Much? [　　] Select Fee Type	

If selected other list fee type: [　　　　　　　]

☐ Elective	☑ Major	☐ Minor

(If major or minor course, you must complete the Request for Program Change form to add course to program.)

If course is required by major/minor, how frequently will course be offered?
Spring

For the proposed course, attach a syllabus in Word format that includes: **(Items a. through d. should be entered as they should appear in the catalog)**
a. Course subject
b. Course number
c. Catalog course title
d. Catalog description
   1. Arkansas Course Transfer System (ACTS) course number, if applicable
   2. Cross-listing
   3. Offered (e.g., Fall only, Spring only. Do not enter if offer course fall and spring)
   4. Prerequisites
   5. Co-requisites
   6. Description
   7. Notes (e.g., information not in description such as course may be repeated for credit)
   8. Contact Hours if different than lecture (e.g., Lecture three hours, laboratory three hours)
   9. Fees (e.g., $36 art fee)
e. Section for Name of instructor, office hours, contact information (telephone, email)
f. Text required for course
g. Bibliography (supplemental reading list)
h. Justification/rationale for the course
i. Course objectives
j. Description of how course meets general education objectives (courses included in the general education component should show how the course meets one or more of the objectives contained in General Education Objectives listed in undergraduate catalog)
k. Assessment methods (include grading policy with specific equivalents for A, B, C)
l. Policy on absences, cheating, plagiarism, etc.
m. Course content (outline of material to be covered in course).

Will this course require any special resources such as unusual maintenance costs, library resources, special software, distance learning equipment, etc.? **No**

Will this course require a special classroom (computer lab, smart classroom, or laboratory)? **No**

Attach the Course Addition Assessment Form. The form is located on the Assessment & Institutional Effectiveness web page at http://www.atu.edu/assessment/

If this course will affect other departments, a Departmental Support Form for each affected department must be attached. The form is located on the Curriculum forms web page at http://www.atu.edu/registrar/curriculum_forms.php. **N/A**

Syllabus
Department of Computer & Information Science

CSEC 4240	**Software Security Analysis and Reverse Engineering LAB**
Section #	None
OFFERED	Spring
PRE-REQUISITE	None
CO-REQUISITES	CSEC 4243 Software Security Analysis and Reverse Engineering
DESCRIPTION	This is a lab designed to support CSEC 4243.
NOTES	None

COURSE INSTRUCTOR Office: Phone: Email:
To be determined by the faculty of record for this course

OFFICE HOURS To be determined by the faculty of record for this course

TEXTBOOK None

BIBLIOGRAPHY There is **no** REQUIRED supplemental reading list for this course.

JUSTIFICATION OS-level and hardware protection cannot solve the security problem alone. Secure Software begins with developing trust-worthy software.

OBJECTIVES After completing this course, the learner will be able to:
- demonstrate the ability to analyze source code.
- demonstrate the ability to analyze binary code.
- demonstrate the ability to analyze static code.
- demonstrate the ability to analyze dynamic code.
- demonstrate an understanding of various testing methodologies (Black Box/White Box/Fuzz).

COURSE TOPICS Topics include:
- analyzing source code
- analyzing binary code
- analyzing static code
- analyzing dynamic code
- testing methodologies

| GENERAL EDUCATION REQUIREMENTS | This course does not meet any of the General Education requirements. |

ASSESSMENT

The final grade will consist of 100 percentage points, with the following breakdown:

Homework, Labs, & Assignments	20%
Exams, including Final Exam	80%
Total	*100%*

The following percentage table will be used to assign scores:

90-100% - A   80-89% - B   70-79% - C   60-69% - D   Below 60% - F

ATTENDANCE

The policy of the University in regard to class absences may be stated as the considered belief that regular class attendance is essential to the maximum growth and development of the student, and that students, in their own interest, are therefore responsible for attending all classes for which they are enrolled.

COURSE CONDUCT

Respect your peers. Students are expected to respect the rights of others. Students must conduct themselves in a professional manner, and maintain an atmosphere that does not distract other students from learning. Students whose behavior the instructor deems to be disruptive will be asked to leave. This includes, but is not limited to, cell phones ringing, talking on a cell phone or text messaging, use of a laptop computer in a distracting manner, consuming food or beverage, and/or having conversations with other students that are not part of the class instruction. If for some reason you feel that one or more of these items are necessary, you must get express permission from the instructor beforehand. A student who is requested to leave will not be excused from missing any class or class activities.

PLAGIARISM & CHEATING

Refer to the rules set forth in the student handbook. Students are expected to do their **OWN** work. **Consider your actions carefully**: there will be no tolerance for conduct that even gives the appearance of cheating. Any questions regarding the policy of cheating or conduct in this class should be clarified with the instructor. Cheating will result in a negative

score (deduction from the final course grade) and will be reported to appropriate governing bodies, e.g. the CIS ethics committee.

SCHEDULE

Week			Exercises
1	Syllabus and introduction to course		The instructor of record will determine the assignments/exercises and point value for each weekly topic.
2	Analyze source code		
3	Analyze source code		
4	Analyze source code		
5	Analyze binary code		
6	Analyze binary code		
7	Analyze binary code		
8	Analyze static code		
9	Analyze static code		
10	Analyze static code		
11	Analyze dynamic code		
12	Analyze dynamic code		
13	Analyze dynamic code		
14	Testing methodologies		
15	Testing methodologies		

Arkansas Tech University

Course Addition

Assessment Form

Our Mission
Arkansas Tech University, a state-supported institution of higher education, is dedicated to nurturing scholastic development, integrity, and professionalism. The University offers a wide range of traditional and innovative programs which provide a solid educational foundation for life-long learning to a diverse community of learners.

Provide an answer for each question. Your answers are to be typed single spaced.
CSEC 4240 Software Security Analysis and Reverse Engineering Lab
a. How does this course fit with the university mission? **This course is a required course for the proposed BS in Cybersecurity. This course supports the University's mission by being innovative and rigorous for students as they are educated to become professionals in the field of Cybersecurity.**
b. If this course is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable. **The Bachelor of Science in Cybersecurity is not accredited by an accrediting body. However, the Department of Homeland Security provides requirements for programs in Cybersecurity to be designated as a Center of Excellence. This proposed program is rigorous and meets these requirements. This course is a mandated requirement for this designation. (https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)**
Provide up to three student learning outcomes students will achieve after completing this course? **1. Students will be able to demonstrate the ability to analyze source code. 2. Students will be able to demonstrate the ability to analyze binary code. 3. Students will be able to demonstrate an ability to analyze static code.**
c. What assessment tool or measure will you use to assess student learning? **Quizzes, tests, assignments, and a research paper.**
d. What will students demonstrate, represent, or produce to provide evidence of their learning? **Students will complete quizzes, tests, assignments.**
e. Provide an example or examples of student learning assessment evidence which supports the addition of this course. **1. Students will be able to demonstrate the ability to analyze code. 2. Students will be able to analyze binary code. 3. Students will be able to demonstrate the ability to analyze dynamic code.**
f. How does this course fit in the current state of the discipline? Include Arkansas institutional comparisons. If Arkansas educational institutions do not have the course or program

provide comparative examples from regional educational institutions. **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included in this degree.**

Arkansas Tech University
REQUEST FOR COURSE ADDITION

TO:	Curriculum Committee	
FROM (Initiating Department):	**Department of Computer & Information Science**	
DATE SUBMITTED:	6.30.2016	

Title	Signature	Date
Department Head **Dr. David Hoelzeman**	*David A. Hoelzeman*	7-6-2016
Dean **Dr. Neal Barlow**	*[signature]*	*[date]*
Teacher Education Council (if applicable)		
Graduate Council (if applicable)		
Registrar **Ms. Tammy Weaver**	*[signature]*	8/10/16
Vice President for Academic Affairs **Dr. Mohammed Abdelrahman**		

Course Subject: (e.g., ACCT, ENGL) **CSEC**	Course Number: (e.g., 1003) **4243**	Effective Term: **Fall 2017** ◯ Spring ⦿ **Summer I**

Official Catalog Title: (If official title exceeds 30 characters, indicate Banner Title below)

Software Security Analysis and Reverse Engineering

Banner Title: (limited to 30 characters, including spaces, capitalize all letters — this will display on the transcript)

Software Security & Reverse En

Will this course be cross-listed with another existing course? If so, list course subject and number.

◯ Yes ⦿ No

Will this course be cross-listed with a course currently not in the undergraduate or graduate catalog?

If so, list course subject and number. ◯ Yes ⦿ No

Is this course repeatable for additional earned hours? ◯ Yes ⦿ No How many total hours? [ ]

Grading: ⦿ Standard Letter ◯ P/F ◯ Other [ ]

Mode of Instruction (check appropriate box):

◯ 01 Lecture ⦿ 02 Lecture/Laboratory ◯ 03 Laboratory only

◯ 05 Practice Teaching ◯ 06 Internship/Practicum ◯ 07 Apprenticeship/Externship

◯ 08 Independent Study ◯ 09 Readings ◯ 10 Special Topics

◯ 12 Individual Lessons ◯ 13 Applied Instruction ◯ 16 Studio Course

◯ 17 Dissertation ◯ 18 Activity Course ◯ 19 Seminar ◯ 98 Other

Does this course require a fee? ☐ Yes ☑ No How Much? [____]	Select Fee Type

If selected other list fee type: [_____]

☐ Elective   ☑ Major   ☐ Minor

(If major or minor course, you must complete the Request for Program Change form to add course to program.)

If course is required by major/minor, how frequently will course be offered?

Spring

For the proposed course, attach a syllabus in Word format that includes: **(Items a. through d. should be entered as they should appear in the catalog)**

a. Course subject
b. Course number
c. Catalog course title
d. Catalog description
   1. Arkansas Course Transfer System (ACTS) course number, if applicable
   2. Cross-listing
   3. Offered (e.g., Fall only, Spring only. Do not enter if offer course fall and spring)
   4. Prerequisites
   5. Co-requisites
   6. Description
   7. Notes (e.g., information not in description such as course may be repeated for credit)
   8. Contact Hours if different than lecture (e.g., Lecture three hours, laboratory three hours)
   9. Fees (e.g., $36 art fee)
e. Section for Name of instructor, office hours, contact information (telephone, email)
f. Text required for course
g. Bibliography (supplemental reading list)
h. Justification/rationale for the course
i. Course objectives
j. Description of how course meets general education objectives (courses included in the general education component should show how the course meets one or more of the objectives contained in General Education Objectives listed in undergraduate catalog)
k. Assessment methods (include grading policy with specific equivalents for A, B, C)
l. Policy on absences, cheating, plagiarism, etc.
m. Course content (outline of material to be covered in course).

Will this course require any special resources such as unusual maintenance costs, library resources, special software, distance learning equipment, etc.? **No**

Will this course require a special classroom (computer lab, smart classroom, or laboratory)?
No

Attach the Course Addition Assessment Form. The form is located on the Assessment & Institutional Effectiveness web page at http://www.atu.edu/assessment/

If this course will affect other departments, a Departmental Support Form for each affected department must be attached. The form is located on the Curriculum forms web page at http://www.atu.edu/registrar/curriculum_forms.php. **N/A**

Syllabus
Department of Computer & Information Science

CSEC 4243	**Software Security Analysis and Reverse Engineering**
Section #	001
OFFERED	Spring
PRE-REQUISITE	**COMS2213 Data Structures**
CO-REQUISITES	**CSEC 4240 Software Security Analysis and Reverse Engineering Lab**
DESCRIPTION	To learn code analysis techniques and apply testing methodologies to detect the presence of loopholes or weaknesses of software and to determine the effectiveness of security controls that are implemented in the software.
NOTES	None
COURSE INSTRUCTOR	Office: Phone: Email: To be determined by the faculty of record for this course
OFFICE HOURS	To be determined by the faculty of record for this course
TEXTBOOK	*Practical Reverse Engineering: x86, x64, ARM, Windows Kernel, Reversing Tools, and Obfuscation*, B. Dang; Wiley Publishing; SBN: 978-1-118-78731-1
BIBLIOGRAPHY	There is **no** REQUIRED supplemental reading list for this course.
JUSTIFICATION	OS-level and hardware protection cannot solve the security problem alone. Secure Software begins with developing truth worthy software.
OBJECTIVES	After completing this course, the learner will be able to: • demonstrate the ability to analyze source code. • demonstrate the ability to analyze binary code. • demonstrate the ability to analyze static code. • demonstrate the ability to analyze dynamic code. • demonstrate an understanding of various testing methodologies (Black Box/White Box/Fuzz).

COURSE TOPICS

Topics include:
- analyzing source code
- analyzing binary code
- analyzing static code
- analyzing dynamic code
- testing methodologies

GENERAL EDUCATION REQUIREMENTS

This course does not meet any of the General Education requirements.

ASSESSMENT

The final grade will consist of 100 percentage points, with the following breakdown:

Homework, Labs, and Assignments	20%
Exams, including Final Exam	80%
Total	*100%*

The following percentage table will be used to assign scores:

90-100% - A   80-89% - B   70-79% - C   60-69% - D   Below 60% - F

ATTENDANCE

The policy of the University in regard to class absences may be stated as the considered belief that regular class attendance is essential to the maximum growth and development of the student, and that students, in their own interest, are therefore responsible for attending all classes for which they are enrolled.

COURSE CONDUCT

Respect your peers. Students are expected to respect the rights of others. Students must conduct themselves in a professional manner, and maintain an atmosphere that does not distract other students from learning. Students whose behavior the instructor deems to be disruptive will be asked to leave. This includes, but is not limited to, cell phones ringing, talking on a cell phone or text messaging, use of a laptop computer in a distracting manner, consuming food or beverage, and/or having conversations with other students that are not part of the class instruction. If for some reason you feel that one or more of these items are necessary, you must get express permission from the instructor beforehand. A student who is requested to leave will not be excused from missing any class or class activities.

PLAGIARISM & CHEATING   Refer to the rules set forth in the student handbook. Students are expected to do their **OWN** work. **Consider your actions carefully**: there will be no tolerance for conduct that even gives the appearance of cheating. Any questions regarding the policy of cheating or conduct in this class should be clarified with the instructor. Cheating will result in a negative score (deduction from the final course grade) and will be reported to appropriate governing bodies, e.g. the CIS ethics committee.

SCHEDULE

Week			Exercises
1	Syllabus and introduction to course		The instructor of record will determine the assignments/exercises and point value for each weekly topic.
2	Analyze source code		
3	Analyze source code		
4	Analyze source code		
5	Analyze binary code		
6	Analyze binary code		
7	Analyze binary code		
8	Analyze static code		
9	Analyze static code		
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11	Analyze dynamic code		
12	Analyze dynamic code		
13	Analyze dynamic code		
14	Testing methodologies		
15	Testing methodologies		

Arkansas Tech University

Course Addition

Assessment Form

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Provide an answer for each question. Your answers are to be typed single spaced.

CSEC 4243 Software Security Analysis and Reverse Engineering

a. How does this course fit with the university mission? **This course is a required course for the proposed BS in Cybersecurity. This course supports the University's mission by being innovative and rigorous for students as they are educated to become professionals in the field of Cybersecurity.**

b. If this course is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable. **The Bachelor of Science in Cybersecurity is not accredited by an accrediting body. However, the Department of Homeland Security provides requirements for programs in Cybersecurity to be designated as a Center of Excellence. This proposed program is rigorous and meets these requirements. This course is a mandated requirement to qualify for designation as a Center of Excellence. (https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)**

Provide up to three student learning outcomes students will achieve after completing this course? **1. Students will be able to demonstrate the ability to analyze source code. 2. Students will be able to demonstrate the ability to analyze binary code. 3. Students will be able to demonstrate an ability to analyze static code.**

c. What assessment tool or measure will you use to assess student learning? **Quizzes, tests, assignments, and a research paper.**

d. What will students demonstrate, represent, or produce to provide evidence of their learning? **Students will complete quizzes, tests, assignments.**

e. Provide an example or examples of student learning assessment evidence which supports the addition of this course. **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included. To be a qualified cybersecurity student, the student must be trained extensively in understanding secure software. This course is accompanied by a lab that will provide a hands-on experience to**

	support student learning. (https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)
f.	How does this course fit in the current state of the discipline? Include Arkansas institutional comparisons. If Arkansas educational institutions do not have the course or program provide comparative examples from regional educational institutions. **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included in this degree.**

Arkansas Tech University
REQUEST FOR COURSE ADDITION

TO:	Curriculum Committee
FROM (Initiating Department):	**Department of Computer & Information Science**
DATE SUBMITTED:	6.30.2016

Title	Signature	Date
Department Head **Dr. David Hoelzeman**	*David A. Hoelzeman*	7-6-2016
Dean **Dr. Neal Barlow**	*[signature]*	9 Aug 16
Teacher Education Council (if applicable)		
Graduate Council (if applicable)		
Registrar **Ms. Tammy Weaver**	*Weaver*	8/10/16
Vice President for Academic Affairs **Dr. Mohammed Abdelrahman**		

Course Subject: (e.g., ACCT, ENGL) **CSEC**	Course Number: (e.g., 1003) **4293**	Effective Term: **Fall 2017** ⊙ Spring ⦿ **Summer I**

Official Catalog Title: (If official title exceeds 30 characters, indicate Banner Title below)

Cybersecurity Capstone Project / Internship

Banner Title: (limited to 30 characters, including spaces, capitalize all letters — this will display on the transcript)

Cybersecurity Capstone/Interns

Will this course be cross-listed with another existing course? If so, list course subject and number.

⦿ Yes ⦿ No [   ]

Will this course be cross-listed with a course currently not in the undergraduate or graduate catalog?

If so, list course subject and number. ⦿ Yes ⦿ No [   ]

Is this course repeatable for additional earned hours? ⦿ Yes ⦿ No How many total hours? [   ]

Grading: ⦿ Standard Letter   ⦿ P/F   ⦿ Other [   ]

Mode of Instruction (check appropriate box):

⦿ 01 Lecture   ⦿ 02 Lecture/Laboratory   ⦿ 03 Laboratory only

⦿ 05 Practice Teaching   ⦿ 06 Internship/Practicum   ⦿ 07 Apprenticeship/Externship

⦿ 08 Independent Study   ⦿ 09 Readings   ⦿ 10 Special Topics

⦿ 12 Individual Lessons   ⦿ 13 Applied Instruction   ⦿ 16 Studio Course

⦿ 17 Dissertation   ⦿ 18 Activity Course   ⦿ 19 Seminar   ⦿ 98 Other

Does this course require a fee? ○ Yes ● No How Much? [＿＿＿＿]	Select Fee Type

If selected other list fee type: [＿＿＿＿＿＿＿＿＿＿＿＿＿]

☐ Elective   ☑ Major   ☐ Minor

(If major or minor course, you must complete the Request for Program Change form to add course to program.)

If course is required by major/minor, how frequently will course be offered?

Spring

For the proposed course, attach a syllabus in Word format that includes: **(Items a. through d. should be entered as they should appear in the catalog)**
a. Course subject
b. Course number
c. Catalog course title
d. Catalog description
    1. Arkansas Course Transfer System (ACTS) course number, if applicable
    2. Cross-listing
    3. Offered (e.g., Fall only, Spring only. Do not enter if offer course fall and spring)
    4. Prerequisites
    5. Co-requisites
    6. Description
    7. Notes (e.g., information not in description such as course may be repeated for credit)
    8. Contact Hours if different than lecture (e.g., Lecture three hours, laboratory three hours)
    9. Fees (e.g., $36 art fee)
e. Section for Name of instructor, office hours, contact information (telephone, email)
f. Text required for course
g. Bibliography (supplemental reading list)
h. Justification/rationale for the course
i. Course objectives
j. Description of how course meets general education objectives (courses included in the general education component should show how the course meets one or more of the objectives contained in General Education Objectives listed in undergraduate catalog)
k. Assessment methods (include grading policy with specific equivalents for A, B, C)
l. Policy on absences, cheating, plagiarism, etc.
m. Course content (outline of material to be covered in course).

Will this course require any special resources such as unusual maintenance costs, library resources, special software, distance learning equipment, etc.? **No**

Will this course require a special classroom (computer lab, smart classroom, or laboratory)?
No

Attach the Course Addition Assessment Form. The form is located on the Assessment & Institutional Effectiveness web page at http://www.atu.edu/assessment/

If this course will affect other departments, a Departmental Support Form for each affected department must be attached. The form is located on the Curriculum forms web page at http://www.atu.edu/registrar/curriculum_forms.php. **N/A**

Syllabus
Department of Computer & Information Science

CSEC 4293   Internship

Section #   001

OFFERED   Spring

PRE-REQUISITE   Departmental Approval

CO-REQUISITES   None

DESCRIPTION   An integrative and intensive learning project which culminates the cyber security program during the senior year. Student will build on program course work to develop a strategic evaluation and plan for the management of secure information systems in an organization, either real or hypothetical. Student may use a start-up project as well. At the end of the internship, the student will present their proposals or findings and recommendations to a panel of representatives of an organization, faculty, and fellow students.

NOTES   None

COURSE INSTRUCTOR   Office: Phone: Email:
To be determined by the faculty of record for this course

OFFICE HOURS   To be determined by the faculty of record for this course

TEXTBOOK   To be determined by the faculty of record for this course

BIBLIOGRAPHY   There is **no** REQUIRED supplemental reading list for this course.

JUSTIFICATION   This course will serve as a capstone course that will allow students to Immerse themselves by monitoring, defending, and if required, monitor system recovery as a result of a data breach.

OBJECTIVES   After completing this course, the learner will be able to:
- monitor a system for intrusion detection.
- implement defense strategies for a system.
- monitor system recovery from a data breach.

COURSE TOPICS   Topics include, but not limited to:
- building upon knowledge learned throughout the program

- monitor a system for intrusion detection
- implement defense strategies for a system
- monitor system recovery from a breach

GENERAL EDUCATION REQUIREMENTS

This course does not meet any of the General Education requirements.

ASSESSMENT

The final grade will consist of 100 percentage points, with the following breakdown:

Weekly reports to supervisor on status of internship	**25%**
Presentation of Proposals, recommendations or findings	**25%**
Evaluations from internship sponsor	**50%**
Total	*100%*

The following percentage table will be used to assign scores:

90-100% - A   80-89% - B   70-79% - C   60-69% - D   Below 60% - F

ATTENDANCE

The policy of the University in regard to class absences may be stated as the considered belief that regular class attendance is essential to the maximum growth and development of the student, and that students, in their own interest, are therefore responsible for attending all classes for which they are enrolled.

COURSE CONDUCT

Respect your peers. Students are expected to respect the rights of others. Students must conduct themselves in a professional manner, and maintain an atmosphere that does not distract other students from learning. Students whose behavior the instructor deems to be disruptive will be asked to leave. This includes, but is not limited to, cell phones ringing, talking on a cell phone or text messaging, use of a laptop computer in a distracting manner, consuming food or beverage, and/or having conversations with other students that are not part of the class instruction. If for some reason you feel that one or more of these items are necessary, you must get express permission from the instructor beforehand. A student

who is requested to leave will not be excused from missing any class or class activities.

PLAGIARISM & CHEATING

Refer to the rules set forth in the student handbook. Students are expected to do their **OWN** work. **Consider your actions carefully**: there will be no tolerance for conduct that even gives the appearance of cheating. Any questions regarding the policy of cheating or conduct in this class should be clarified with the instructor. Cheating will result in a negative score (deduction from the final course grade) and will be reported to appropriate governing bodies, e.g. the CIS ethics committee.

SCHEDULE

Week			Exercises
1	There is no set schedule; dependent upon actual internship and requirements of the internship.		
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

Arkansas Tech University

Course Addition

Assessment Form

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Arkansas Tech University, a state-supported institution of higher education, is dedicated to nurturing scholastic development, integrity, and professionalism. The University offers a wide range of traditional and innovative programs which provide a solid educational foundation for life-long learning to a diverse community of learners.

Provide an answer for each question. Your answers are to be typed single spaced.
CSEC 4293 Internship
a. How does this course fit with the university mission? **This course is a required course for the proposed BS in Cybersecurity. This course supports the University's mission by being innovative and rigorous for students as they are educated to become professionals in the field of Cybersecurity.**
b. If this course is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable. **The Bachelor of Science in Cybersecurity is not accredited by an accrediting body. However, the Department of Homeland Security provides requirements for programs in Cybersecurity to be designated as a Center of Excellence. This proposed program is rigorous and meets these requirements. This course is a mandated requirement to qualify for designation as a Center of Excellence. (https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)**
Provide up to three student learning outcomes students will achieve after completing this course? **1. Students will be able to monitor a system for intrusion detection. 2. Students will be able to implement defense strategies for a system. 3. Students will be able to monitor system recovery from a data breach.**
c. What assessment tool or measure will you use to assess student learning? **Students will be required to complete a review of task that were assigned and completed throughout the internship. The organization providing the internship will complete an analysis of the student's strengths/weaknesses.**
d. What will students demonstrate, represent, or produce to provide evidence of their learning? **Students will complete a review of tasks that were assigned to him/her during the internship. In addition, the organization where the internship was completed with complete documentation that pertains to the students' abilities.**
e. Provide an example or examples of student learning assessment evidence which supports the addition of this course. **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included. This course will**
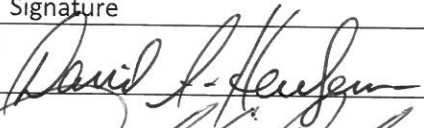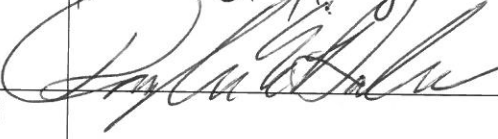
	provide the student with a 'real-world' experience so the student can utilize what they have learned as well as increase his/her level of knowledge. (https://www.nsa.gov/resources/educators/centers-academic-excellence/cyber-operations/requirements.shtml)
f.	How does this course fit in the current state of the discipline? Include Arkansas institutional comparisons. If Arkansas educational institutions do not have the course or program provide comparative examples from regional educational institutions. **To become a Center of Excellence for Cybersecurity for Homeland Security, this is a mandated course that must be included in this degree.**

Arkansas Tech University
PROPOSAL FOR NEW PROGRAM

TO:	Select Appropriate Committee
	Curriculum Committee
FROM (Initiating Department):	**Department of Computer & Information Science**
DATE SUBMITTED:	6.30.2016

Title	Signature	Date
Department Head **Dr. David Hoelzeman**	*David L. Hoelzeman*	7-6-2016
Dean **Dr. Neal Barlow**	*[signature]*	9 Aug 16
Teacher Education Council (if applicable)		
Graduate Council (if applicable)		
Registrar **Ms. Tammy Weaver**	*[signature]*	8/10/16
Vice President for Academic Affairs **Dr. Mohamed Abdelrahman**		

Program Title: Associate of Applied Science in Cybersecurity	CIP Code: 11.1003
Contact Person: Name: Dr. David Hoelzeman Institution Name: Arkansas Tech University Address: 1811 North Boulder, Corley 232 Russellville, AR 72801 E-mail Address: dhoelzeman@atu.edu Phone Number: 479.880.4376	Proposed Date: Fall 2017
Program Summary: (Include general description of program with overview of any curriculum additions or modifications, proposed cost, faculty resources, library resources, facilities and equipment, purpose, and any other important information)	

The rise in cyber threats has created an unprecedented demand for cybersecurity specialists. Data breaches, malware infections, and software vulnerabilities are common in today's technology and it is critical to fully understand how these attacks occur, how to prevent them, and how to recover. An Associate of Applied Science in Cybersecurity is an introduction to the field. Students seeking the Associate of Applied Science in Cybersecurity will be completing courses in:

- Wireless and cellular security
- Digital logic design
- Introduction to Information Systems
- Computer Programming courses
- Forensics and Incident Response
- Virtualization

List existing degree programs that support the proposed program:
Computer Science
Electrical Engineering
General Education
Information Technology
Mathematics

Need for the Program: (Survey data on student interest in the program (numbers not percentages), job availability, corporate demands, and employment/wage projections). Focus mostly on state needs.

As an attachment, include letters of support from organizations and businesses that can speak to number of job vacancies, whether the degree will provide opportunities for job advancement, increase in wages based on additional education, etc.) **Cybersecurity threats are rapidly increasing. The following link is to the Department of Homeland Security's website for cybersecurity.**
https://www.dhs.gov/cybersecurity-overview

The U. S. Bureau of Labor Statistics includes information that this field is rapidly increasing.
http://www.bls.gov/ooh/computer-and-information-technology/home.htm

In further support, the following website is to the Comprehensive National Cybersecurity Initiative.
https://www.whitehouse.gov/issues/foreign-policy/cybersecurity/national-initiative

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Curriculum Outline by Semester: **Please see attached document**

Total number of Semester Hours Required for Graduation: 60	Can the program be completed in 8 semesters? ⦿ Yes ◯ No If not, provide justification. N/A

List New Courses (Please attach New Course Proposals):
CSEC 1113 Introduction to Networking
CSEC 1213 Wireless and Cellular Security

CSEC 2113 Introduction to Information Systems CSEC 2213 Forensics and Incident Response CSEC 2223 Virtualization
Identify General Education Courses, Core Courses, and Major Courses: **General Education Courses** **ENGL 1013/1023** **MATH 2914** **4 hours Science with Lab** **3 hours US Hist/Pols** **3 hours Social Science** **3 hours FAH** **3 hours COMM** **26 hours total**   **Major Courses:** **CSEC 1113 Introduction to Networking** **CSEC 1213 Wireless and Cellular Security** **CSEC 2113 Introduction to Information Systems** **CSEC 2213 Forensics and Incident Response** **CSEC 2223 Virtualization**
Courses currently offered via distance technology: (moved from above section) **None**
Program Admission Requirements: **Mirror of the University's admission policy**
Attach the New Program Assessment Form. The form is located on the Assessment & Institutional Effectiveness web page at http://www.atu.edu/assessment/ **Please see attached.**
List the names and credentials of all faculty teaching course in the proposed program. **Dr. Matt Brown – Ph.D. Information Systems** **Dr. Roger Fang – Ph.D. Electrical and Computer Engineering** **Mr. Roger Frye – ABD Engineering Science** **Dr. Nan Harrell – Ph.D. Information Systems with an emphasis in Information Security** **Dr. David Hoelzeman – Ph.D. Computer Science** **Dr. Rick Massengale - Ph.D. Information Assurance** **Dr. David Middleton – Ph.D. Computer Science** **Dr. Johnette Moody - DBA Business with emphasis in** **Dr. Larry Morell – Ph.D. Computer Science** **Dr. Nobuyuki Nezu – Ph.D. Computer Science** **Mr. Ron Robison – Masters in Business** **Ms. Sarah Robison – Masters in Mathematics** **Dr. Jerry Wood (Ph.D. Information Assurance)**

Dr. Jerry Wood (Ph.D. Information Assurance)
Total number of faculty required (existing and new) For new faculty members include expected credentials/experience and hire date **No new faculty will be needed.**
For proposed graduate programs attach curricula vitae for the faculty teaching the program **N/A**
Description of Resources **The current are adequate for this degree.**
Current Library and instructional facilities **The library and instructional facilities are adequate to support this program.**
New Resources Required (include costs and acquisition plan): **None**

New Program Costs (Expenditures for first three years of program operation)
Include:
    New administrative costs – **none; this program will be housed in the Department of Computer &**
Information Science and the administrative structure is currently in place.
    New faculty - **none**
    New library resources and costs - **none**
    New/renovated facilities and costs - **none**
    New instructional equipment and costs - **none**
    Distance delivery costs - **none**
    Other new costs - **none**

Detail Marketing Plan and Costs **Please see attached.**

Associate of Applied in in Cybersecurity Degree Proposed Curriculum
6.30.2016

Freshman Fall (13 hours)
ENGL 1013 Composition
Fine Arts & Humanities
US History / Government
Tech 1001   Orientation to the University
CSEC 1113   Introduction to Networking

Freshman Spring (17 hours)
ENGL 1023   Composition II
Social Science
MATH 2914   Calculus I
CSEC 1213   Wireless and Cellular Security
COMS 2104   Foundations of Computer Programming I

Sophomore Fall (13 hours) 14
ELEG 2130   Digital Logic Design Lab
ELEG 2134   Digital Logic Design
CSEC 2113   Introduction to Information Systems
COMS 2203   Foundations of Computer Programming II -
COMS 2903   Discrete Structures for Technical Majors
1 hour LD Elective

Sophomore Spring (16 hours)
COMM 2173   Business and Professional Speaking (previously SPH 2173)
Science Sequence I
COMS 2213   Data Structures
CSEC 2213   Forensics and Incident Response
CSEC 2223   Virtualization

Arkansas Tech University

Proposal for New Program Assessment Form

Associate of Applied Science in Cybersecurity

Our Mission
Arkansas Tech University, a state-supported institution of higher education, is dedicated to nurturing scholastic development, integrity, and professionalism. The University offers a wide range of traditional and innovative programs which provide a solid educational foundation for life-long learning to a diverse community of learners.

Provide an answer for each question. Your answers are to be typed single spaced.
a. How does this proposal for the new program fit with the university mission? **The Associate of Applied Science in Cybersecurity will provide students with training in the latest detection and protection methods in cybersecurity. This degree is in an introduction into the field of Cybersecurity and will provide a student with the knowledge necessary to assume entry level positions in the field of Cybersecurity. This degree supports the University's mission by being innovative as it trains individuals for entry-level positions.**
b. If this program is mandated by an accrediting or certifying agency, include the directives. If not, state not applicable. **The Associate of Science in Cybersecurity is not accredited by an accrediting body. However, the Department of Homeland Security provides requirements for programs in cybersecurity to be designated as a Center of Excellence. This new program is rigorous and meets the requirements to become a Center of Excellence.**
c. How will this new program enhance learning for students enrolled in the program? **This program will enhance student learning because it offers extensive training in cybersecurity for detection and prevention of intrusion into systems. Students will be involved in 'real-world' situations, through assignments, tests, projects, etc., as they learn. Students will be be assessed on how a computer functions and processes at the most basic level, how to detect intrusions, how to prevent intrusions, how to write secure software, cryptography, and how to restore a system that has been compromised.**
d. What will students demonstrate, represent, or produce to provide evidence of their learning once they complete the program? **Students will be required to complete an internship or capstone project. The coursework is designed so that students will be able to complete tests, quizzes, hands-on assignments, and labs to support learning.**
e. Provide an example or examples of assessment evidence which supports adding this new program. **Cybersecurity threats are rapidly increasing. The following link is to the Department of Homeland Security's website for cybersecurity: https://www.dhs.gov/cybersecurity-overview. The U. S. Bureau of Labor Statistics includes information that this field is rapidly increasing. The link to this site: http://www.bls.gov/ooh/computer-and-information-technology/home.htm. To further support this new program, the following website is to the Comprehensive National**

	Cybersecurity Initiative: https://www.whitehouse.gov/issues/foreign-policy/cybersecurity/national-initiative. **In addition the Advisory Board for the Department of Computer & Information Science met during April of this year and urged the department to offer this degree because graduates are and will continue to be in high demand.**
f.	Attach a detailed assessment plan including three to five specific program student learning outcomes, means or instructional measures to assess each outcome, identify program courses where learning will be assessed, and performance standards or criteria for success which demonstrate student learning for each outcome. (Examples for assessment plans/curriculum mapping can be found at the Office of Assessment and Institutional Effectiveness web page.) **See below.**

Arkansas Tech University				
Academic Cycle: New Program Proposal				
Program: Associate of Applied Science in Cybersecurity				
Program Objectives/Standards (align with mission)	**Learning Objectives/ Outcome Assessment (3-5 unless otherwise specified)**	**Courses (program core)**	**Means of Assessment (direct and indirect measures)**	**Criteria for Success (performance standard)**
PO1: Understand information systems	LO1: Analyze and evaluate information systems	CSEC 2113 – Introduction to	Tests, assignments, projects	High Pass 90-100% Pass 70-89%

		Information Systems		
PO2: Understand wireless security and cellular technologies	LO1: Analyze current industry standards LO2: Assessment of wireless and cellular systems and security risks	CSEC 1213 – Wireless Security and Cellular Technologies	Tests, quizzes, assignments; hands-on projects	High Pass 90-100% Pass 70-89%
PO3: Install and administer virtual machines	LO1: Implement standard procedures to install virtual machines LO2: Monitor networks	CSEC 2223 - Virtualization	Tests, quizzes, assignments, hands-on projects	High Pass 90-100% Pass 70-89%
PO4: Understand Forensics and Incident Response	LO1: Evaluate forensic tools LO2: Analyze variety of operating systems and applications for computer evidence	CSEC 2213 – Forensics and Incident Response	Tests, quizzes, assignments, Hands-on assignments	High Pass 90-100% Pass 70-89%

Assessment Plan Implementation				
Assessment	**CPGE Form or Department Method**	**CPGE System or Department Method**	**Actual Results Obtained (CPGE Report or Department Method)**	**Use of Results for Improvement**

Course Embedded	Department of Computer & Information Science utilizes FCAR (Faculty Course Assessment Report) and CABS (Course Assessment Binder)	Department of Computer & Information Science utilizes FCAR (Faculty Course Assessment Report) and CABS (Course Assessment Binder). Assessment data will be submitted annually.	Review and analyze departmental assessment data.	Course, instructional or program changes.
Indirect and Direct Measures Alignment	Graduates will complete exit survey in the CSEC 4983. A survey will be sent to those providing an internship.	Graduates will complete exit survey in the CSEC 4983. A survey will be sent to those providing an internship.	Analyze survey results	Program and Curriculum changes

Continuous Improvement Plan Summarize each category from assessment results and conclusions.	
Categories of Improvement:	**Recommended Changes:**
A. Student Learning	Course Embedded Student Learning Outcome Assessment
B. Instruction and Curriculum	Course Embedded Student Learning Outcome Assessment
C. Assessment	Evaluate assessment from Student Learning Outcome results
D. Program Quality	Evaluate changes from Student and Employer Satisfaction Surveys
E. Budget	Budget requests supported by student learning and program assessment.

Marketing Plan
Cybersecurity Degree
June 28, 2016

Arkansas Tech University engages in a variety of marketing initiatives to inform prospective students about the educational opportunities that it offers. These include advertisements on television, online, in print and through other channels as they become available and constructive in reaching stated objectives. All marketing messages and placements are tailored to reach specific audiences based upon regularly conducted research about the educational needs of prospective students and their awareness of Arkansas Tech.

These marketing efforts are supported by internal and external communication initiatives that leverage internal channels such as www.atu.edu, www.arkansastechnews.com and Arkansas Tech's social media presences as well as external channels such as newspapers, television stations, radio stations and press services. The external communication initiatives aid in constantly elevating the brand of Arkansas Tech, while internal communications represent an important retention tool by creating a better informed and more engaged student population.

As it relates to new academic programs such as the proposed cybersecurity degree in the Arkansas Tech Department of Computer and Information Science, marketing and communication programs are designed to create awareness of the new degree, points of differentiation that make it a good option for prospective students and potential positive outcomes for graduates of the program. Specific tactics may include some or all of the following options: a presence on www.atu.edu, news releases announcing the new program, inclusion in marketing campaigns on behalf of the university and brochures and similar publications that include information about the program. These marketing and communication goals are established and pursued through collaboration between staff from the Office of University Relations and faculty members from the academic discipline.

Arkansas Tech University
DEPARTMENTAL SUPPORT FORM

This form must be completed for every department affected by the course change.

Department Affected: MATHEMATICS	This department ☒ supports the change.	☐ does not support
Comments: The Department of Computer & Information Science is proposing an **Associate of Applied Science in Cybersecurity.** This degree requires math 2914. MATH 2914 is required during the spring of the Freshman year.		

Department Head Signature: _Jeanne L. Myers_

Date: _8-9-16_

Arkansas Tech University
DEPARTMENTAL SUPPORT FORM

This form must be completed for every department affected by the course change.

Department Affected: Electrical Engineering	This department ☑ supports ☐ does not support the change.
Comments: The Department of Computer & Information Science is proposing an **Associate of Applied Science in Cybersecurity**. This degree requires ELEG 2130 and ELEG 2134. The course will be required during the fall of the Sophomore year.	

Department Head Signature: _____

Date: _____

Arkansas Tech University
DEPARTMENTAL SUPPORT FORM

This form must be completed for every department affected by the course change.

Department Affected: Department of English and World Languages	This department ☑ supports ☐ does not support the change.
Comments: The Department of Computer & Information Science is proposing an **Associate of Applied Science in Cybersecurity.** This degree requires the 35 hours of required general education courses.	

Department Head Signature: _____

Date: **8-9-16**

Course Number/Name	Description	Co-Req(s)	Prerequisite(s)	Num of hours	Semester offered	Gen. Ed (N) Core (C) Major (M)	New	Courses that satisfy Gen Ed requirements
ENGL 1013	A review of grammar, introduction to research methods, and practice in writing exposition using reading to provide ideas and patterns. Note: A grade of C or better must be earned in each of the two composition courses used to satisfy the general education requirement of English/Communication. Note: May not be taken for credit after successful completion of ENGL 1043.	None	Score of 19 or above on English section of the Enhanced ACT, 450 or above on the quantitative portion of the SAT, 40 or above on the TSWE, 80 or above on the COMPASS writing section, 83 or above on ACCUPLACER sentence skills section, or a grade of C or better in ENGL 0203 or 0303 or 0404	3	Fall/Spring	Yes	M	ENGL 1013 Composition I
Fine Arts/ Humanities	Dependent on individual course	Varies by course	Varies by course	3	Fall/Spring		M	ART 2123 Experiencing Art ENGL 2003 Introduction to World Literature ENGL 2013 Introduction to

							Courses
							American Literature **ENGL 2023** Honors World Literature **ENGL 2173** Introduction to Film **ENGL 2183** Honors Introduction to Film **JOUR 2173** Introduction to Film **MUS 2003** Introduction to Music **PHIL 2003** Introduction to Philosophy **PHIL 2043** Honors Introduction to Philosophy **TH 2273** Introduction to Theatre
U. S. History/ Government	Dependent on Individual course	Varies by course	Varies by course	3	Fall/Spring	Yes	M
							HIST 1903 Survey of American History **HIST 2003** United States History to 1877 **HIST 2043** Honors United States History to 1877 **HIST 2013** United States History since 1877 **POLS 2003** American Government

Course	Description							
TECH 1001	A course designed to provide information and enhance skills that will enable students to take responsibility for a successful transition to college. The course will expose students to college resources and requirements and promote the development of practical skills for college success.	None	No	1	Fall/Spring	No	M	N/A

CSEC 1113 *Introduction to Networking*	Computer and communications networks are the very environment in which cyber operations are conducted. An understanding of these networks is essential to any discussion of cyber operations activities.
	
	Specific topics to be covered to satisfy this knowledge unit must minimally include:
	
	• Routing, network, and application protocols including:
	  ○ TCP/IP (versions 4 and 6)
	  ○ ARP, BGP, SSL/TLS
	  ○ DNS
	  ○ SMTP
	  ○ HTTP
	• Network architectures
	• Network security
	• Wireless network technologies
	• Network traffic analysis
	• Protocol analysis (examining component-to-component communication to determine the protocol being used and what it is doing)
	• Network mapping techniques (active and passive)
		None	No	3	Fall	No	N C M	N/A

Course	Description	Prerequisite	Credit	Offered		Mode	Course Options
ENGL 1023	A continuation of ENGL 1013 with readings in poetry, fiction, and drama. Note: A grade of C or better must be earned in each of the two composition courses used to satisfy the general education requirement of English/Communication. Note: May not be taken for credit after successful completion of ENGL 1053	None	Minimum grade of C in **ENGL 1013** (Composition I) or **1043** (Honors Composition I)	3	Fall/Spring	Yes	M
							ENGL 1023 Composition II
Social Science	Dependent on individual course	Varies by course	Varies by course	3			AGBU 2063 Principles of Agriculture Macroeconomics AGBU 2073 Principles of Agriculture Microeconomics AMST 2003 American Studies ANTH 1213 Introduction to Anthropology ANTH 2003 Cultural Anthropology ECON 2003 Principles of Economics I ECON 2013 Principles of Economics II ECON 2103 Honors Principles of Economics I GEOG 2013 Regional Geography of the World HIST 1503 World

Course	Description	Prerequisites	Credit Hours	Semester			
							History to 1500 **HIST 1513** World History since 1500 **HIST 1543** Honors World History to 1500 **HIST 1903** Survey of American History **HIST 2003** United States History to 1877 **HIST 2013** United States History since 1877 **HIST 2043** Honors United States History to 1877 **POLS 2003** American Government **PSY 2003** General Psychology **SOC 1003** Introductory Sociology
MATH 2914 Calculus I	This is the first of two courses covering the calculus of functions of a single variable. The content covers differentiation of all single variable functions and introduces integration of functions. Note: A grade of C of better must be earned in this course if being used to satisfy the general education mathematics requirement.	Math ACTE score of 24 or higher, or a grade of C or higher in **MATH 1914** (Precalculus or **MATH 1203** (Plane Trigonometry) or consent of instructor.	4	Fall/Spring	Possible	M	**MATH 2914** Calculus I can be used to satisfy the Math general education requirement,
CSEC 1213 Wireless Security &	An overview of wireless and mobile security providing students with practical and theoretical experiences.	*CSEC 1113 Introduction to Networking*	3	Spring	No	N C M	N/A

Course	Description	Prerequisite	Credit	Semester			
Cellular Technologies	Topics include threat analysis, security infrastructure, security services, wireless network security components. Topics include, but not limited to: • Overview of smart phone technologies • Overview of embedded operating systems (e.g., iOS, Android) • Wireless technologies (mobile: GSM, WCDMA, CDMA2000, LTE; and Internet: 802.11b/g/n) • Infrastructure components (e.g., fiber optic network, evolved packet core, PLMN) • Mobile protocols (SS7, RR, MM, CC) • Mobile logical channel descriptions (BCCH, SDCCH, RACH, AGCH, etc.) • Mobile registration procedures • Mobile encryptions standards • Mobile identifiers (IMSI, IMEI, MSISDN, ESN, Global Title, E.164) • Mobile and Location-based Services	None					
COMS 2104 Foundations of Computer Programming I	An overview of wireless and mobile security providing students with practical and theoretical experiences. Topics include threat analysis, security infrastructure, security services, wireless network security	**MATH 1113** (College Algebra) and either **COMS 1403** and **1411** or consent of instructor	4	Fall/Spring	No	C M	N/A

Course	Description	Prerequisite	Corequisite	Credit Hours	Offered	Required	Classification	Fee
(continued from previous page)	components. Topics include, but not limited to: ■ Overview of smart phone technologies ■ Overview of embedded operating systems (e.g., iOS, Android) ■ Wireless technologies (mobile: GSM, WCDMA, CDMA2000, LTE; and Internet: 802.11b/g/n) ■ Infrastructure components (e.g., fiber optic network, evolved packet core, PLMN) ■ Mobile protocols (SS7, RR, MM, CC) ■ Mobile logical channel descriptions (BCCH, SDCCH, RACH, AGCH, etc.) ■ Mobile registration procedures ■ Mobile encryptions standards ■ Mobile identifiers (IMSI, IMEI, MSISDN, ESN, Global Title, E.164) ■ Mobile and Location-based Services	ELEG 2134 and COMS 2104 or consent of instructor	None	0	Fall/Spring	No	C M	N/A
ELEG 2130 Digital Logic Lab	Laboratory must be taken during the same semester as the lecture, ELEG 2134. A study of basic digital logic circuit design and implementation. Circuit schematic development utilizing computerized automated design tools. Computer modeling and simulation of digital systems. Emphasis will be placed on proper laboratory techniques, including data collection, data reduction, and report preparation.	ELEG 2130 and COMS	None	4	Fall/Spring	No	C M	N/A
ELEG 2134 Digital Logic	Binary numbers and codes, Boolean algebra, combinational and sequential							

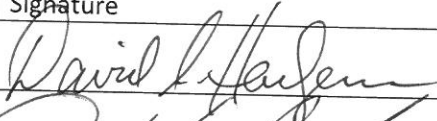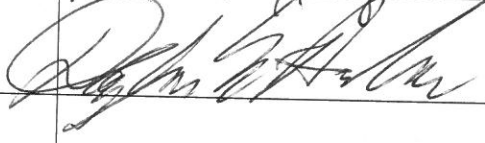| Course	Course Description	Prerequisite	Corequisite	Credit Hours	Semester Offered	Online	Code	Gen Ed
Design	logic including: minimization techniques, memory systems, register transfers, control logic design, and state machines.	2104 or consent of instructor.					N C M	N/A
CSEC 2113 Introduction to Information Systems	Introduction to the infrastructure of information technology and systems. Topics include computer hardware and software, communication and networks, databases, e-commerce technology, design and development of information systems, Cloud computing, information security, privacy, ethics, and social impact.	None	None	3	Fall	No	N C M	N/A
COMS 2203 Foundations of Computer Programming II	This course is a continuation of Foundations of Programming I. Topics include multi-dimensional arrays, functions, string processing, classes, and records. Students are introduced to object oriented programming using C++.	None	MATH 1113 (College Algebra) or equivalent with a grade of C or better and completion of COMS 2104 (Foundations of Computer Programming I) with a grade of C or better	3	Fall/Spring	No	C M	N/A
COMS 2903 Discrete Structures for Technical Majors	Fundamental mathematical concepts related to computing, including logic and proof techniques; sets, sequences, relations, and functions; combinatorics; algebraic structures and Boolean algebra ; trees and graphs.	None	MATH 1113 (College Algebra) and a C or better In COMS 2104 (Foundations of Computer Programming I) or equivalent	3	Fall/Spring	No	C M	N/A

Course	Description			Credit	Semester			
Lower Level Elective	Any 1000 or 2000 level course will satisfy a general lower level elective.	Varies by course	Varies by course	1	Fall/Spring	Possible	M	Any 1000 or 2000 level course will satisfy a general lower level elective.
COMM 2173 Business & Professional Speaking	An oral communication course for individuals in business, industry and the professions. Human communication theories and behavioral research are used as a framework for generating competencies in interviewing, briefings, conference leadership, and intergroup coordination.	None	None	3	Fall/Spring	Yes	C M	**COMM 1003** Introduction to Speech Communication **COMM 2003** Public Speaking **COMM 2173** Business and Professional Speaking
Science Sequence I	Complete a total of eight hours of science with laboratory	Varies by course	Varies by course	4	Fall/Spring	Yes	C M	Complete a total of eight hours of science with laboratory
COMS 2213 Data Structures	This course involves a study of abstract data structures and the implementation of these abstract concepts as computer algorithms.	None	**COMS 2203** (Foundations of Computer Programming I) and **COMS 2903** (Discrete Structures for Technical Majors)	3	Fall/Spring	No	C M	N/A
CSEC 2213 Forensics and Incident Response	This course teaches the fundamentals of incident response and digital forensics. An overview of operating systems will then lead to a systematic approach to incident response will be reviewed, focusing on a six step process (Preparation,	None	*CSEC 1113 Introduction to Networking*	3	Spring	No	N C M	N/A

	Identification, Containment, Eradication, Recovery, Lessons Learned.) Preservation of data (dd, FTK imager, DumpIt,) Data recovery (Scalpel, Foremost,) forensic analysis (Sleuthkit, SIFT workstation, Volatility, RegRipper, Supertimeline,) Network Forensics (tcpdump, Wireshark, nfsen,) and legal aspects of both investigation and preservation will be discussed.							
CSEC 2223 Virtualization	Virtualization technology has rapidly spread to encompass workstations, servers, infrastructure devices, storage, and networks, and as such has become critical to cyber operations. Specific topics to be covered in this knowledge unit must minimally include, but are not limited to: • Virtualization techniques Virtual machine architectures Uses of virtualization for: • Security • Efficiency • Simplicity • Resource savings (space, admin overhead)	*COMS 2703* (Survey of Operating Systems) And *CSEC 1113* (*Introduction to Networking*)	None	3	Spring	No	C N M	N/A

Arkansas Tech University
PROPOSAL FOR NEW PROGRAM

TO:	Select Appropriate Committee Curriculum Committee
FROM (Initiating Department):	**Department of Computer & Information Science**
DATE SUBMITTED:	6.30.2016

Title	Signature	Date
Department Head **Dr. David Hoelzeman**	*David L Hoelzeman*	7-6-2016
Dean **Dr. Neal Barlow**	*signature*	9 Aug 16
Teacher Education Council (if applicable)		
Graduate Council (if applicable)		
Registrar **Ms. Tammy Weaver**	*T Weaver*	8/10/16
Vice President for Academic Affairs **Dr. Mohamed Abdelrahman**		

Program Title: Bachelor of Science in Cybersecurity	CIP Code: 11.1003
Contact Person: Name: Dr. David Hoelzeman Institution Name: Arkansas Tech University Address: 1811 North Boulder, Corley 232 Russellville, AR 72801 E-mail Address: dhoelzeman@atu.edu Phone Number: 479.880.4367	Proposed Date: Fall 2017
Program Summary: (Include general description of program with overview of any curriculum additions or modifications, proposed cost, faculty resources, library resources, facilities and equipment, purpose, and any other important information)	

The rise in cyber threats has created an unprecedented demand for cybersecurity specialists. Data breaches, malware infections, and software vulnerabilities are common in today's technology and it is critical to fully understand how these attacks occur, how to prevent them, and how to recover. A cybersecurity major will understand the techniques used to hack systems as well as the best methods to protect data. The cybersecurity degree includes courses in programming, wireless technologies, mathematics, and networking concentrating on theory and hands-on experience. Coursework includes:

* Forensics and Incident Response
* Virtualization
* Computer Architecture
* Operating Systems Theory
* Penetration Testing
* Applied Cryptography
* Large Scale Distributed Systems
* Building Secure Software
* Risk Management
* Legal Issues in Cybersecurity
* Software Security Analysis and Reverse Engineering (with lab)
* Cybersecurity Capstone Project/Internship

Cybersecurity graduates will be able to:
* protect an organization's data and assets.
* implement cybersecurity best practices and risk management.
* understand and develop software to minimize vulnerabilities.
* analyze persistent threats and utilize appropriate counter measures.
* conduct risk and liability assessments of information systems.
* examine cybercrimes and support recovery of operations.

List existing degree programs that support the proposed program:
Computer Science
Electrical Engineering
General Education
Information Technology
Mathematics

Need for the Program: (Survey data on student interest in the program (numbers not percentages), job availability, corporate demands, and employment/wage projections). Focus mostly on state needs.

As an attachment, include letters of support from organizations and businesses that can speak to number of job vacancies, whether the degree will provide opportunities for job advancement, increase in wages based on additional education, etc.) **Cybersecurity threats are rapidly increasing. The following link is to the Department of Homeland Security's website for cybersecurity.** https://www.dhs.gov/cybersecurity-overview

The U. S. Bureau of Labor Statistics includes information that this field is rapidly increasing. http://www.bls.gov/ooh/computer-and-information-technology/home.htm

In further support, the following website is to the Comprehensive National Cybersecurity Initiative. https://www.whitehouse.gov/issues/foreign-policy/cybersecurity/national-initiative

In addition, the Advisory Board for the Department of Computer & Information Science met during April of this year and urged the department to offer this degree because graduates are and will continue to be in high demand.

Curriculum Outline by Semester: **Please see attached document**

Total number of Semester Hours Required for Graduation: 120	Can the program be completed in 8 semesters? ⦿ Yes ◯ No If not, provide justification.

List New Courses (Please attach New Course Proposals):
CSEC 1113 (Intro to Networking)
CSEC 1213 (Wireless and Cellular Security)
CSEC 2113 (Introduction to Information Systems)
CSEC 2213 (Forensics and Incident Response)
CSEC 2223 (Virtualization)
CSEC 3113 (Assembly Programming)
CSEC 3123 (Cyber Defense I)
CSEC 3243 (Computer Architecture)
CSEC 3223 (Programming Embedded Systems)
CSEC 3233 (Cyber Defense II)
CSEC 4123 (Cryptography)
CSEC 4133 (Large Scale Distributed Systems)
CSEC 4143 (Building Secure Software)
CSEC 4213 (Information Systems Risk Management)
CSEC 4233 (Legal Issues in Cybersecurity)
CSEC 4243 (Software Security Analysis and Reverse Engineering
CSEC 4240 (Lab for Software Security Analysis and Reverse Engineering)
CSEC 4293 (Cybersecurity Capstone Project / Internship

Identify General Education Courses, Core Courses, and Major Courses:

General Education Courses
ENGL 1013/1023
MATH 2914
Science I/II 8 hours Science with Lab
US Hist/Pols
6 hours Social Science
6 hours FAH
3 hours COMM
36 hours total

Major Courses:
COMS 2104 (Foundations of Computer Programming I)
COMS 2203 (Foundations of Computer Programming II)
COMS 2903 (Discrete Structures for Technical Majors)
COMS 2213 (Data Structures)
COMS 3213 (Advanced Data Structures and Algorithm Design
COMS 3703 (Operating Systems Theory)
CSEC 1113 (Intro to Networking)
CSEC 1213 (Wireless and Cellular Security)
CSEC 2113 (Introduction to Information Systems)
CSEC 2213 (Forensics and Incident Response)
CSEC 2223 (Virtualization)
CSEC 3113 (Assembly Programming)
CSEC 3123 (Cyber Defense I)
CSEC 3243 (Computer Architecture)
CSEC 3223 (Programming Embedded Systems)
CSEC 3233 (Cyber Defense II)
CSEC 4123 (Cryptography)
CSEC 4133 (Large Scale Distributed Systems)
CSEC 4143 (Building Secure Software)
CSEC 4213 (Information Systems Risk Management)
CSEC 4233 (Legal Issues in Cybersecurity)
CSEC 4243 (Software Security Analysis and Reverse Engineering
CSEC 4240 (Lab for Software Security Analysis and Reverse Engineering)
CSEC 4293 (Cybersecurity Capstone Project / Internship
ELEG 2130 (Digital Logic Design Lab)
ELEG 2134 (Digital Logic Design)

Courses currently offered via distance technology: (moved from above section)

None

Program Admission Requirements:
Mirror of the University's admission policy

Attach the New Program Assessment Form. The form is located on the Assessment & Institutional Effectiveness web page at http://www.atu.edu/assessment/
Please see attached.

List the names and credentials of all faculty teaching course in the proposed program.
Dr. Matt Brown – Ph.D. Information Systems
Dr. Roger Fang – Ph.D. Electrical and Computer Engineering
Mr. Roger Frye – ABD Engineering Science
Dr. Nan Harrell – Ph.D. Information Systems with an emphasis in Information Security
Dr. David Hoelzeman – Ph.D. Computer Science
Dr. Rick Massengale - Ph.D. Information Assurance
Dr. David Middleton – Ph.D. Computer Science
Dr. Johnette Moody - DBA Business with emphasis in
Dr. Larry Morell – Ph.D. Computer Science
Dr. Nobuyuki Nezu – Ph.D. Computer Science
Mr. Ron Robison – Masters in Business
Ms. Sarah Robison – Masters in Mathematics
Dr. Jerry Wood (Ph.D. Information Assurance)

Total number of faculty required (existing and new)
For new faculty members include expected credentials/experience and hire date
- **Two (2) new faculty members**
  - **Hiring to be staggered with hiring of first new faculty member for fall 2018**
    - **0 for first year (2017-2018) and then 1 per year for next 2 years**
- **Credentials for additional faculty include:**
  - **Ph.D. in Computer Security, Information Security, Information Technology, Information Assurance, Computer Science**

For proposed graduate programs attach curricula vitae for the faculty teaching the program
N/A

Description of Resources
The current resources (computer lab, virtual machines, software, etc.) are adequate for the first and second (1st / 2nd) years of this program.

Current Library and instructional facilities
The library and instructional facilities are adequate to support this program.

New Resources Required (include costs and acquisition plan):
None for first two (2) years of program

New Program Costs (Expenditures for first three years of program operation)
Include:
New administrative costs – **none; this program will be housed in the Department of Computer & Information Science and the administrative structure is currently in place.**
New faculty **0 for first year (2017-2018) and then 1 per year for next 2 years (2018-2019 & 2019-2020)**

New library resources and costs - **none**
New/renovated facilities and costs – **none through second (2nd) year of program**
New instructional equipment and costs – **none through second (2nd) year of program**
Distance delivery costs – **none**
Other new costs - **none**

Detail Marketing Plan and Costs
Please see attached.

BS Cybersecurity Degree Proposed Curriculum
6.30.2016

Freshman Fall (13 hours)
ENGL 1013 Composition
Fine Arts & Humanities
US History / Government
Tech 1001   Orientation to the University
CSEC 1113   Introduction to Networking

Freshman Spring (17 hours)
ENGL 1023   Composition II
Social Science
MATH 2914   Calculus I
CSEC 1213   Wireless and Cellular Security
COMS 2104   Foundations of Computer Programming I

Sophomore Fall (16 hours)
ELEG 2130   Digital Logic Design Lab
ELEG 2134   Digital Logic Design
CSEC 2113   Introduction to Information Systems
COMS 2203   Foundations of Computer Programming II -
COMS 2903   Discrete Structures for Technical Majors
COMS 2733   Introduction to Computer Forensics and Security

Sophomore Spring (16 hours)
COMM 2173   Business and Professional Speaking (previously SPH 2173)
Science Sequence I
COMS 2213   Data Structures
CSEC 2213   Forensics and Incident Response
CSEC 2223   Virtualization

Junior Fall (16 hours)
MATH 3153   Applied Statistics I
CSEC 3113   Assembly Programming
COMS 3213   Advanced Data Structures and Algorithm Design
CSEC 3123   Cyber Defense I
Science Sequence II

Junior Spring (15 hours)
Fine Arts & Humanities
CSEC 3223   Programming Embedded Systems
COMS 3703   Operating Systems
CSEC 3233   Cyber Defense II
CSEC 3243   Computer Architecture

Senior Fall (12 hours)
Social Sciences
CSEC 4123   Cryptography
CSEC 4133   Large Scale Distributed Systems
CSEC 4143   Building Secure Software

Senior Spring (15 hours)

CSEC 4213   Information Systems Risk Management

Upper Level Elective

CSEC 4233   Legal Issues in Cybersecurity
CSEC 4243   Software Security Analysis and Reverse Engineering
CSEC 4240   Software Security Analysis and Reverse Engineering LAB
CSEC 4293   CyberSecurity Capstone Project / Internship

Arkansas Tech University

Proposal for New Program Assessment Form

Bachelor of Science in Cybersecurity

Our Mission
Arkansas Tech University, a state-supported institution of higher education, is dedicated to nurturing scholastic development, integrity, and professionalism. The University offers a wide range of traditional and innovative programs which provide a solid educational foundation for life-long learning to a diverse community of learners.

	Provide an answer for each question. Your answers are to be typed single spaced.
a.	How does this proposal for the new program fit with the university mission? **The Bachelor of Science in Cybersecurity will provide students with training in the latest detection and protection methods in cybersecurity. This degree is rigorous so that it will provide a student with the knowledge necessary to enter the business world or for those interested, to enter a Master's program in Cybersecurity once the Bachelor of Science is completed. This degree supports the University's mission by being innovative and rigorous as individuals are trained to enter the field of cybersecurity.**
b.	If this program is mandated by an accrediting or certifying agency, include the directives. If not, state not applicable. **The Bachelor of Science in Cybersecurity is not accredited by an accrediting body. However, the Department of Homeland Security provides requirements for programs in cybersecurity to be designated as a Center of Excellence. This new program is rigorous and meets the requirements to become a Center of Excellence.**
c.	How will this new program enhance learning for students enrolled in the program? **This program will enhance student learning because it offers extensive training in cybersecurity for detection and prevention of intrusion into systems. Students will be involved in 'real-world' situations, through assignments, tests, projects, etc., as they learn. Students will be assessed on how a computer functions and processes at the most basic level, how to detect intrusions, how to prevent intrusions, how to write secure software, cryptography, and how to restore a system that has been compromised. As a culmination of this degree, the student will be required to complete an Internship or a capstone project.**
d.	What will students demonstrate, represent, or produce to provide evidence of their learning once they complete the program? **Students will be required to complete an internship or capstone project. The coursework is designed so that students will be able to complete tests, quizzes, hands-on assignments, and labs to support learning.**
e.	Provide an example or examples of assessment evidence which supports adding this new program. **Cybersecurity threats are rapidly increasing. The following link is to the Department of Homeland Security's website for cybersecurity: https://www.dhs.gov/cybersecurity-overview. The U. S. Bureau of Labor Statistics includes information that this field is rapidly increasing. The link to this site:**

http://www.bls.gov/ooh/computer-and-information-technology/home.htm. **To further support this new program, the following website is to the Comprehensive National Cybersecurity Initiative:** https://www.whitehouse.gov/issues/foreign-policy/cybersecurity/national-initiative. **In addition the Advisory Board for the Department of Computer & Information Science met during April of this year and urged the department to offer this degree because graduates are and will continue to be in high demand.**

f.	Attach a detailed assessment plan including three to five specific program student learning outcomes, means or instructional measures to assess each outcome, identify program courses where learning will be assessed, and performance standards or criteria for success which demonstrate student learning for each outcome. (Examples for assessment plans/curriculum mapping can be found at the Office of Assessment and Institutional Effectiveness web page.) **See below.**

Arkansas Tech University				
Academic Cycle: New Program Proposal				
Program: Bachelor of Science in Cybersecurity				
Program Objectives/Standards (align with mission)	**Learning Objectives/ Outcome Assessment (3-5 unless otherwise specified)**	**Courses (program core)**	**Means of Assessment (direct and indirect measures)**	**Criteria for Success (performance standard)**

PO1: Protect an organization's data and assets	LO1: Evaluate appropriate security measures LO2: Implement appropriate security measures and software	CSEC 4293 – Capstone or Internship	Reports from employer providing internship Weekly meetings between advisor and student Feedback from employer	High Pass 90-100% Pass 70-89%
PO2: Implement cybersecurity best practices and risk management.	LO1: Analyze current industry standards and implement appropriate standards LO2: Assessment of systems at system level for risk of security breaches	CSEC 4213 – Information Systems Risk Management CSEC 4293 – Capstone or Internship	Tests, quizzes, assignments; hands-on projects Reports from employer providing internship Weekly meetings between advisor and student Feedback from employer	High Pass 90-100% Pass 70-89%
PO3: Understand and develop software to minimize vulnerabilities.	LO1: Create appropriate software that meets or exceeds industry security standards	CSEC 4243 – Software Security Analysis and Reverse Engineering CSEC 4240 – Lab CSEC 4143 – Building Secure Software	Tests, quizzes, assignments Hands-on assignments Tests, quizzes, assignments	High Pass 90-100% Pass 70-89% High Pass 90-100% Pass 70-89% High Pass 90-100% Pass 70-89%
PO4:	LO1: Monitor networks	CSEC 4243 –	Tests, quizzes, assignments	High Pass 90-100%

Analyze persistent threats and utilize appropriate counter measures.	L02: Evaluate security measures	Software Security Analysis and Reverse Engineering CSEC 4240 – Lab	Hands-on assignments	Pass 70-89%
PO5: Examine cybercrimes and support recovery of operations.	LO1: Maintain knowledge level of industry standards L02: Implement steps to recover and secure system	CSEC 2123 – Cyber Defense I	Tests, quizzes, assignments, hands-on projects	High Pass 90-100% Pass 70-89%

Assessment Plan Implementation				
Assessment	**CPGE Form or Department Method**	**CPGE System or Department Method**	**Actual Results Obtained (CPGE Report or Department Method)**	**Use of Results for Improvement**
Course Embedded	Department of Computer & Information Science utilizes FCAR (Faculty Course Assessment Report) and CABS (Course Assessment Binder)	Department of Computer & Information Science utilizes FCAR (Faculty Course Assessment Report) and CABS (Course Assessment Binder). Assessment data will be submitted annually.	Review and analyze departmental assessment data.	Course, instructional or program changes.
Indirect and Direct Measures Alignment	Graduates will complete exit survey in the CSEC 4983. A survey	Graduates will complete exit survey in the CSEC 4983. A survey	Analyze survey results	Program and Curriculum changes

	will be sent to those providing an internship.	will be sent to those providing an internship.	

Continuous Improvement Plan Summarize each category from assessment results and conclusions.	
Categories of Improvement:	**Recommended Changes:**
A. Student Learning	Course Embedded Student Learning Outcome Assessment
B. Instruction and Curriculum	Course Embedded Student Learning Outcome Assessment
C. Assessment	Evaluate assessment from Student Learning Outcome results
D. Program Quality	Evaluate changes from Student and Employer Satisfaction Surveys
E. Budget	Budget requests supported by student learning and program assessment.

Marketing Plan
BS in Cybersecurity

Arkansas Tech University engages in a variety of marketing initiatives to inform prospective students about the educational opportunities that it offers. These include advertisements on television, online, in print and through other channels as they become available and constructive in reaching stated objectives. All marketing messages and placements are tailored to reach specific audiences based upon regularly conducted research about the educational needs of prospective students and their awareness of Arkansas Tech.

These marketing efforts are supported by internal and external communication initiatives that leverage internal channels such as www.atu.edu, www.arkansastechnews.com and Arkansas Tech's social media presences as well as external channels such as newspapers, television stations, radio stations and press services. The external communication initiatives aid in constantly elevating the brand of Arkansas Tech, while internal communications represent an important retention tool by creating a better informed and more engaged student population.

As it relates to new academic programs such as the proposed cybersecurity degree in the Arkansas Tech Department of Computer and Information Science, marketing and communication programs are designed to create awareness of the new degree, points of differentiation that make it a good option for prospective students and potential positive outcomes for graduates of the program. Specific tactics may include some or all of the following options: a presence on www.atu.edu, news releases announcing the new program, inclusion in marketing campaigns on behalf of the university and brochures and similar publications that include information about the program. These marketing and communication goals are established and pursued through collaboration between staff from the Office of University Relations and faculty members from the academic discipline.

Arkansas Tech University
DEPARTMENTAL SUPPORT FORM

This form must be completed for every department affected by the course change.

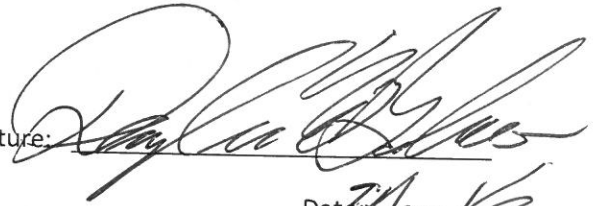| Department Affected: MATHEMATICS	This department ☒ supports ☐ does not support the change.
Comments: The Department of Computer & Information Science is proposing a **Bachelor of Science in Cybersecurity**. This degree requires math 2914 and MATH 3153. MATH 2914 is required during the spring of the Freshman year. MATH 3153 is required during the fall of the JUNIOR year.	

Department Head Signature: _Jeanie L. Myers_

Date: 8-9-16

Arkansas Tech University
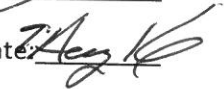## DEPARTMENTAL SUPPORT FORM

This form must be completed for every department affected by the course change.

Department Affected: Electrical Engineering	This department ☒ supports ☐ does not support the change.
Comments: The Department of Computer & Information Science is proposing a **Bachelor of Science in Cybersecurity**. This degree requires ELEG 2130 and ELEG 2134. The course will be required during the fall of the Sophomore year.	

Department Head Signature: _____

Date: _____

Arkansas Tech University
DEPARTMENTAL SUPPORT FORM

This form must be completed for every department affected by the course change.

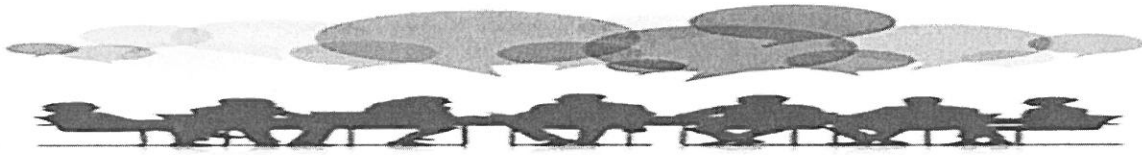| Department Affected: Department of English and World Languages	This department ☑ supports ☐ does not support the change.
Comments: The Department of Computer & Information Science is proposing **a Bachelor of Science in Cybersecurity.** This degree requires the 35 hours of required general education courses. 	

Department Head Signature: _____

Date: 8-9-16

Arkansas Tech University
REQUEST FOR COURSE ADDITION

TO:	Select Appropriate Committee
FROM (Initiating Department):	**Professional Studies**
DATE SUBMITTED:	July 1, 2016

Title	Signature	Date
Department Head Dr. Jeff Aulgur	*(signature)*	6/27/16
Dean Dr. Hanna Norton	*(signature)* Hanna Norton	6/27/16
Teacher Education Council (if applicable)		
Graduate Council (if applicable)		
Registrar Mrs. Tammy Weaver	*(signature)* Weaver	8/10/16
Vice President for Academic Affairs Dr. Mohamed Abdelrahman		

Course Subject: (e.g., ACCT, ENGL)	Course Number: (e.g., 1003)	Effective Term:
PS	**4643**	○ Spring ◉ **Summer I**

Official Catalog Title: (If official title exceeds 30 characters, indicate Banner Title below)

Occupational Globalization & Diversity

Banner Title: (limited to 30 characters, including spaces, capitalize all letters — this will display on the transcript)

Occup Globalization/Diversity

Will this course be cross-listed with another existing course? If so, list course subject and number.

○ Yes ◉ No

Will this course be cross-listed with a course currently not in the undergraduate or graduate catalog?

If so, list course subject and number. ○ Yes ◉ No

Is this course repeatable for additional earned hours? ○ Yes ◉ No How many total hours?

Grading: ◉ Standard Letter ○ P/F ○ Other

Mode of Instruction (check appropriate box):

◉ 01 Lecture   ○ 02 Lecture/Laboratory   ○ 03 Laboratory only

○ 05 Practice Teaching   ○ 06 Internship/Practicum   ○ 07 Apprenticeship/Externship

○ 08 Independent Study   ○ 09 Readings   ○ 10 Special Topics

○ 12 Individual Lessons   ○ 13 Applied Instruction   ○ 16 Studio Course

○ 17 Dissertation   ○ 18 Activity Course   ○ 19 Seminar   ○ 98 Other

Does this course require a fee? ○ Yes ● No How Much?		Select Fee Type	

If selected other list fee type:

☑ Elective ☑ Major ☐ Minor

(If major or minor course, you must complete the Request for Program Change form to add course to program.)

If course is required by major/minor, how frequently will course be offered?

Each semester

For the proposed course, attach a syllabus in Word format that includes: **(Items a. through d. should be entered as they should appear in the catalog)**

a. Course subject
b. Course number
c. Catalog course title
d. Catalog description
    1. Arkansas Course Transfer System (ACTS) course number, if applicable N/A
    2. Cross-listing N/A
    3. Offered (e.g., Fall only, Spring only. Do not enter if offer course fall and spring)
    4. Prerequisites – Junior standing
    5. Co-requisites N/A
    6. Description
    7. Notes (e.g., information not in description such as course may be repeated for credit)
    8. Contact Hours if different than lecture (e.g., Lecture three hours, laboratory three hours)
    9. Fees (e.g., $36 art fee)
e. Section for Name of instructor, office hours, contact information (telephone, email)
f. Text required for course
g. Bibliography (supplemental reading list)
h. Justification/rationale for the course
i. Course objectives
j. Description of how course meets general education objectives (courses included in the general education component should show how the course meets one or more of the objectives contained in General Education Objectives listed in undergraduate catalog)
k. Assessment methods (include grading policy with specific equivalents for A, B, C)
l. Policy on absences, cheating, plagiarism, etc.
m. Course content (outline of material to be covered in course).

Will this course require any special resources such as unusual maintenance costs, library resources, special software, distance learning equipment, etc.? No

Will this course require a special classroom (computer lab, smart classroom, or laboratory)? No

Attach the Course Addition Assessment Form. The form is located on the Assessment & Institutional Effectiveness web page at http://www.atu.edu/assessment/

If this course will affect other departments, a Departmental Support Form for each affected department must be attached. The form is located on the Curriculum forms web page at http://www.atu.edu/registrar/curriculum_forms.php. N/A

Arkansas Tech University
PS 4643 – Occupational Globalization and Diversity

CRN:

COURSE/SEC NO.   PS 4643

INSTRUCTOR: Dr. Tennille Lasker-Scott, Assistant Professor
715 N. El Paso Ave, Russellville, AR 72801
Office Phone: (479) 356-6247
Office FAX: (479) 968-0205
Email: tlaskerscott@atu.edu

OFFICE HOURS: *I do not have set office hours but I'm flexible with my schedule. If you need to meet with me, email me your requested day and time. We can meet face-to-face, via teleconference or by phone.*

TECHNICAL SUPPORT: **Face to Face:** Blackboard Help Desk – RPL 150,
Phone: 479-968-0646 or 1-866-400-8022
Website: http://support.atu.edu
Email: campussupport@atu.edu

Blackboard System: https://bblearn.atu.edu

COURSE DESCRIPTION:

This course will discuss cultural (racial, gender, ethnic, religious) and global diversity in the workplace and classroom. Topics include cultural self-awareness, the impact of demographic changes and projections, issues in cross/intercultural settings, and theoretical perspectives of multicultural education. Applied strategies from personal, leadership and management perspectives will be explored.

TEXT REQUIRED FOR THIS COURSE

Ferdman, B. M., & Deane, B. A. (Eds.). (2014) Diversity at Work: The Practice of Inclusion. San
    Francisco, CA: Jossey-Bass.

SUPPLEMENTAL READINGS AND WEBSITES

Additional readings will be assigned from provided material or Internet resources posted in
Blackboard as necessary.

JUSTIFICATION/RATIONALE FOR THE COURSE

This course is designed to prepare students for today's workplace by means of critical thinking
and problem-solving skills, the use of advanced technology, and the ability to work within a team
environment often found in today's culturally diverse workplace.

COURSE OBJECTIVES

As the result of participation in this course, students will be able to:

- Discuss and research the importance of cultural diversity and globalization.
- Apply critical thinking skills to improve the understanding and appreciation of
  individual, cultural and organizational diversity.
- Discuss the many ways in which we are similar and different across the dimensions of
  diversity.
- Demonstrate an awareness of and sensitivity to attitudes towards difference and the
  dynamics of relating to one another.
- Assess organizational culture and identify the underlying assumptions that influence
  how diversity is managed.
- Discuss the evolution from Affirmative Action to Managing Diversity.
- Demonstrate a shared understanding of Cultural Competence, Managing Diversity and
  Inclusion
- Research, design and present a group project that identifies issues with workplace
  inclusion and offers programs of support.

HOW COURSE MEETS GENERAL EDUCATION OBJECTIVES

The general education curriculum at Arkansas Tech University is designed to provide a foundation
for knowledge common to educated people and to develop the capacity for individuals to expand
that knowledge over his or her lifetime. The University has identified a set of comprehensive goals
that will allow students to accomplish these general education objectives. This course addresses
the following specific Arkansas Tech University general education goals:
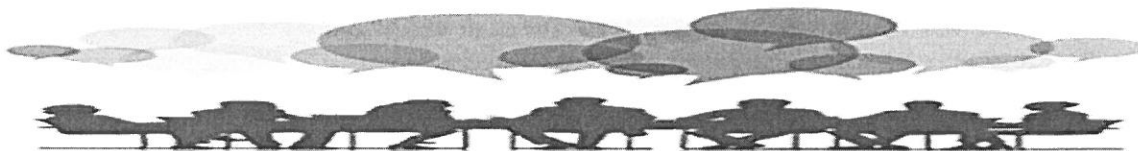
Communicate effectively
Think critically
Develop ethical perspectives
Apply scientific and quantitative reasoning

GRADING SCALE

90% - 100% - A
80% - 89% - B
70% - 79% - C
60% - 69% - D
< 60%   - F

COURSE ASSESSMENT (Tentative)

Chapter Assignments	140
Discussion Board Topics	260
Journal	40
Group Project	100
Quizzes	210
Mid Term	50
Final Exam	100
Total	**900**

COURSE CONTENT

<u>Weekly Assignments, Discussion Board Forums, Chat Sessions, Quizzes, and Exams</u>

The weekly assignments, discussion board forums, chat sessions, quizzes, and exams will be made available in the Course Content section of Blackboard. The submission due date for each is shown in the Course Schedule below and in the Course Content section of your course. All assignments must be submitted by **11:59 p.m.**, on the assigned due date, unless you have received prior permission from the instructor to submit them late. In the event that the instructor changes the due dates, a notice will be posted in the Announcements section in Blackboard.
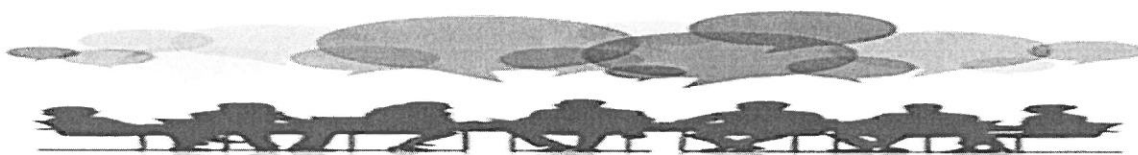
Participation in Discussion Board Forums and Chat Sessions

Students will be expected to participate in these collaboration activities. Feel free to express thoughts and ideas pertinent to the discussion. Courteous and civil discourse is expected and abusive or inappropriate comments will not be tolerated. Credit will be awarded throughout the term for continual, substantive participation in the discussion board forum.

COURSE POLICIES

Academic Misconduct

University policy will be followed. At a minimum, the student (and any student caught assisting in the misconduct) will be given an automatic "F" for the test/assignment in question and possibly an "F" for the course. Subsequent cases of plagiarism will result in a minimum of one letter grade course reduction for each incident. In addition, any student who aids another student in plagiarism (e.g., provides a completed homework assignment to another student for submission) will be treated as also being involved in plagiarism and appropriate penalties will apply. Egregious cases of plagiarism (i.e., large sections copied from another source) will result in an automatic "F" for the course.

Excessive Unexcused Absences/Missed Assignments

If, at any time during the semester, you miss three assignments, you will be referred to the Tech Early Warning Program. If you are unresponsive within the following two class sessions, you will be dropped from the course by your instructor with an "F" for excessive absences or non-performance. It is your responsibility to contact the instructor when you cannot attend class or are having a problem completing an assignment.

The deadline for dropping this course with a "W" is **April 15.** If you have a failing score and do not drop before the stated deadline, you will receive an "F" on your transcript for the course; therefore, it is in your best interest to monitor your status in the course and take advantage of the opportunity to withdraw with a "W" rather than remaining in the course and receiving an "F". Tech now has a very lenient withdrawal policy which eliminates the deadlines for receiving a "WP" (withdrawn with passing) or "WF" (withdrawn with failing) and has extended the period for withdrawing with just a "W" until almost the end of the semester.

You are responsible for explaining to the instructor the reason for absences due to sickness, accident or death in the family. For absences which make it difficult for you to contact the instructor, such as an emergency, you should contact the Student Services Office, Doc Bryan Student Services Center, Room 233, (479-968-0239) to have the instructor notified.
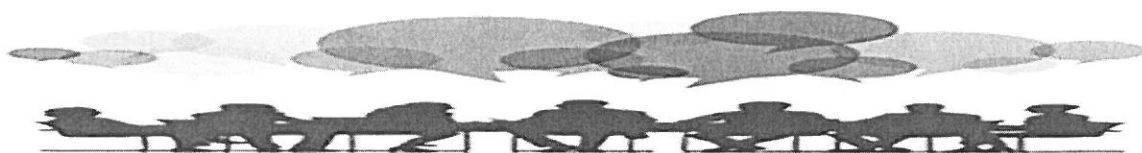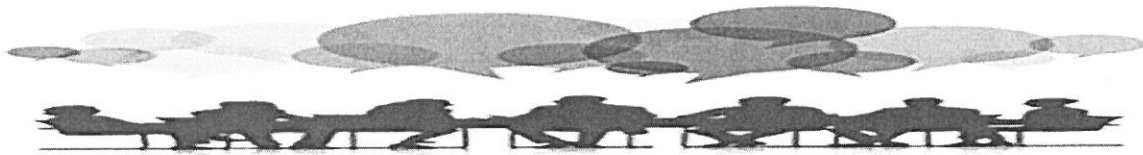
COURSE SCHEDULE (Tentative)

Begins	Bb Module	Learning Activities	Graded Assignments	Due 11:59 p.m.
01/11	**Course Info**	Read and Save Course Syllabus		
	Introduction	Introduction Activity	Discussion Board	
01/11	**Week One Learning Module** Perceiving Culture & Practice of Inclusion	Ferdman & Dean (2014): Chap 1	-	
		Gannon (2008): Chap 2		
		Discuss Definition of Diversity	Week One Discussion Board	
			Chapter One Quiz	
01/18	**Week Two Learning Module** Communicating About Diversity & Inclusion	Ferdman & Dean (2014): Chap 2		
			Week Two Assignments	
			Week Two Discussion Board	
			Chapter Two Quiz	
01/25	**Week Three Learning Module** The Influence of Diversity on Group Dynamics and Outcomes	Thomas (2003): Chapter 6		
		Watch "A Class Divided" video	Week Three Assignment	
			Week Three Discussion Board	
02/01	**Week Four Learning Module** Interpersonal Awareness & Intercultural Competence	Ferdman & Deane (2014): Chapter 4 & 5		
			Week Four Assignment	
			Week Four Discussion Board	
02/08	**Week Five Learning Module** Perceptions & Privilege	Gannon (2008): Chapter 7		
		Thomas (2004): Chapter 7	Week Five Discussion Board	
		Handouts on Privilege	Week Five Quiz	
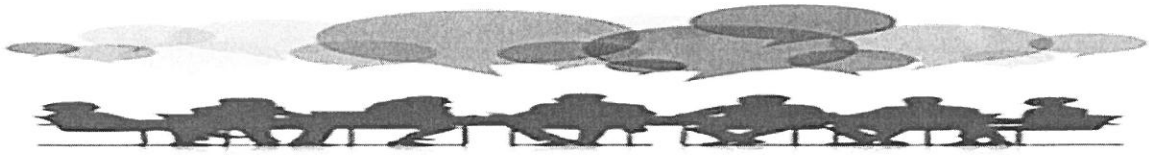
02/15	**Week Six Learning Module** The Work of Inclusive Leadership	Ferdman & Deane (2014): Chapter 6		
			Week Six Assignment (Diversity Articles)	
			Week Six Discussion Board	
			Week Six Quiz	
02/22	**Week Seven Learning Module** Leadership-Diversity to Inclusion	Ferdman & Deane (2014): Chapter 7		
		Thomas (2004): Chapter 9	Week Seven Discussion Board	
			MIDTERM EXAM	
02/29	**Week Eight Learning Module** Inclusive Organization Development	Ferdman & Deane (2014): Chapter 9		
			Week Eight Assignment	
			Week Eight Discussion Board	
03/07	**Week Nine Leaning Module** Inclusive Leadership Practice and Processes	Ferdman & Deane (2014): Chapter 10		
			Week Nine Discussion Board	
			Week Nine Quiz	
03/14	**Week Ten Learning Module** Creating Inclusive Climates in Diverse Organizations	Ferdman & Deane: Chapter 11		
			Week Ten Discussion Board	
			Week Ten: Personal Journal	
			Complete Course Survey	

FALL/SPRING BREAK

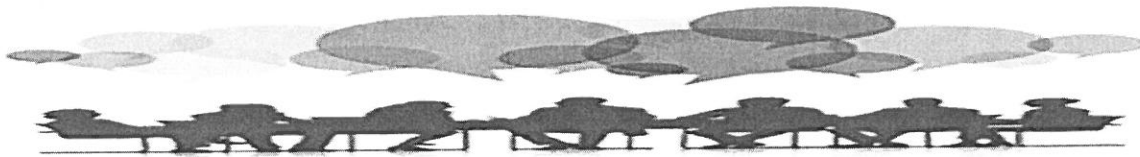|			
03/28	**Week Eleven Learning Module** Models of Global Diversity Management	Ferdman & Deane: Chapter 12	
			Week Eleven Discussion Board
			Choose Team for Group Project
04/04	**Week Twelve Learning Module** Group Project	Use this week to choose the organization that will be the subject of your project. Participate in Week Twelve Discussion Board on Group Board Answer all of the required question to start your project!	
04/11	**Week Thirteen Learning Module** The Diversity and Inclusion Journey	Ferdman & Deane: Chapter 15	
			Week Thirteen Discussion Board (Group Discussion Board)
04/18	**Week Fourteen Learning Module** Fostering Inclusion from the Outside	Ferdman & Deane (2014): Chapter 17	Group Project Submission
			Week Fourteen – Group Discussion Board
			Week Fourteen Quiz
04/25	**Week Fifteen Learning Module** **FINALS WEEK**	Ferdman & Deane (2014): Chapter 16	
			Week Fifteen Discussion Board
			FINAL EXAM
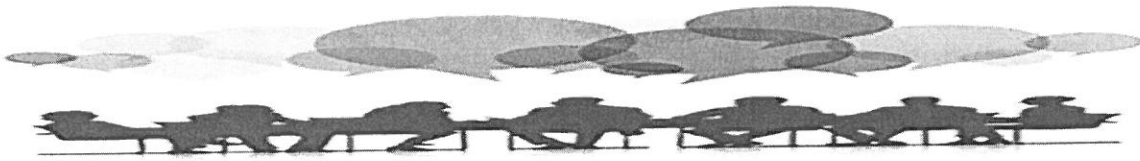
DISCUSSION BOARD RUBRIC

I know the following is posted several times in the online course but please pay close attention to the Discussion Board Rubric so there will be no misunderstandings later in the semester.

If you only do the minimum, three posts (your initial post and responding to at least two of your classmates – with little to no grammatical and spelling errors), you will only receive the minimum grade, a "C."

To receive higher grades you must exceed the minimum. If you make four to five postings, with little to no grammatical and spelling errors, you will receive at least a "B" and depending on the content, an "A" if you make five or more postings.

ATTENTION: ONE AND TWO SENTENCE RESPONES ARE NOT ACCEPTED!!!!! You must create or add to the dialogue.

Community Development Discussion Forum Grading Rubric

	Exceeds	Meets	Emerging	Not Yet
	6 points	4 points	2 points	0 points
Initial Response to Discussion Board	Student shows an understanding of the concepts covered in the learning module. Student demonstrates material was read and the ability to apply that material in a practical setting. Student uses firsthand experience and references the readings when responding.	Student shows an understanding of the concepts covered in the learning module. Student demonstrates material was read and the ability to apply the material in a practical setting.	Student shows material for the learning module was read, but does not demonstrate a solid understanding of the material nor the ability to apply the material in a practical setting.	Student does NOT show material for the learning module was read. Student does not respond to the question.
& **Responses to Others**	Student responds to others in a way that advances learning. This includes offering advice, asking follow up questions, providing an alternate viewpoint, acknowledging shared experiences, etc. Student uses at least two of the above methods to advance learning.	Student responds to others in a way that advances learning. This includes offering advice, asking follow up questions, providing an alternate viewpoint, acknowledging shared experiences, etc. Student uses at least one of the above methods to advance learning.	Student responds to others, but does not advance learning in a sustentative way.	Student responds to others using simple statements of agreement (e.g., I agree; You are right; Great post). Student does not respond to others.
Grammar	No grammatical mistakes made.	No more than 2 grammatical mistakes.	No more than 4 grammatical mistakes.	More than 4 grammatical mistakes.
& **Following Directions**	Student posts above the 3 (1 initial response, 2 responses to classmates) minimum required posts for the week. Student posts initial response early in the week. Student meets all deadlines.	Student meets the minimum required posts for the week. Student posts initial response by Thursday deadline. Student posts all responses by Sunday deadline.	Student meets some requirements and deadlines for the week, but not all.	Student does not meet any requirements or deadlines for the week.
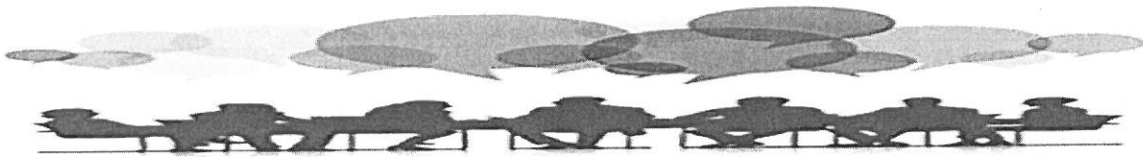
Group Projects

Decide among the group members to use one of your occupations as the subject/example for the group project.

Choose the workplace that has the least diversity or that has issues with diversity and inclusion. This will make it easier for you in the end.
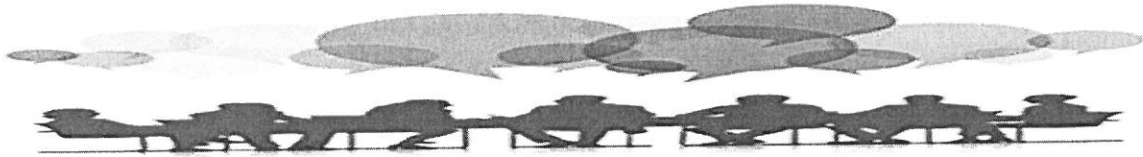
Your assignment is to develop a diversity program for that occupation, using the techniques, models and information from the course readings and from at least three (3) other outside sources (articles, magazines, videos, websites, etc.).

You will submit a PowerPoint presentation with lecture, through Tegrity Lecture Capture, that includes:

- Background on the company (type/industry of business, number of employees, business structure in an organizational chart).
- Statement of the problem
- Miniature Literature Review (Minimum of two (2) slides, using at least five (5) references.
- Introduction/Proposal of program implementation
- Explanation for specific use of technique or model
- Expectation/Assumption
- References

You will have to decide who will do the voice over for the project. I will give you access to the tool in the upcoming weeks.

I want you to be creative. Look on the following page for the group project grading rubric.

Group Project Grading Rubric			
	Exceed Standard	Met Standard	Did Not Meet Standard
Content & Knowledge (30 pts)	The presentation contained an abundance of material, which clearly related to the proposed program. External research was used to justify arguments or solutions. There is a clear relation between the references and the proposed program. The presentation has no spelling or grammatical errors. (27-30 pts)	The presentation contained at least five (5) reference materials that relate to the subject matter. At least two sources from the course readings and three external research sources were used to justify the proposed implementation. The presentation has two (2) or less spelling and grammatical errors. (21-26 pts)	The presentation contains less than five (5) reference materials that relate to the subject matter. There is little to no connect of the reading material and/or references to the project. The presentation has three or more spelling or grammatical errors. (0-20 pts)
Creativity (20 pts)	The presentation of the material was original and presented in a creative way that held audience attention. (18-20 pts)	The the presentation of the material was appropriate, but only somewhat held audience attention. (14-17 pts)	The presentation lacked creativity and did not hold audience attention. (0-13 pts)
Teamwork (20 pts)	The team worked well together to achieve objectives. Each member contributed in a valuable way to the project and indicated a high level of mutual respect and collaboration. (18-20 pts)	The team worked well together most of the time, with only a few occurrences of communication breakdown or failure to collaborate when appropriate. Members were mostly respectful. (14-17 pts) of each other.	The team worked well together most of the time, with only a few occurrences of communication breakdown or failure to collaborate when appropriate. Members were mostly respectful of each other. (0-13 pts)
Contribution (20 pts)	The individual contributed in a valuable way to the project. The individual also volunteered to complete significant tasks for the group. (18-20 pts)	The individual contributed in the group discussion and participated in the decisions toward the project. (14-17 pts)	The individual participated in little or none of the group discussion and did little to no work on the group project. (0-13 pts)
Peer Evaluation (10 pts)	Using the explanations supplied under "Content & Knowledge" and "Creativity," carefully consider the group's presentation and award the group a score between 0-10.		

Arkansas Tech University

Course Addition

Assessment Form

PS 4643

Our Mission
Arkansas Tech University, a state-supported institution of higher education, is dedicated to nurturing scholastic development, integrity, and professionalism. The University offers a wide range of traditional and innovative programs which provide a solid educational foundation for life-long learning to a diverse community of learners.

	Provide an answer for each question. Your answers are to be typed single spaced.
a.	**How does this course fit with the university mission?** PS 4643 Occupational Globalization and Diversity will provide students the opportunity of thinking critically about the issues of globalization and diversity as it applies to their specific field of study. PS 4643 supports the university's commitment to providing educational foundations for life-long learning to a diverse community of learners by using it as an example of the national and international trends. Through the examination of the practical, ethical and philosophical purposes of inclusion, the course provides students with scientific and qualitative techniques of implementing diversity and inclusion programs.
b.	**If this course is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable.** Not applicable
c.	**Provide up to three student learning outcomes students will achieve after completing this course?** Upon completion of the course, the student will 1.) possess an understanding of the importance of cultural diversity and globalization, 2.) apply critical thinking skills to improve the understanding and appreciation of individual, cultural and organizational diversity, and 3.) assess organizational culture and identify the underlying assumptions that influence how diversity is managed.
d.	**What assessment tool or measure will you use to assess student learning?** 1.) Students are given assignments, projects, quizzes/exams and discussion forum topics that relate to material covered in each course module. 2.) Student learning is assessed through textbook readings, supplemental readings, PowerPoint presentations, on-line discussions, and individual and group assignments. 3.) The assessment of student learning with regard to program assessment centers on student performance on the higher order learning outcomes expected in a senior level undergraduate course, including the submission of an individual and group leadership projects. Student learning is further assessed by student self-evaluations at the beginning and end of the course. The individual project and the group project challenge the student by participation in experiential learning.

e.	**What will students demonstrate, represent, or produce to provide evidence of their learning?** Students will demonstrate the knowledge of distinguishing between diversity and inclusion methods through in-depth weekly dialogue. Students are able to effectively assess and communicate the diversity and inclusion issues on an institutional, occupational and individual level through individual assignments and a group project.
f.	**Provide an example or examples of student learning assessment evidence which supports the addition of this course.** PS 4643 was offered as a Special Topics (PS 4993 – Occupational Globalization & Diversity) elective course during Spring 2016 semester. There were 25 students enrolled in the course. As of 6/17/2016, the course has 10 students enrolled for fall. The end of semester course survey shows the high level of interest in the course, how the course was used to assist students in their current occupations, and informed how the course was a catalyst for change in the students' personal and professional lives. The following are student comments from the end of semester survey: -- "I feel that I have already learned a great deal more about diversity and inclusion in the workplace. The text and discussions have provided a greater insight into differences in cultures and how it affects a person's job." -- "Interesting topics of conversations that force people out of their normal comfort zone of thought and reflection." -- "I like how it is applied to actual work and school settings and environments. I like how everyone is encouraged to be honest and open about how they really feel about the topics at hand. I feel like this course is really here to not only educate individuals, but to actually help people as well." -- "What I like most about this course is the fact that it provides multiple perspectives of the workplace. Different levels of responsibilities, race, age, and gender are all considered throughout this course. This gives me an opportunity to open my mind and think from other people's perspectives on a regular basis." -- "I love that I have learned a lot more how to be more inclusive and diverse in business practices. I do not think that this issue is something that I think about enough. This course has opened my eyes to some things that I could be better at."
g.	**How does this course fit in the current state of the discipline? Include Arkansas institutional comparisons. If Arkansas educational institutions do not have the course or program provide comparative examples from regional educational institutions.** The topic of occupational globalization and diversity is not often advertised or offered as one complete course regarding the specifics. The topics are often covered briefly within several courses that include cases pertaining to that particular field of study. PS 4643 Occupational Globalization and Diversity was created to provide students with a more in-depth examination of inclusion techniques to apply to their fields of study, while also encouraging critical thinking skills on how diversity and globalization affects varying aspects of education, workplace environment, professional development. The course supports the program and learning objectives of the Professional Studies program, as listed in the Professional Studies Program Review. Aligning with the Professional Studies outcomes, at the completion of the course, students will: obtain experience in exercising team membership skills, build

awareness of ethical issues facing students now and on the job (including discrimination and sexual harassment), illustrate the ability to develop a recommended action plan by analyzing research data and formulate a plan for a business to follow, apply newly acquired knowledge to the solution of hypothetical personnel problems, demonstrate the ability to conduct research by presenting a clear analysis and findings report of data gathered from the research, and illustrate the ability to develop a recommended action plan by analyzing research data and formulate a plan for a business to follow. The course is not limited to these specific outcomes. Similar courses are found at: University of Arkansas – SCWK 3193: Human Diversity and Social Work; Arkansas State – SW 3363: Cultural Diversity, MGMT 3173: Special Topics in Human Resources; University of Central Arkansas – MGMT 3315: Diversity and Multicultural Communications, EDUC 3322: Diverse Learners in Inclusive Settings.
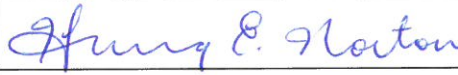
Arkansas Tech University

PROPOSAL FOR CHANGE IN PROGRAM

TO:	Curriculum Committee
FROM (Initiating Department):	**Professional Studies**
DATE SUBMITTED:	July 1, 2016

Title	Signature	Date
Department Head Dr. Jeff Aulgur		7/25/14
Dean Dr. Hanna Norton	Hanna E. Norton	7/25/16
Teacher Education Council (if applicable)		
Graduate Council (if applicable)		
Registrar Mrs. Tammy Weaver		8/10/16
Vice President for Academic Affairs Dr. Mohamed Abdelrahman		

Program Title: Bachelor of Professional Studies	Requested changes will be effective Summer I for next catalog year

Outline change in program:

1. Add PS 4643 Occupational Globalization and Diversity as an upper-division elective option in the Professional Core (applies to all concentration options).

2. Add PS 4543 Workplace Supervision and PS 4643 Occupational Globalization and Diversity as required upper-division courses in the Professional Core of the Applied Leadership concentration. All other upper-division elective options in the Professional Core are required courses in the Applied Leadership concentration. Delete footnote 4.

3. Add a new concentration in Child Development (matrix provided below).

What impact will the change have on staffing, on other programs and space allocation?

The change will not have a material impact on the Department of Professional Studies with respect to staffing, programs, or space allocation. The potential impact on other programs is decreased SSCH as BIOL/PHSC 3213 Science Education in the Elementary School and MATH 2033 Mathematical Concepts I are removed from the Professional Studies curriculum with the phase-out of the Early Childhood Education concentration. Conversely, the SSCH for PSY 3063 Developmental Psychology I and ENGL 4723 Teaching People of Other Cultures will increase with the addition of the Child Development concentration. The proposed concentration in Child Development was developed in collaboration with the Department of Curriculum and Instruction to provide a seamless transition for graduates of the Associate of Science in Early Childhood Education program to the Bachelor of Professional Studies degree with a concentration in Child Development.

Attach the Change in Program Assessment Form. The form is located on the Assessment & Institutional Effectiveness web page at http://www.atu.edu/assessment/

If this course will affect other departments, a Departmental Support Form for each affected department must be attached. The form is located on the Curriculum forms web page at http://www.atu.edu/registrar/curriculum_forms.php.

In the attached matrix, include requested changes in the matrix and include course number and title.

Curriculum Matrix for Catalog	
Curriculum in Professional Studies Child Development Concentration	
Freshman Fall Semester Change: Electives from 3 hours to 6 hours Delete: 3 hours Technical Courses Total Hours: 17	**Freshman Spring Semester** Add: ECE 2113: Basic Child Growth and Development Delete: ECED 2003: Introduction to Early Childhood Education Total Hours: 16
Sophomore Fall Semester Change: Electives from 6 hours to 9 hours Delete: 3 hours Technical Courses Total Hours: 15	**Sophomore Spring Semester** Add: PSY 3063: Development Psychology Delete: MATH 2033: Mathematical Concepts I Total Hours: 15
Junior Fall Semester Add: ECE 2313: Theories of Early Childhood SEED 3552: Child and Adolescent Development One hours Elective Delete: ECED 3023: Foundations of Early Childhood Education ECED 3033: Child Development Total Hours: 15	**Junior Spring Semester** Add/Change: Delete: Total Hours: 12
Senior Fall Semester Change: Electives from 3 hours to 9 hours Delete: 6 hours Technical Courses Total Hours: 15	**Senior Spring Semester** Add: ENGL 4723: Teaching People of Other Cultures 9 hours Electives Delete: BIOL/PHSC 3213: Science Education in the Elementary School 9 hours Technical Courses Total Hours: 15

Arkansas Tech University

Proposal for Change in Program

Assessment Form

Our Mission
Arkansas Tech University, a state-supported institution of higher education, is dedicated to nurturing scholastic development, integrity, and professionalism. The University offers a wide range of traditional and innovative programs which provide a solid educational foundation for life-long learning to a diverse community of learners.

Provide an answer for each question. Your answers are to be typed single spaced.

a.	**How does the program change fit with the university mission? The Bachelor of Professional Studies program embodies all three core elements of the university's mission.** The proposed changes in the Professional Core of the Bachelor of Professional Studies program are designed to increase the emphasis on scholastic development and professionalism with the following changes 1) Adding PS 4643 Occupational Globalization and Diversity as an upper-division elective option in the professional core to offer students the opportunity to explore diversity and globalization in the professional workforce. 2) Add PS 4543 Workplace Supervision and PS 4643 Globalization and Diversity as required upper-division electives in the professional core of the Applied Leadership concentration as all other upper-division elective options in the professional core are required courses within the Applied Leadership Concentration. 3) Add a new concentration in Child Development to meet the educational needs of Professional Studies majors whose career paths include day care center owners, day care center directors, and employment opportunities in Head Start early childhood programs. The proposed changes to the Bachelor of Professional Studies program of study enhance the program's academic intent of developing well-rounded and well-educated individuals who will have the knowledge, skills and attributes to become a force multiplier for their employers or potential employers.
b.	**If this change in the program is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable.** Not applicable
c.	**How will the program change impact learning for students enrolled in this program?** Students pursuing any of the concentrations offered other than Early Childhood Education will not be impacted. Students enrolled in the Early Childhood Education concentration will have an opportunity to complete their program of study or migrate to the newly adopted concentration in Child Development.

d.	**What will students demonstrate, represent, or produce to provide evidence of their learning once they complete the program?** As identified in the Bachelor of Professional Studies Continuous Improvement Plan, proof of learning is captured through a qualitative and quantitative assessment process for the following learning outcomes: 1.) Communicate in a group setting with organization or agency stakeholders; 2.) Apply research, identify and comprehend the research process, identify and evaluate ethical issues in research, develop an action research plan and a needs assessment process; 3). Conduct a formal needs assessment; 4) Analyze research data and formulate a business plan. The Continuous Improvement Plan assesses evidence of student learning in the following courses: PS 3143 Applied Professional Research, PS 3003 Project Design and PS 4003 Capstone Project.
e.	**Provide an example or examples of student learning assessment evidence which supports the changes in the program.** A) Add PS 4643 Occupational Globalization and Diversity as an upper-division elective option in the Professional Core (applies to all concentration options). In 2015-2016, the Department of Professional Studies revised the Professional Core to include six (6) hours of upper-division electives from existing departmental options (PS 4143 Nonprofit Governance, PS 4243 Planning for Adult Learners, PS 4343 Community Development, PS 4443 Professional Leadership, and PS 4543 Workplace Supervision). The addition of PS 4643 as an elective option in the Professional Core increases student choice in tailoring his or her core to meet personal education goals. Additionally, PS 4643 offers Professional Studies students an opportunity to explore cultural diversity. B) Add PS 4543 Workplace Supervision and PS 4643 Globalization and Diversity as required upper-division electives in the Professional Core of the Applied Leadership Concentration. All other upper division elective options in the Professional Core (PS 4143, PS 4243, PS 4343, PS 4443) are required courses in the Applied Leadership concentration. C) Add a new concentration in Child Development. The Bachelor of Professional Studies program has offered a concentration in Early Childhood Education since the program became available 100% online in 2011. Before recent changes in teacher education curriculum in Arkansas, as well as limitations to the pathway to alternative teacher certification, the concentration in Early Childhood Education provided a viable path to alternative teacher certification. This previous path no longer exists in Arkansas. As an alternative to the concentration in Early Childhood Education, the Department of Professional Studies proposes the addition of a concentration in Child Development. The proposed concentration will continue to meet the educational needs of Professional Studies majors whose career paths include day care center owners, day care center directors, and employment opportunities in Head Start early childhood programs. To focus on child development, the proposed concentration includes PSY 3063 Developmental Psychology I, ECE 2113 Basic Child Growth and Development, ECE 2313 Theories of Early Childhood Education, SEED 3552 Child and Adolescent Development, EDMD 3013 Integration Instructional Technology, and ENGL 4723 Teaching People of Other Cultures. If the program changes are approved, the Early Childhood Education concentration will be closed to new enrollments with the start of the 2017 summer term.
f.	**How does this course fit in the current state of the discipline? Include Arkansas institutional comparisons. If Arkansas educational institutions do not have the course or program,**

provide comparative examples from regional educational institutions. Arkansas Tech University's Department of Curriculum and Instruction offers an Associate of Science degree in Early Childhood Education in a 100% distance learning format. The existing Bachelor of Professional Studies degree with a concentration in Early Childhood Education provides a seamless path to the baccalaureate degree for a graduate of the AS-ECE program. The Department of Professional Studies consulted the Department of Curriculum and Instruction to ensure the proposed concentration in Child Development continued to offer continuity in degree programs. An exploration of degree completion programs in Arkansas indicated a comparable online option in Child Development does not exist. The University of Memphis offers a Bachelor of Professional Studies degree with a program of study in Child Development & Family Studies. The University of Memphis program is not designed as a degree completion program, as it requires 48 hours of coordinated study in Child Development and Family Services, Family and Society, Counseling, Historical Context, Social Services and Public Policy, and Educational Context. Northwestern State University of Louisiana offers an online Bachelor of Science in Family and Consumer Sciences with a Concentration in Child Development and Family Relations. Students seeking this degree from Northwestern State University of Louisiana must complete 59 hours with the 120 semester hour Family and Consumer Science curriculum. Comparable programs of study were not identified in Oklahoma or Missouri.

g. **Attach a detailed assessment plan including three to five specific program student learning outcomes, means or instructional measures to assess each outcome, identify program courses where learning will be assessed, and performance standards or criteria for success which demonstrate student learning for each outcome. (Examples for assessment plans/curriculum mapping can be found at the Office of Assessment and Institutional Effectiveness web page.)** Please see attached Professional Studies program outcomes and curriculum map for 2016 – 2017.

The Department of Professional Studies, in cooperation with the Office of Assessment and Institutional Effectiveness, completed an Assessment Peer Review Degree/Program Continuous Improvement Report in 2014. The results of the peer review process indicated a need to revise the assessment protocols for the Professional Studies program to include, but not limited to,

- updating the Continuous Improvement Plan annually,

- measuring formative and summative learning,

- deploying direct and indirect measures of assessment,

- discussions of student strengths and weaknesses, and

- the rationale for making or not making changes.

Major revisions to the Professional Studies curriculum were approved in fall 2015, and these changes will be deployed with the 2016-2017 university catalog. The Department of Professional Studies is developing new program assessment protocols for implementation in the 2016-2017 academic year to match the revised curriculum. The formal program review process and a separate formative assessment (the Professional Studies Student Survey) will serve as the program assessment for the 2015-2016 academic year. The faculty will finalize new program outcomes as the conclusion of the program review process. The following program outcomes are tentative and under review.

Program Outcome 1: The graduate maximizes professional communication skills in a group setting with the organizational or agency stakeholder's present (Bloom's Taxonomy Level 4: Apply).

Program Outcome 2: The graduate evaluates empirical research by producing an academic literature review of peer-reviewed scholarly sources (Bloom's Taxonomy Level 5: Evaluating).

Program Outcome 3: The graduate proposes a real-world business solution by conducting a formal needs assessment, developing an action plan, and offering a viable course of action (Bloom's Taxonomy Level 6: Creating).

Program Outcome 4: The graduate constructs a research proposal through academic study and personal development, culminating with the presentation of his or her findings (Bloom's Taxonomy Level 6: Creating).

Program Outcome 5: The graduate interprets the professional and corporate work environments as a member of an enterprise leadership team through an active case study (Bloom's Taxonomy Level 4: Analyze).

Program Outcome 6: The graduate analyzes stakeholder challenges and constructs an academic research project displaying his or her ability to write and communicate in a professional manner (Bloom's Taxonomy Level 5: Creating).

Professional Studies Program 2016-2017 Program Assessment

	Stakeholder	Action Word	Learning Statement	Criterion	Bloom's
Program Outcome 1	The graduate	maximizes	professional verbal communication skills	in a group setting with organization or agency stakeholders present.	6 - Creating
Program Outcome 2	The graduate	evaluates	empirical research	by producing an academic literature review of peer-reviewed scholarly sources.	5 - Evaluating
Program Outcome 3	The graduate	proposes	a real-world business solution	by conducting a formal needs assessment, developing an action plan and proposes a course of action.	6 - Creating
Program Outcome 4	The graduate	constructs	a research proposal	through academic research and development and presenting results and findings.	6 - Creating
Program Outcome 5	The graduate	interprets	the professional and corporate work environments	as a member of a corporate leadership team through active case study.	5 - Evaluating
Program Outcome 6	The graduate	analyzes	potential courses of action	(intent is to display written communication)	4 - Analyzing

Required Course	Outcome 1	Outcome 2	Outcome 3	Outcome 4	Outcome 5	Outcome 6
PS 3013 Professional Studies Seminar	I	I	I	I	I	I
PS 3133 Principles/Personnel Management				R	R	R
PS 3023 Professional Communication	R	R		R	R	R
PS 3143 Applied Prof Research		R	R	R	R	R
PS 3003 Project Design	R	M	M	M		M
PS 4003 Capstone Project	M				M	

I - Introduce
R - Reinforce
M - Master

Summative Assessment

The department created the tentative curriculum map below to show the graduate's path to mastery of the program outcomes identified below. The curriculum map reflects approved curriculum changes to the program's professional core (to begin 2016-17 AY) and not the core curriculum as presented elsewhere in the program review. Each program objective is delivered through a process of introduction, reinforcement, and mastery. The goal of the summative assessment is to measure the level of success or proficiency that has been obtained at the end of the program of study, by comparing it against a benchmark determined by the department. The summative assessment will employ both qualitative and quantitative measurements.

Required Course	Outcome 1	Outcome 2	Outcome 3	Outcome 4	Outcome 5	Outcome 6
PS 3013 PS Seminar	I	I	I	I	I	I
PS 3133 Principles/Personnel Management				R	R	R
PS 3023 Professional Communication	R	R		R	R	R
PS 3143 Applied Professional Research		R	R	R	R	R
PS 3003 Project Design	R	M	M	M		M
PS 4003 Capstone Project	M				M	

I – Introduce

R – Reinforce

M – Master

Formative Assessment

The goal of formative assessment is to gather feedback that can be used by the department to guide improvements in the ongoing teaching, learning, and advising contexts. The Department of Professional Studies deployed the Professional Studies Student Survey in December 2015 to assess student perceptions in five domains: Comfort, Community, Facilitation, Interaction and Collaboration, and Advising. The response rate for the survey was 19.8% (152/767) over a seven-day period. This high response rate indicates a student population engaged in the educational process. For each of the questions below, the highest response category on the Likert Scale is shown.

a.   <u>**Comfort**</u>

1. I feel comfortable introducing myself in online courses.

75% Strongly Agree

2. I can effectively communicate in an online course.

70% Strongly Agree

3. I feel comfortable asking other students for help in online courses.

38% Somewhat Agree

4. I do not have difficulties with expressing my thoughts in my online courses.

60% Strongly Agree

5. I am comfortable expressing my opinions and feelings in an online course.

57% Strongly Agree

6. I feel comfortable in the online learning environment provided.

77% Strongly Agree

b. <u>Community</u>

7. I can easily make acquaintances in my online courses.

35% Somewhat Agree

8. My peers know me quite well in my online course.

35% Neither Agree or Disagree

9. I feel that students depend on me in my online courses.

42% Neither Agree or Disagree

10. I spend a lot of time with my peers in my online courses.

32% Neither Agree or Disagree

11. I feel emotionally attached to other students in my online courses.

32% Strongly Disagree

c. **Facilitation**

12. Instructors integrate collaboration tools into my online courses.

48% Strongly Agree

13. Instructors promote collaboration between students in online courses.

51% Strongly Agree

14. I receive frequent feedback from my instructors in my online courses.

41% Strongly Agree

15. My instructors participate in discussions in my online courses.

32% Somewhat Agree

16. My instructors are responsive to my questions in my online courses.

54% Strongly Agree

17. I feel my instructors have created a safe environment in which I can freely express myself in my online course.

67% Strongly Agree

18. I know some of my faculty members well in my online courses.

33% Neither Agree or Disagree

d. **Interaction and Collaboration**

19. I discuss my ideas with other students in my online courses.

7% Somewhat Agree

20. I value the contributions of my peers in my online courses.

47% Strongly Agree

21. I share information with other students in my online courses.

40% Somewhat Agree

22. I collaborate with other students in my online courses.

40% Somewhat Agree

e. **Advising**

23. My advisor advocates for my success as a student.

68% Strongly Agree

24. I would first contact my advisor for a quick answer related to Arkansas Tech.

57% Strongly Agree

25. I would contact my advisor about such topics as:

15% Course Selection; 15% Degree Requirements; 12% Graduation; 11% Enrollment

26. I am satisfied with my overall advising experience in the Department of Professional Studies.

75% Strongly Agree

Free Text Responses

The Professional Studies Student Survey offered a free text response question for each of the five domains. The design of each free text question afforded the student an opportunity to further discuss each topic addressed in the Likert-item questions.

- Please share any additional comments regarding your level of comfort as an online student at Arkansas Tech University. (Comfort)

- Do you have any additional comments regarding your sense of community as an online student at Arkansas Tech? (Community)

- Do you have any comments regarding your instructors' facilitation of your online courses? (Facilitation)

- Do you have any comments regarding the level of interaction and collaboration in your online courses? (Interaction and Collaboration)

- Do you have any other information you would like to share regarding your advising experience in the Department of Professional Studies? (Advising)

Arkansas Tech University
DEPARTMENTAL SUPPORT FORM

This form must be completed for every department affected by the course change.

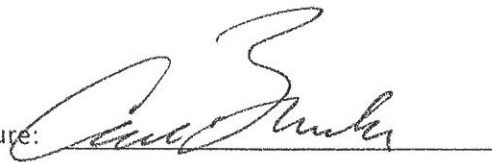| Department Affected: Curriculum and Instruction	This department x supports ☐ does not support the change.
Comments: The Department of Professional Studies proposes a new concentration in Child Development for the Bachelor of Professional studies degree. The 17-hour concentration consists of the following: Department of Curriculum and Instruction ECE 2113 Basic Child Growth and Development ECE 2313 Theories of Early Childhood SEED 3552 Child and Adolescent Development EDMD 3013 Integrating Instructional Technology Department of Behavioral Sciences PSY 3063 Developmental Psychology I Department of English and World Languages ENGL 4723 Teaching People of Other Cultures	

Department Head Signature: _____

Date: 8/5/16

Arkansas Tech University
DEPARTMENTAL SUPPORT FORM

This form must be completed for every department affected by the course change.

Department Affected: English and World Languages	This department x supports ☐ does not support the change.
Comments: The Department of Professional Studies proposes a new concentration in Child Development for the Bachelor of Professional studies degree. The 17-hour concentration consists of the following: Department of Curriculum and Instruction ECE 2113 Basic Child Growth and Development ECE 2313 Theories of Early Childhood SEED 3552 Child and Adolescent Development EDMD 3013 Integrating Instructional Technology Department of Behavioral Sciences PSY 3063 Developmental Psychology I Department of English and World Languages ENGL 4723 Teaching People of Other Cultures	

Department Head Signature: _____

Date: 08-05-16

Arkansas Tech University
DEPARTMENTAL SUPPORT FORM

This form must be completed for every department affected by the course change.

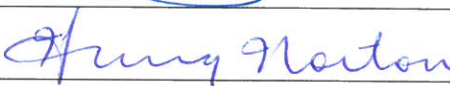| Department Affected: Behavioral Sciences	This department x supports ☐ does not support the change.
Comments: The Department of Professional Studies proposes a new concentration in Child Development for the Bachelor of Professional studies degree. The 17-hour concentration consists of the following: Department of Curriculum and Instruction ECE 2113 Basic Child Growth and Development ECE 2313 Theories of Early Childhood SEED 3552 Child and Adolescent Development EDMD 3013 Integrating Instructional Technology Department of Behavioral Sciences PSY 3063 Developmental Psychology I Department of English and World Languages ENGL 4723 Teaching People of Other Cultures	

Department Head Signature: _____

Date: Aug 5, 2016

Arkansas Tech University
PROPOSAL FOR NEW CERTIFICATE PROGRAM

TO:	Check Appropriate Committee:
	☒ Curriculum Committee
	☐ Graduate Council
FROM (Initiating Department):	Professional Studies
DATE SUBMITTED:	

Title	Signature	Date
Department Head Dr. Jeff Aulgur	*[signature]*	7/25/16
Dean Dr. Hanna Norton	*Hanna Norton*	7/25/16
Teacher Education Council (if applicable)		
Graduate Council (if applicable)		
Registrar Mrs. Tammy Weaver	*[signature]*	8/9/16
Vice President for Academic Affairs Dr. Mohamed Abdelrahman		

Program Title: **Certificate in Professional Leadership**	CIP Code: **52.0213**	Proposed Date: **Summer 2017**

Reason for proposed program implementation:

The certificate in Professional Leadership offers a 15-hours stand-alone solution for individuals currently employed in professional, corporate, management, industrial, and nonprofit positions but whose formal academic background may not have emphasized this skillset. The certificate also offers an opportunity for individuals who have earned some college credit but who have not received a baccalaureate degree to enhance his or her leadership abilities. For these potential students, the certificate in Professional Leadership would serve as a gateway to the Bachelor of Professional Studies degree. Finally, a certificate in Professional Leadership provides current students with an opportunity to enhance their employability before graduation, regardless of the field of study.

The *Harvard Business Review* (March 2014), published an article entitled "The Seven Skills You Need to Thrive in the C-Suite." The seven skills are:

- Leadership
- Strategic Thinking
- Technical and Technology
- Team- and Relationship Building
- Communication and Presentation.
- Change-Management
- Integrity

The certificate in Professional Leadership provides students with the knowledge, skills, and attributes employers demand across all professional, industrial and corporate environments.

Provide the following:

a. **Curriculum outline - List of courses in new program – Underline required courses and mark distance technology courses with an asterisk***

PS 3133 <u>Applied Principles of Personnel Management</u>*
PS 3023 <u>Professional Communication</u>*
PS 4443 <u>Professional Leadership</u>*
PS 4543 <u>Workplace Supervision</u>*
PS 4343 Community Development* **OR**
PS 4643 Occupational Globalization and Diversity*

b. **Total semester credit hours required for proposed program (Program range: 6-21 semester credit hours)**

15 semester credit hours

c. **New courses and new course descriptions**

PS 4643 Occupational Globalization and Diversity is proposed as a new course in the curriculum of the certificate program in Professional Leadership as well as an upper-division elective option in the Professional Core for the Bachelor of Professional Studies degree. The proposed course is currently offered as a Professional Studies special topics course.

d. **Program goals and objectives**

1. The graduate maximizes written communication skills for management and leadership.
2. The graduate analyzes real-world business solutions based on critical analysis.
3. The graduate constructs professional presentations (written and visual) by conducting formal needs assessment, developing an action plan and proposing a course of action.
4. The graduate interprets the professional and corporate work environment through virtual small-group analysis and solution exercise.
5. The graduate analyzes potential courses of action with consideration to work environment, diversity, and community.

e. **Expected student learning outcomes**
1. Ability to lead and work in a team structure (professional, industrial or nonprofit). Supports Goals 4 and 5.
2. Ability to make decisions and solve problems from the front-line to the executive suite. Supports Goal 2.
3. Ability to plan, organize and prioritize work (as an individual and for a team). Supports Goal 4.
4. Ability to create and edit written reports, letters, memorandum, and white papers. Supports Goals 1 and 3.
5. Ability to lead in a diverse work environment through assessment, education, and solution implementation. Supports Goals 2, 4 and 5.

6. Ability to produce and deliver professional visual presentations in multiple formats. Supports Goal 3.
7. Ability to lead a front-lines staff or effectively supervise front-line leaders. Supports Goals 4 and 5.
8. Ability to deploy research, project management, negotiation, and analytic skills. Supports Goals 1 and 2.
9. Ability to transition from a front-line leadership role to strategic leadership. Supports Goals 4 and 5.

f. Documentation that program meets employer needs

In a white paper entitled "The Human Factor: The hard time employers have finding soft skills," Burning Glass (2015) identified communication, writing, and organizational skills as commonly requested across all jobs families and skill levels. These are the top three requested baseline skills overall and are in the top five for every occupational domain. Burning Glass further identified supervisory skills across the job market, but specifically in finance, hospitality, sales, manufacturing, and production. In a survey of over 600 employment recruiters, Bloomberg (2015) identified the following skills as less common in academic programs but highly desired by employers: strategic thinking, creative problem-solving, leadership skills, and communication skills. The Center for Creative Leadership (CCL), in a study of 400,000 people across 7,500 companies, found that nearly 70 percent of employers reported that "relational skills are critical for leadership success." According to CCL, "the inability to develop and maintain relationships is listed as their biggest weakness and the biggest hindrance to a company." The certificate in Professional Leadership is designed with current employer needs in demand and to develop individuals to serve in a capacity greater than the sum of their parts in his or her respective organization.

g. Student demand (projected enrollment) for proposed program

Conservatively, it is anticipated at least 25 percent of students matriculating with a Bachelor of Professional Studies degree will want to simultaneously earn the certificate in Professional Leadership (approximately 50 certificates annually). It is expected the immediate response from those not enrolled in a program of study at Arkansas Tech University will be minimal but will develop over time through marketing and outreach efforts. Through internal institutional awareness, it is expected students in a wide array of disciplines will seek to earn the certificate in Professional Leadership to enhance employment opportunities.

h. Program approval letter from licensure/certification entity, if required

Not applicable

i. **Name of institutions offering similar programs and the institution(s) used as model to develop proposed program.**

Arkansas Northeastern College offers a Team Leadership Technical Certificate, designed for individuals seeking to enhance their leadership and management skills. Comparable certificate programs do not exist in the state of Arkansas. For comparative purposes, Florida State University offers a 15 credit hour Leadership Studies Certificate with the stated intent of preparing students for leadership in multiple contexts. Western Kentucky University offers a 14 credit hour certificate in Organizational Leadership to allow students to enhance the understanding of leadership theory and practice while applying it directly to the student's academic or professional area of interest. The University of Georgia offers an 18 credit hour undergraduate certificate in Leadership and Service, which is designed to enhance the leadership skills and orientation to service through the study and practice of leadership.

j. **Scheduled program review date (within 10 years of program implementation)**

The certificate in Professional Leadership program review will occur concurrently with the next next program review of the Bachelor of Professional Studies program review during the 2022-2023 academic year.

Attach the New Program Assessment Form. The form is located on the Assessment & Institutional Effectiveness web page at http://www.atu.edu/assessment/

Arkansas Tech University

Proposal for New Program Assessment Form

Our Mission
Arkansas Tech University, a state-supported institution of higher education, is dedicated to nurturing scholastic development, integrity, and professionalism. The University offers a wide range of traditional and innovative programs which provide a solid educational foundation for life-long learning to a diverse community of learners.

Provide an answer for each question. Your answers are to be typed single spaced.
• **How does this proposal for the new program fit with the university mission?** The certificate in Professional Leadership offers a 15-hours stand-alone solution for individuals currently employed in professional, corporate, management, industrial, and nonprofit positions but whose formal academic background may not have emphasized this skillset. The certificate also offers an opportunity for individuals who have earned some college credit but who have not received a baccalaureate degree to enhance his or her leadership abilities. For these potential students, the certificate in Professional Leadership would serve as a gateway to the Bachelor of Professional Studies degree. Finally, a certificate in Professional Leadership provides current students with an opportunity to enhance their employability before graduation, regardless of their field of study.
• **If this program is mandated by an accrediting or certifying agency, include the directives. If not, state not applicable.** Not applicable.
• **How will this new program enhance learning for students enrolled in the program?** The Harvard Business Review (March 2014) published an article identifying the seven skills individuals need for success in the corporate environment: leadership, strategic thinking, technical and technology skills, team- and relationship building, communication and presentation, change management, and integrity. In alignment with this construct, the certificate in Professional Leadership offers the following program goals. 1) The graduate maximizes written communication skills for management and leadership. 2) The graduate analyzes real-world business solutions based on critical analysis. 3) The graduate constructs professional presentations (written and visual) by conducting a formal needs assessment, developing an action plan, and proposing a course of action. 4) The graduate interprets the professional and corporate work environment through virtual small-group analysis and solution exercises. 5) The graduate analyzes potential courses of action with consideration to work environment, diversity, and community.

1. **What will students demonstrate, represent, or produce to provide evidence of their learning once they complete the program?** Individuals completing the certificate in Professional Leadership will demonstrate the:

1. Ability to lead and work in a team structure (professional, industrial or nonprofit). Supports Goals 4 and 5.

2. Ability to make decisions and solve problems from the front-line to the executive suite. Supports Goal 2.

3. Ability to plan, organize and prioritize work (as an individual and for a team). Supports Goal 4.

4. Ability to create and edit written reports, letters, memorandum, and white papers. Supports Goals 1 and 3.

5. Ability to lead in a diverse work environment through assessment, education, and solution implementation. Supports Goals 2, 4 and 5.

6. Ability to produce and deliver professional visual presentations in multiple formats. Supports Goal 3.

7. Ability to lead a front-lines staff or effectively supervise front-line leaders. Supports Goals 4 and 5.

8. Ability to deploy research, project management, negotiation, and analytic skills. Supports Goals 1 and 2.

9. Ability to transition from a front-line leadership role to strategic leadership. Supports Goals 4 and 5.

- **Provide an example or examples of assessment evidence which supports adding this new program.** In a white paper entitled "The Human Factor: The hard time employers have finding soft skills," Burning Glass (2015) identified communication, writing, and organizational skills as commonly requested across all jobs families and skill levels. These are the top three requested baseline skills overall and are in the top five for every occupation family. Burning Glass further identified supervisory skills across the job market, but specifically in finance, hospitality, sales, manufacturing, and production. In a survey of over 600 employment recruiters, Bloomberg (2015) identified the following skills as less common in academic programs by highly desired by employers: strategic thinking, creative problem-solving, leadership skills, and communication skills. The Center for Creative Leadership (CCL), in a study of 400,000 people across 7,500 companies, found that nearly 70 percent of employers reported that "relational skills are critical for leadership success." According to CCL, "the inability to develop and maintain relationships is listed as their biggest weakness and the biggest hindrance to a company." The certificate in Professional Leadership is designed with current employer needs in demand and to develop individuals to serve in a capacity greater than the sum of their parts in his or her respective organization.

- **How does this course fit in the current state of the discipline? Include Arkansas institutional comparisons. If Arkansas educational institutions do not have the program provide comparative examples from regional educational institutions.** Arkansas Northeastern College offers a Team Leadership Technical Certificate, designed for

individuals seeking to enhance their leadership and management skills. Comparable certificate programs do not exist in the state of Arkansas. For comparative purposes, Florida State University offers a 15 credit hour Leadership Studies Certificate with the stated intent of preparing students for leadership in multiple contexts. Western Kentucky University offers a 14 credit hour certificate in Organizational Leadership to allow students to enhance the understanding of leadership theory and practice while applying it directly to the student's academic or professional area of interest. The University of George offers an 18 credit hour undergraduate certificate in Leadership and Service, which is designed to enhance the leadership skills and orientation to service through the study and practice of leadership.

- **Attach a detailed assessment plan including three to five specific program student learning outcomes, means or instructional measures to assess each outcome, identify program courses where learning will be assessed, and performance standards or criteria for success which demonstrate student learning for each outcome. (Examples for assessment plans/curriculum mapping can be found at the Office of Assessment and Institutional Effectiveness web page.)**

Professional Leadership 2017-2018 Program Assessment

	Stakeholder	Action Word	Learning Statement	Criterion	Bloom's
Program Outcome 1	The graduate	maximizes	written communication skills or management and leadership	in an individual or virtual group setting.	6 - Creating
Program Outcome 2	The graduate	analyzes	real-world business solutions	bsed on critical analysis and by conducting a formal needs assessment, developing an action plan and proposing a course of action.	6 – Creating / 4 - Analyzing
Program Outcome 3	The graduate	constructs	professional presentations (written and visual)	through academic research and development and presenting results and findings.	6 - Creating
Program Outcome 4	The graduate	interprets	the professional and corporate work environment	through virtual small-group analysis and solution exercises.	5 – Evaluating / 4 - Analyzing
Program Outcome 5	The graduate	analyzes	potential courses of action	with consideration to work environment, diversity, and community.	4 - Analyzing

Required Course	Outcome 1	Outcome 2	Outcome 3	Outcome 4	Outcome 5
PS 3133 Principles/Personnel Management		I	I	I	I
PS 3023 Professional Communication	I	I	I	I	I
PS 4443 Professional Leadership	M	R	M	M	M
PS 4543 Workplace Supervision	R	M	R	M	M
PS 4343 Community Development	R	R	R	R	R
PS 4643 Occupational Globalization/Diversity	R	M	R	R	M

I - Introduce
R - Reinforce
M - Master