Summary and Proposals Nov CC/Nov FS

1. College of Science, Technology, Engineering, & Mathematics – Department of Engineering and Computing Sciences

    a. Add COMS 1921: Microsoft Excel, to the course descriptions;
    b. Add COMS 2323: Programming in Python, to the course descriptions;
    c. Add COMS 4923: Capstone II, to the course descriptions;
    d. Add COMS 4931-4933: Internship, to the course descriptions;
    e. Add CSEC 1003: Introduction to Cybersecurity, to the course descriptions;
    f. Add CSEC 4931-4933: Internship, to the course descriptions;
    g. Modify the Curriculum in Bachelor of Science in Computer Science, as follows:
        (1) Delete the following 13 hours:
            ELEG 2134: Digital Logic Design, and ELEG 2130: Digital Logic Design Lab;
            CSEC 2213: Network Forensics and Incident Response;
            COMS 4063: IT Project Administration; and
            Elective - 3 hours;
        (2) Add the following 13 hours:
            CSEC 1003: Introduction to Cybersecurity;
            COMS 2163: Scripting Languages;
            COMS 2323: Programming in Python;
            COMS 4923: Capstone II; and
            3000-4000 Level Elective – 1 hour;
    h. Modify the Curriculum in Bachelor of Science in Cybersecurity, as follows:
        (1) Delete the following 11 hours:
            ELEG 2134: Digital Logic Design, and ELEG 2130: Digital Logic Design Lab;
            CSEC 2113: Introduction to Information Systems; and
            3000-4000 Level Elective - 4 hours; and
        (2) Add 11 hours:
            CSEC 1003: Introduction to Cybersecurity;
            COMS 2323: Programming in Python;
            COMS 3233: Database Design and Implementation; and
            Elective - 2 hours;
    i. Modify the Curriculum in Bachelor of Science in Information Programming, Database, and Web Track I, and Bachelor of Science in Information Technology Network and Security Track II, as follows:
        Track I (Programming, Database, and Web):
        (1) Delete the following 9 hours:
            CSEC 2213: Network Forensics and Incident Response;
            COMS 4063: IT Project Administration;
            Elective - 3 hours; and
        (2) Add the following 9 hours:
            CSEC 1003: Introduction to Cybersecurity;
            COMS 2323: Programming in Python; and
            COMS 4923: Capstone II; and

Track II (Network and Security) changes

(1) Delete the following 6 hours:
COMS 4063: IT Project Administration; and
Elective - 3 hours; and

(2) Add the following 6 hours:
CSEC 1003: Introduction to Cybersecurity;
COMS 4923: Capstone II; and

(3) Change "COMS 2163: Scripting Languages" to "COMS 2163: Scripting Languages or COMS 2323: Programming in Python" (to allow students a choice between the two courses); and

j. Modify the Curriculum in Associate of Applied Science in Cybersecurity, as follows:

(1) Delete the following 10 hours:
ELEG 2134: Digital Logic Design, and ELEG 2130: Digital Logic Design Lab; CSEC 2113: Introduction to Information Systems; and
U.S. History/Government; and

(2) Add the following 10 hours:
CSEC 1003: Introduction to Cybersecurity;
COMS 2323: Programming in Python; and
Elective - 4 hours; and

k. Modify the Curriculum in Associate of Applied Science in Information Technology, as follows:

(1) Delete the following 3 hours:
CSEC 2213: Network Forensics and Incident Response; and

(2) Add the following 3 hours:
CSEC 1003: Introduction to Cybersecurity; and

l. Modify the Curriculum in Certificate of Proficiency in Computer Networking, as follows:

(1) Change program to require ONE of: CSEC 1213 Wireless and Cellular Security or COMS 2703: Computer Hardware and Architecture (certificate currently requires both courses); and

(2) Add CSEC 2213: Network Forensics and Incident Response.

2. College of Science, Technology, Engineering, & Mathematics – Department of Physical & Earth Sciences

a. Add PHYS 4061: Engineering Physics Design, to the course descriptions;

b. Modify the Curriculum in Engineering Physics, as follows:

(1) Delete the following courses:
MCEG 1002: Engineering Graphics;
4 hours of ELEG/MCEG/COMS (3000-4000 level) electives; and
PHYS 4951: Undergraduate Research in Physics; and

(2) Add the following courses:

COMS 2203: Programming II; and
COMS 2323: Programming in Python;
PHYS 4061: Engineering Physics Design; and

c. Modify the Curriculum in Physics, as follows:

(1) Delete the following courses:
STAT 2304: Programming Languages for Data Science;
3 hours of Electives; and
3 hours of Upper Division Electives; and

(2) Add the following courses:
COMS 2203: Programming II;
COMS 2323: Programming in Python;
STAT 3153: Applied Statistics; and
1 hours of Elective.

ARKANSAS TECH UNIVERSITY

REQUEST FOR COURSE ADDITION

Department Initiating Proposal	Date
Engineering and Computing Sciences	

Title	Signature	Date
Department Head	John L. Krohn	12/1/2022
Dean		12/1/2022
Assessment		12/5/22
Registrar	Tammy Lucas	1/3/23
Graduate Dean (Graduate Proposals Only)		
Vice President for Academic Affairs		

Committee	Approval Date
General Education Committee (Undergraduate Proposals Only)	
Teacher Education Committee (Graduate or Undergraduate Proposals)	
Curriculum Committee (Undergraduate Proposals Only)	
Faculty Senate (Undergraduate Proposals Only)	
Graduate Council (Graduate Proposals Only)	

Course Subject: (e.g., ACCT, ENGL)	Course Number: (e.g., 1003)	Effective Term:
COMS	**1921**	○ Spring ◉ **Summer I**

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

Microsoft Excel

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

MICROSOFT EXCEL

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?

n/a

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)?
Computer lab

Answer the following Assessment questions:

a. If this course is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable. n/a
b. If this course is required for the major or minor, complete the following. n/a
    1. Provide the program level learning outcome(s) it addresses.
    2. Provide tool or measure directly linked to each program learning outcome. (How will student learning in this outcome be measured?)
c. What is the rationale for adding this course? What evidence demonstrates this need? **Employers often ask for skills in Excel. The goal of this course is to prepare students to pass the Microsoft Excel: Associate certification exam.**

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).

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

COMS 1921 Microsoft Excel SAMPLE SYLLABUS

Department of Engineering and Computing Sciences
Fall 2023

Instructor Contact Information

Instructor: Mrs. Rebecca (Becky) Cunningham
Webex meeting room: https://atu.webex.com/meet/rcunningham
Email: rcunningham@atu.edu
Office location: Corley 248
Office phone: 479.880.4610
Expect an email response or returned phone call within 24 hours (except on weekends).

Office Hours

9-10 MWF 11-12 MWF	In person or virtual	Available in my office COR 248, in the Webex meeting room, by email, or by phone

Other times by appointment; please allow 24-hour notice when requesting appointment

Course Description

Preparation to pass the Microsoft Office Specialist: Excel Associate Certification exam. Topics covered include creating and managing worksheets and workbooks, creating cells and ranges, creating tables, applying formulas and functions and creating charts and objects.
Credit for this course may be awarded to any student who has already obtained the MOS: Excel Associate certification.

Course Objectives

- Manage worksheets and workbooks
- Manage data cells and ranges
- Manage tables and table data
- Perform operations by using formulas and functions
- Manage charts

Textbook/Software Requirements & Bibliography

Cengage Unlimited required, due to embedded electronic projects.
Options:

- 1-semester access (4 months) / 9780357700037 / $119.99
- 1-year access (12 months) / 9780357700044 / $179.99
- 2-year access (24 months) / 9780357700051 / $239.99

Actual book that will be utilized:

Shelly Cashman Series® Microsoft® Office 365® & Excel 2019 Comprehensive | 1st Edition
Copyright 2020
ISBN: 9780357392676

COURSE CONTENT

Module 1: Creating a Worksheet and a Chart
Module 2: Formulas, Functions, and Formatting
Module 3: Working with Large Worksheets, Charting, and What-If Analysis
Supplementary certification exam preparation material

ASSESSMENT METHODS

Grades will be calculated on a total point basis. At any point during the course, simply divide your earned points by the points possible to calculate your current grade. (NOTE: Blackboard should do this for you.)

The traditional grading scale will be used to determine final grades:

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

Any questions concerning your grade need to be voiced as soon as possible.

NOTE: Submitted assignments/exams in this course may be used to assess aspects of the course and/or the department and may be viewed by other faculty and/or members of an accreditation team. All such use will preserve the student's anonymity.

POLICIES

Course policies align with the most recent version of the Student Handbook, which can be found at: https://www.atu.edu/studenthandbook/StudentHandbook-2020-ada.pdf

1. ATTENDANCE

During the first week of class, you must complete the Federal Initial Attendance and Participation Module to be considered as "actively participating" in the course. You may retake the assignment as often as you need to make 100%. Failure to make a 100% may result in being marked as "non-attended."

Since this class is online, there is no in-person attendance requirement.

2. COURSE ACTIVITIES / DUE DATES

Assignments should be completed on time or may receive a late penalty.

3. STUDENT ACCOMMODATIONS

A student must be registered with Disability Services in order to qualify for special accommodations. (Registration must occur each semester; it doesn't carry over.) In addition, you should make contact with the instructor to determine which specific accommodations would be appropriate for this particular course.

Related University Policy: http://www.atu.edu/disabilities/index.php

4. FAIRNESS

Every effort will be made to ensure that all students are treated equally and fairly. That being said, special treatment may be awarded for extenuating circumstances if sought in advance and some students may qualify for special services. If you ever feel that you are being treated unequally, please discuss with your instructor.

Related University Policy: http://www.atu.edu/titleix/index.php

5. ACADEMIC INTEGRITY

You are expected to do your own work. (That means you actually sit in front of the computer and do the typing/clicking.) **Any sharing of computer files is considered cheating, and all parties involved will be dealt with harshly.** You may find that one cheating instance may haunt you for the rest of your college career, and in some cases, even beyond that. Don't risk it!

Students who violate the Code of Academic Integrity (cheating, plagiarism, etc.) face penalties ranging from being required to redo the assignment (i.e., properly cite sources in cases of plagiarism) to failure of the assignment and/or class. The sanction is dependent on the severity of the violation as well as the number of times a student has violated the policy in the class. Egregious or multiple violations may result in additional university level sanctions.

ARKANSAS TECH UNIVERSITY

REQUEST FOR COURSE ADDITION

Department Initiating Proposal	Date
Engineering and Computing Sciences	6-20-2022

Title	Signature	Date
Department Head	John L. Krohn	12/1/2022
Dean	[signature]	12/1/2022
Assessment	[signature]	12/5/22
Registrar	[signature]	1/3/23
Graduate Dean (Graduate Proposals Only)		
Vice President for Academic Affairs		

Committee	Approval Date
General Education Committee (Undergraduate Proposals Only)	
Teacher Education Committee (Graduate or Undergraduate Proposals)	
Curriculum Committee (Undergraduate Proposals Only)	
Faculty Senate (Undergraduate Proposals Only)	
Graduate Council (Graduate Proposals Only)	

Course Subject: (e.g., ACCT, ENGL)	Course Number: (e.g., 1003)	Effective Term:
COMS	**2323**	○ Spring ◉ **Summer I**
Official Catalog Title: (If official title exceeds 30 characters, indicate Banner Title below)		

Programming in Python

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

PROGRAMMING IN PYTHON

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?

Course will be offered each fall semester

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

Answer the following Assessment questions:

a. If this course is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable.
b. If this course is required for the major or minor, complete the following.
    1. Provide the program level learning outcome(s) it addresses.
    2. Provide tool or measure directly linked to each program learning outcome. (How will student learning in this outcome be measured?) **This course doesn't directly support a program outcome but instead the skills learned are needed to be successful in other courses which use this class as a prerequisite.**
c. What is the rationale for adding this course? What evidence demonstrates this need?

Many upper division courses use the python programming language for various purposes. Therefore, students need exposure to this language before enrolling into those courses to improve student outcomes.

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).

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.

COMS 2323 Programming in Python

Course Description:

Introduction to the Python programming language where students will learn the basics through advanced concepts including basic data types, control structures, regular expressions, input/output, and textual analysis.

Prerequisite:

COMS 2203 Programming Fundamentals II (NOTE: This prereq course is undergoing a name change; this is the new name)

Textbook:

Title: Fundamentals of Python: First Programs

Author: Kenneth A. Lambert

ISBN: 9780357687758

Course Rationale/Justification:

This course is an introduction to the Python programming language. The purpose of the course is to prepare students for building scripts that control a sequence of program steps such as those used in developing testing and deploying software.

Course Objectives:

- Design, code, and test applications using Python scripts
- Demonstrate the basic techniques used to create scripts for automating system administrative task

- Demonstrate the use of regular expressions in processing text
- Demonstrate the use of Python to manage applications using networking
- Control the keyboard and mouse with GUI automation

Attendance:

Programming classes are cumulative. If you miss class regularly, then you will get behind and become lost. Therefore, please attend class regularly.

Students with Disabilities:

If you have any disability that requires special needs for this class, please see me, and I will accommodate you in any way I can.

The ATU Statement of Students and Disabilities policy can be located by navigating to the below link:

http://www.atu.edu/disabilities/index.php

University Academic Integrity Policy:

The ATU Academic Integrity Policy can be located by navigating to the below link:

https://www.atu.edu/academic-integrity/

Statement of Non-Discrimination and Access can be found below:

The ATU Statement of Non-Discrimination and Access policy can be located by navigating to the below link:

http://www.atu.edu/titleix/index.php

COVID-19 Policy:

The ATU COVID-19 Policy can be located by navigating to the below link:

https://www.atu.edu/pandemicrecovery/managementplan.php

ARKANSAS TECH UNIVERSITY

REQUEST FOR COURSE ADDITION

Department Initiating Proposal	Date
Engineering and Computing Sciences	11/21/2022

Title	Signature	Date
Department Head Dr. John Krohn	John L Krohn	12/1/2022
Dean Dr. Judy Cezeaux	Judy L Cezeaux	12/1/2022
Assessment		12/5/22
Registrar	Tammy Weaver	1/3/23
Graduate Dean (Graduate Proposals Only)		
Vice President for Academic Affairs		

Committee	Approval Date
General Education Committee (Undergraduate Proposals Only)	
Teacher Education Committee (Graduate or Undergraduate Proposals)	
Curriculum Committee (Undergraduate Proposals Only)	
Faculty Senate (Undergraduate Proposals Only)	
Graduate Council (Graduate Proposals Only)	

Course Subject: (e.g., ACCT, ENGL)	Course Number: (e.g., 1003)	Effective Term:
COMS	4923	○ Spring ◉ **Summer I**
Official Catalog Title: (If official title exceeds 30 characters, indicate Banner Title below) Capstone II		
Banner Title: (limited to 30 characters, including spaces, capitalize all letters — this will display on the transcript) CAPSTONE II		

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:

This is a MAJOR course (form fields wouldn't let me check the box so I deleted them)

(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 semester

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**

Answer the following Assessment questions:

a. If this course is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable. **n/a**
b. If this course is required for the major or minor, complete the following.
    1. Provide the program level learning outcome(s) it addresses. **This course will be used to assess Outcomes 3 and 5 (Communication and Teams)**
    2. Provide tool or measure directly linked to each program learning outcome. (How will student learning in this outcome be measured?)
        i. **Outcome 3 – The student will give an oral presentation of their final capstone project**
        ii. **Outcome 5 – The student will develop a capstone project as part of a team; they will be assessed on how they contributed to the team**
c. What is the rationale for adding this course? What evidence demonstrates this need? **Feedback from students, faculty, and the advisory board indicated not enough time to come up, develop, test,**

document, and present a complete working project/system. Adding a capstone sequence will produce much better projects and simulate a real-world environment.

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).

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.

COMS 4923 Capstone II SAMPLE SYLLABUS

Department of Engineering and Computing Sciences
Fall 2023

INSTRUCTOR CONTACT INFORMATION

Instructor: Mrs. Rebecca (Becky) Cunningham
Webex meeting room: https://atu.webex.com/meet/rcunningham
Email: rcunningham@atu.edu
Office location: Corley 248
Office phone: 479.880.4610
Expect an email response or returned phone call within 24 hours (except on weekends).

Office Hours

9-10 MWF 11-12 MWF	In person or virtual	Available in my office COR 248, in the Webex meeting room, by email, or by phone

Other times by appointment; please allow 24-hour notice when requesting appointment

COURSE DESCRIPTION

Prerequisite: COMS 4913

A continuation of Capstone I with an emphasis on the development, testing, and deployment phase of the project based on the proposal presented in the previous course. Students will work in teams to develop and present their project in a real-world environment.

COURSE OBJECTIVES

- Develop initial beta version of the solution
- Adhere to timeline
- Provide feedback to client and instructor on a weekly basis
- Maintain strong documentation
- Thoroughly test project

TEXTBOOK/SOFTWARE REQUIREMENTS & BIBLIOGRAPHY

none

COURSE CONTENT

The majority of the semester will be spent developing and testing a system (app, website, database, etc) in a team-based environment. Students will also focus on issues surrounding the development of a system, such as ethical considerations, version testing, adding features, and documenting progress.

ASSESSMENT METHODS

Grades will be calculated as follows:

- Proposal: 5%
- Weekly Reports: 15%
- External Evaluation: 5%
- Documentation: 15%
- Presentations: 20%
- Client Evaluation: 10%
- Holistic Evaluation of Project: 30% - this will include several criteria such as tools learned, teamwork, comprehensiveness, look and feel of the application developed, etc.

NOTE: Submitted assignments/exams in this course may be used to assess aspects of the course and/or the department and may be viewed by other faculty and/or members of an accreditation team. All such use will preserve the student's anonymity.

POLICIES

Course policies align with the most recent version of the Student Handbook, which can be found at: https://www.atu.edu/studenthandbook/StudentHandbook-2020-ada.pdf

1. ATTENDANCE

During the first week of class, you must complete the Federal Initial Attendance and Participation Module to be considered as "actively participating" in the course. You may retake the assignment as often as you need to make 100%. Failure to make a 100% may result in being marked as "non-attended."

Since this class is online, there is no in-person attendance requirement.

2. COURSE ACTIVITIES / DUE DATES

Assignments should be completed on time or may receive a late penalty.

3. STUDENT ACCOMMODATIONS

A student must be registered with Disability Services in order to qualify for special accommodations. (Registration must occur each semester; it doesn't carry over.) In addition, you should make contact with the instructor to determine which specific accommodations would be appropriate for this particular course.

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4. FAIRNESS

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5. ACADEMIC INTEGRITY

You are expected to do your own work. (That means you actually sit in front of the computer and do the typing/clicking.) **Any sharing of computer files is considered cheating, and all parties involved will be dealt with harshly.** You may find that one cheating instance may haunt you for the rest of your college career, and in some cases, even beyond that. Don't risk it!

Students who violate the Code of Academic Integrity (cheating, plagiarism, etc.) face penalties ranging from being required to redo the assignment (i.e., properly cite sources in cases of plagiarism) to failure of the assignment and/or class. The sanction is dependent on the severity of the violation as well as the number of times a student has violated the policy in the class. Egregious or multiple violations may result in additional university level sanctions.

ARKANSAS TECH UNIVERSITY

REQUEST FOR COURSE ADDITION

Department Initiating Proposal	Date
Engineering and Computing Sciences	

Title	Signature	Date
Department Head	John L. Krohn	12/1/2022
Dean	Judy L. Cyrus	12/1/2022
Assessment	[signature]	12/5/22
Registrar	Tammy Lucas	1/3/23
Graduate Dean (Graduate Proposals Only)		
Vice President for Academic Affairs		

Committee	Approval Date
General Education Committee (Undergraduate Proposals Only)	
Teacher Education Committee (Graduate or Undergraduate Proposals)	
Curriculum Committee (Undergraduate Proposals Only)	
Faculty Senate (Undergraduate Proposals Only)	
Graduate Council (Graduate Proposals Only)	

Course Subject: (e.g., ACCT, ENGL)	Course Number: (e.g., 1003)	Effective Term:
COMS	**4931-4933**	○ Spring ◉ **Summer I**

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

Internship

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

INTERNSHIP

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?

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

Answer the following Assessment questions:

a. If this course is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable. n/a
b. If this course is required for the major or minor, complete the following. n/a
    1. Provide the program level learning outcome(s) it addresses.
    2. Provide tool or measure directly linked to each program learning outcome. (How will student learning in this outcome be measured?)
c. What is the rationale for adding this course? What evidence demonstrates this need? We encourage students to complete internships because they have many benefits, such as helping students link what they are learning in the classroom to real-world applications of that knowledge and getting their "foot in the door" which can lead to permanent employment. This way they can receive upper-division elective credit for completing an internship.

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).

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

COMS 4931, 4932, 4933 Internship SAMPLE SYLLABUS

Department of Engineering and Computing Sciences
Fall 2023

Instructor Contact Information

Instructor: Mrs. Rebecca (Becky) Cunningham
Webex meeting room: https://atu.webex.com/meet/rcunningham
Email: rcunningham@atu.edu
Office location: Corley 248
Office phone: 479.880.4610
Expect an email response or returned phone call within 24 hours (except on weekends).

Office Hours

9-10 MWF 11-12 MWF	In person or virtual	Available in my office COR 248, in the Webex meeting room, by email, or by phone

Other times by appointment; please allow 24-hour notice when requesting appointment

Course Description

Prerequisite: Junior standing in a computing or related degree

A supervised, practical experience providing computing majors with hands-on professional experience in a position relating to an area of career interests. The student should secure an approved internship prior to course enrollment. During the internship, the student will submit regular reports regarding their internship experience.

Course Objectives

- Assist the student's development of employer-valued skills such as teamwork, communications and attention to detail.
- Expose the student to the environment and expectations of performance on the part of an information technology professional in a professional setting.
- Enhance and/or expand the student's knowledge of a particular area(s) of computing.
- Meet professional role models and potential mentors who can provide guidance, feedback, and support.
- Expand network of professional relationships and contacts.
- Develop a solid work ethic and professional demeanor, as well as a commitment to ethical conduct and social responsibility.

TEXTBOOK/SOFTWARE REQUIREMENTS & BIBLIOGRAPHY

none

COURSE OUTLINE

Internship Proposal: During the first week of the semester, the student will submit a proposal through Blackboard providing details of their internship goals and how you plan to meet them.

Progress Reports: At the end of each week, the student will submit a weekly progress report through Blackboard. The report will provide any pertinent information regarding the internship progress.

Final Report: During final exam week, but before the final exam day/time, the student will submit a final report providing details of their internship.

ASSESSMENT METHODS

Grades will be calculated on a total point basis. At any point during the course, simply divide your earned points by the points possible to calculate your current grade. (NOTE: Blackboard should do this for you.)

The traditional grading scale will be used to determine final grades:

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

Any questions concerning your grade need to be voiced as soon as possible.

NOTE: Submitted assignments/exams in this course may be used to assess aspects of the course and/or the department and may be viewed by other faculty and/or members of an accreditation team. All such use will preserve the student's anonymity.

POLICIES

Course policies align with the most recent version of the Student Handbook, which can be found at: https://www.atu.edu/studenthandbook/StudentHandbook-2020-ada.pdf

1. ATTENDANCE

During the first week of class, you must complete the Federal Initial Attendance and Participation Module to be considered as "actively participating" in the course. You may retake the assignment as often as you need to make 100%. Failure to make a 100% may result in being marked as "non-attended."

Since this class is online, there is no in-person attendance requirement.

2. COURSE ACTIVITIES / DUE DATES

Assignments should be completed on time or may receive a late penalty.

3. STUDENT ACCOMMODATIONS

A student must be registered with Disability Services in order to qualify for special accommodations. (Registration must occur each semester; it doesn't carry over.) In addition, you should make contact with the instructor to determine which specific accommodations would be appropriate for this particular course.

Related University Policy: http://www.atu.edu/disabilities/index.php

4. FAIRNESS

Every effort will be made to ensure that all students are treated equally and fairly. That being said, special treatment may be awarded for extenuating circumstances if sought in advance and some students may qualify for special services. If you ever feel that you are being treated unequally, please discuss with your instructor.

Related University Policy: http://www.atu.edu/titleix/index.php

5. ACADEMIC INTEGRITY

You are expected to do your own work. (That means you actually sit in front of the computer and do the typing/clicking.) **Any sharing of computer files is considered cheating, and all parties involved will be dealt with harshly.** You may find that one cheating instance may haunt you for the rest of your college career, and in some cases, even beyond that. Don't risk it!

Students who violate the Code of Academic Integrity (cheating, plagiarism, etc.) face penalties ranging from being required to redo the assignment (i.e., properly cite sources in cases of plagiarism) to failure of the assignment and/or class. The sanction is dependent on the severity of the violation as well as the number of times a student has violated the policy in the class. Egregious or multiple violations may result in additional university level sanctions.

ARKANSAS TECH UNIVERSITY

REQUEST FOR COURSE ADDITION

Department Initiating Proposal	Date
Engineering and Computing Sciences	11/21/22

Title	Signature	Date
Department Head Dr. John Krohn	John L. Krohn	12/1/2022
Dean Dr. Judy Cezeaux	Judy L Cezeaux	12/1/2022
Assessment		12/5/22
Registrar	Tammy Weaver	1/3/23
Graduate Dean (Graduate Proposals Only)		
Vice President for Academic Affairs		

Committee	Approval Date
General Education Committee (Undergraduate Proposals Only)	
Teacher Education Committee (Graduate or Undergraduate Proposals)	
Curriculum Committee (Undergraduate Proposals Only)	
Faculty Senate (Undergraduate Proposals Only)	
Graduate Council (Graduate Proposals Only)	

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

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

Introduction to Cybersecurity

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

Each Fall/Spring

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

Answer the following Assessment questions:

a. If this course is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable.
    1. NSA Center of Academic Excellence – required Knowledge Units Cybersecurity Foundations (CSF) and Cybersecurity Principles (CSP)

b. If this course is required for the major or minor, complete the following.
    1. Provide the program level learning outcome(s) it addresses.
        - For each major: Outcome 1 and Outcome 2.
    2. Provide tool or measure directly linked to each program learning outcome. (How will student learning in this outcome be measured?)
        - Students will engage in multiple assignments in which they will apply the principles discussed in the course to example organizations. Assessment will be based on functionality and appropriateness of solution provided from among discussed options.

c. What is the rationale for adding this course? What evidence demonstrates this need?

1. During the process of working through the NSA-CAE process it has become evident that, while the objectives contained in their required Knowledge Units CSF and CSP are covered in the current curriculum, they are scattered across a wide array of courses. It is more appropriate to approach these concepts in a consolidated and introductory fashion to better allow students to integrate more specific knowledge from advanced courses into the overall concepts of the discipline.

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).

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.

Course Number	**CSEC 1003**
Course Name	**Introduction to Cybersecurity**
Section	001
Description	This course introduces general Cybersecurity principles for majors or non-majors. This includes understanding cybersecurity offense and defense, the role of cybersecurity professionals, and legal and ethical principles
Co-Requisite(s)	None
Prerequisite(s)	**None**
Credit hours	3
Semester offered	Fall/Spring
General Education	This course cannot be used to satisfy the general education curriculum.
New	X
Core	X
Major	X
Courses that satisfy Gen Ed requirements	None
Faculty who can teach this course	• **Mr. Lucas Moody** – *ABD Cybersecurity and Information Assurance; MS IT* • **Dr. Indira Dutta** – *Ph.D.* • **Dr. Jerry Wood** – *Ph.D. Information Assurance* • **Dr. Tolga Ensari** – *Ph.D.* • **Dr. Robin Ghosh** – *Ph.D.* • **Dr. Bhaskar Ghosh** – *Ph.D.*
Distance Ed class	No

Syllabus

Department of Computer & Information Science

CSEC 1003	**Introduction to Cybersecurity**
Section #	001
OFFERED	Fall/Spring
PRE-REQUISITE	None
CO-REQUISITES	None
DESCRIPTION	This course introduces general cybersecurity principles for majors or non-majors. This includes understanding cybersecurity offense and defense, the role of cybersecurity professionals, and legal and ethical principles
ACTS Number	CSEC 1310
NOTES	None
COURSE	**Office:** **Phone:** **Email:**
INSTRUCTOR	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	*Principles of Information Security, 7th Ed.,* Michael Whitman and Herbert Mattord, ISBN: 978-0357506431
BIBLIOGRAPHY	There is **no** REQUIRED supplemental reading list for this course.
JUSTIFICATION	Students of all disciplines should have a solid grounding in the fundamentals of cybersecurity. This will assist students, regardless of major, in implementing security into their professional and personal activities.

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

- Describe the principles of confidentiality, integrity, and availability.
- Identify risks, threats, attacks, and vulnerabilities related to cybersecurity.
- Explain how cybersecurity professionals use technologies, processes, and procedures.
- Recognize the application of legal and ethical principles related to cybersecurity.

COURSE TOPICS Topics include:

- Threats and adversaries for organizations and individuals
- Basic risk assessment
- Applications of cryptography
- Common security tools and techniques (VPN, IDS, etc.)
- Legal and ethical issues

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 areenrolled.

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 phoneor text messaging, use of a laptop computer in a distracting manner, consuming food or beverage, and/or having conversations with other studentsthat 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 beno 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 (deductionfrom the final course grade) and will be reported to appropriate governing bodies, e.g. the CIS ethics committee.

ARKANSAS TECH UNIVERSITY

REQUEST FOR COURSE ADDITION

Department Initiating Proposal	Date
Engineering and Computing Sciences	

Title	Signature	Date
Department Head	John L Krohn	12/1/2022
Dean	Judy L Cypert	12/1/2022
Assessment		12/5/22
Registrar	Tammy Duncan	1/3/23
Graduate Dean (Graduate Proposals Only)		
Vice President for Academic Affairs		

Committee	Approval Date
General Education Committee (Undergraduate Proposals Only)	
Teacher Education Committee (Graduate or Undergraduate Proposals)	
Curriculum Committee (Undergraduate Proposals Only)	
Faculty Senate (Undergraduate Proposals Only)	
Graduate Council (Graduate Proposals Only)	

Course Subject: (e.g., ACCT, ENGL)	Course Number: (e.g., 1003)	Effective Term:
CSEC	**4931-4933**	○ Spring ◉ **Summer I**

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

Cybersecurity Internship

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

CYBERSECURITY INTERNSHIP

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?

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

Answer the following Assessment questions:

a. If this course is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable. n/a
b. If this course is required for the major or minor, complete the following. n/a
    1. Provide the program level learning outcome(s) it addresses.
    2. Provide tool or measure directly linked to each program learning outcome. (How will student learning in this outcome be measured?)
c. What is the rationale for adding this course? What evidence demonstrates this need? We encourage students to complete internships because they have many benefits, such as helping students link what they are learning in the classroom to real-world applications of that knowledge and getting their "foot in the door" which can lead to permanent employment. This way they can receive upper-division elective credit for completing an internship.

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)**

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d. Catalog description
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    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)
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e. Section for Name of instructor, office hours, contact information (telephone, email)
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n/a

CSEC 4931, 4932, 4933 Cybersecurity Internship SAMPLE SYLLABUS

Department of Engineering and Computing Sciences
Fall 2023

Instructor Contact Information

Instructor: Mrs. Rebecca (Becky) Cunningham
Webex meeting room: https://atu.webex.com/meet/rcunningham
Email: rcunningham@atu.edu
Office location: Corley 248
Office phone: 479.880.4610
Expect an email response or returned phone call within 24 hours (except on weekends).

Office Hours

9-10 MWF 11-12 MWF	In person or virtual	Available in my office COR 248, in the Webex meeting room, by email, or by phone

Other times by appointment; please allow 24-hour notice when requesting appointment

Course Description

Prerequisite: Junior standing in the cybersecurity program

A supervised, practical experience providing cybersecurity majors with hands-on professional experience in a position relating to an area of career interests. The student should secure an approved internship prior to course enrollment. During the internship, the student will submit regular reports regarding their internship experience.

Course Objectives

- Assist the student's development of employer-valued skills such as teamwork, communications and attention to detail.
- Expose the student to the environment and expectations of performance on the part of an information technology professional in a professional setting.
- Enhance and/or expand the student's knowledge of a particular area(s) of computing.
- Meet professional role models and potential mentors who can provide guidance, feedback, and support.
- Expand network of professional relationships and contacts.
- Develop a solid work ethic and professional demeanor, as well as a commitment to ethical conduct and social responsibility.

TEXTBOOK/SOFTWARE REQUIREMENTS & BIBLIOGRAPHY

none

COURSE OUTLINE

Internship Proposal: During the first week of the semester, the student will submit a proposal through Blackboard providing details of their internship goals and how you plan to meet them.

Progress Reports: At the end of each week, the student will submit a weekly progress report through Blackboard. The report will provide any pertinent information regarding the internship progress.

Final Report: During final exam week, but before the final exam day/time, the student will submit a final report providing details of their internship.

ASSESSMENT METHODS

Grades will be calculated on a total point basis. At any point during the course, simply divide your earned points by the points possible to calculate your current grade. (NOTE: Blackboard should do this for you.)

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- A 90-100%
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- F Below 60%

Any questions concerning your grade need to be voiced as soon as possible.

NOTE: Submitted assignments/exams in this course may be used to assess aspects of the course and/or the department and may be viewed by other faculty and/or members of an accreditation team. All such use will preserve the student's anonymity.

POLICIES

Course policies align with the most recent version of the Student Handbook, which can be found at: https://www.atu.edu/studenthandbook/StudentHandbook-2020-ada.pdf

1. ATTENDANCE

During the first week of class, you must complete the Federal Initial Attendance and Participation Module to be considered as "actively participating" in the course. You may retake the assignment as often as you need to make 100%. Failure to make a 100% may result in being marked as "non-attended."

Since this class is online, there is no in-person attendance requirement.

2. COURSE ACTIVITIES / DUE DATES

Assignments should be completed on time or may receive a late penalty.

3. STUDENT ACCOMMODATIONS

A student must be registered with Disability Services in order to qualify for special accommodations. (Registration must occur each semester; it doesn't carry over.) In addition, you should make contact with the instructor to determine which specific accommodations would be appropriate for this particular course.

Related University Policy: http://www.atu.edu/disabilities/index.php

4. FAIRNESS

Every effort will be made to ensure that all students are treated equally and fairly. That being said, special treatment may be awarded for extenuating circumstances if sought in advance and some students may qualify for special services. If you ever feel that you are being treated unequally, please discuss with your instructor.

Related University Policy: http://www.atu.edu/titleix/index.php

5. ACADEMIC INTEGRITY

You are expected to do your own work. (That means you actually sit in front of the computer and do the typing/clicking.) **Any sharing of computer files is considered cheating, and all parties involved will be dealt with harshly.** You may find that one cheating instance may haunt you for the rest of your college career, and in some cases, even beyond that. Don't risk it!

Students who violate the Code of Academic Integrity (cheating, plagiarism, etc.) face penalties ranging from being required to redo the assignment (i.e., properly cite sources in cases of plagiarism) to failure of the assignment and/or class. The sanction is dependent on the severity of the violation as well as the number of times a student has violated the policy in the class. Egregious or multiple violations may result in additional university level sanctions.

ARKANSAS TECH UNIVERSITY

REQUEST FOR PROGRAM CHANGE

Department Initiating Proposal	Date
Engineering and Computing Sciences	11/21/22

Title	Signature	Date
Department Head	John L. Krohn	12/1/2022
Dean	Judy L. Cypert	12/1/2022
Assessment		12/5/22
Registrar	Tammy Swaim	1/3/23
Graduate Dean (Graduate Proposals Only)		
Vice President for Academic Affairs		

Committee	Approval Date
General Education Committee (Undergraduate Proposals Only)	
Teacher Education Committee (Graduate or Undergraduate Proposals)	
Curriculum Committee (Undergraduate Proposals Only)	
Faculty Senate (Undergraduate Proposals Only)	
Graduate Council (Graduate Proposals Only)	

Program Title:
Bachelor of Science in Computer Science

Outline change in program: (e.g., list changes in program such as (1) delete three hours of elective and (2) add three hours of approved major electives)

- Remove 13 hours:
  - ELEG 2134/2130 Digital Logic and Lab
  - CSEC 2213 Network Forensics and Incident Response
  - COMS 4063 IT Project Administration
  - Elective – 3 hrs
- Add 13 hours:
  - CSEC 1003 Introduction to Cybersecurity
  - COMS 2163 Scripting Languages
  - COMS 2323 Programming in Python
  - COMS 4923 Capstone II
  - 3-4xxx elective – 1 hr

What impact will the change have on staffing, on other programs and space allocation?

- Multiple sections of CSEC 1003 will be needed, as it is being added to all computing degrees. We currently only have 2 Cybersecurity faculty on staff but have needed 3 for quite some time. The addition of this course (which was recommended by the state and will be good for recruiting) will further the need for an additional Cybersecurity faculty member.
- The Scripting Languages and Programming in Python courses are being added to multiple programs, but current faculty and/or adjuncts should be able to handle the load for these courses.
- Our current computer labs/classrooms can accommodate the new courses.

Answer the following Assessment questions:

a. How does the program change align with the university mission?
In keeping with ATU's mission of student success, removal of the Digital Logic course will strengthen our students' success in our CS program. Computer Science students struggle in this course, as they don't have the background that the engineering majors have. This course is being replaced with a Programming in Python course (and a 1 hr U/D elective) that will provide CS students with additional skills that will prove beneficial to them in other coursework and in their career. The Network Forensics course is being removed in favor of more generic Intro to Cybersecurity course – which will be part of the ACTS and will be beneficial with recruitment. The IT Project Admin course is being removed so that we can add an official capstone sequence (I and II) to give our students a full year of designing and developing a system. These proposed changes received support from our Advisory Board.

b. If this change in the program is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable. **n/a**

c. What is the rationale for this program change?
   1. How will the program change impact learning for students enrolled in this program? **As stated above, students will be more successful in the CS program and their future career.**
   2. Provide an example or examples of student learning assessment evidence which supports the changes in the program. **DFWI rates are high in ELEG 2134; many of our students have communicated that they did not feel prepared for the course and struggled all the way through the course. CS instructors felt the addition of a Python course would strengthen their students' skills.**

d. How does this program 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. **In looking at similar programs at other institutions, many no longer require a course in digital logic for their CS programs. In addition, our accrediting body (ABET) no longer lists skills from this course as required for accreditation. The other additions are common in other CS programs. As mentioned above, there is a move across the state to include an introductory cybersecurity course in all computing curriculums. Many universities provide a year-long capstone experience.**

e. 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.) **Assessment plan for BSIT does not have any major changes; current plan on file with Assessment Office. The only affected courses will be:**
COMS 4063 Project Management will be replaced with COMS 4913 Capstone I
COMS 4913 Capstone I will be replaced with Capstone II

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.
Since the restructuring, COMS and ELEG courses are now both under the same department. It has been internally communicated that there will be less demand for ELEG 2134/2130 since CS students will no longer be taking the course.

In the attached matrix, include requested changes in the matrix and include course number and title.

Curriculum Matrix for Catalog **Curriculum in BS in Computer Science**	
Freshman Fall Semester Add/Change: CSEC 1003 Introduction to Cybersecurity Delete: ~~COMS~~ 1113 Introduction to Networking CSEC Total Hours: 14	Freshman Spring Semester Add/Change: MATH 2924 Calculus II ~~COMS~~ 1113 Introduction to Networking Delete: CSEC Social Science Elective – 3 hrs COMS 2703 Computer Hardware and Architecture Total Hours: 14
Sophomore Fall Semester Add/Change: Social Science COMM 2173 Business and Professional Speaking COMS 2703 Computer Hardware and Architecture Delete: ELEG 2134 Digital Logic and ELEG 2130 DL Lab MATH 2924 Calculus II CSEC 2213 Network Forensics and Incident Response Total Hours: 15	Sophomore Spring Semester Add/Change: COMS 2163 Scripting Languages Delete: COMM 2173 Business and Professional Speaking Total Hours: 16
Junior Fall Semester Add/Change: Fine Arts and Humanities COMS 2323 Programming in Python Delete: COMS 3053 Ethical Issues in Technology COMS 3233 Database Design and Implementation Total Hours: 15	Junior Spring Semester Add/Change: COMS 3053 Ethical Issues in Technology COMS 3233 Database Design and Implementation Change "Approved 3000-4000 level Elective" from 2 hrs to 3 hrs Delete: Fine Arts and Humanities STAT 3153 Applied Statistics Total Hours: 16
Senior Fall Semester Add/Change: STAT 3153 Applied Statistics COMS 4913 Capstone I Delete: MATH 4003 Linear Algebra I COMS 4063 IT Project Administration Total Hours: 15	Senior Spring Semester Add/Change: MATH 4003 Linear Algebra I COMS 4923 Capstone II Delete: COMS 4913 Capstone I Total Hours: 15

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Bachelor of Science in Computer Science

DEPARTMENT HOMEPAGE

The program in computer science prepares students for careers as systems programmers in a scientific and/or engineering environment and for graduate work in computer science. Mathematics and engineering courses supplement a strong core of computer science courses, enabling students to design and implement software that requires complicated computations, data structures and interfaces.

Curriculum

The matrix below is a sample plan for all coursework required for this program.

Freshman

Fall	Credits
ENGL 1013 Composition I [1]	3
~~CSEC 1113~~ CSEC 1003 Introduction to Networking	~~3~~ 3
COMS 1333 Web and Mobile Technologies	3
TECH 1001 Orientation to the University [2]	1
MATH 2914 Calculus I	4
Total Hours	**14**

Spring	Credits
ENGL 1023 Composition II [1]	3
~~SS 1XXX Social Science Courses~~ [1] CSEC 1113	~~3~~ 3
COMS 1011 Programming I Lab and COMS 1013 Programming I	4
~~COMS 2703 Computer Hardware and Architecture~~	~~3~~
~~Elective~~ MATH 2924	~~3~~ 4
Total Hours	~~16~~ 14

Sophomore

Fall	Credits

Spring	Credits
ENGL 2053 Technical Writing	3

Fall	Credits
ELEG 2130 Digital Logic Design Lab and ELEG 2134 Digital Logic Design	4
MATH 2924 Calculus II	4
COMS 2203 Programming II	3
MATH 2703 Discrete Mathematics	3
CSEC 2213 Network Forensics and Incident Response	3
Total Hours	**17**

Spring	Credits
SCIL 1XXX Science with Laboratory [1]	4
COMS 2213 Data Structures	3
COMS 2223 Computer Organization and Programming	3
COMM 2173 Business and Professional Speaking [3]	3
Total Hours	**16**

Social Sciences 3
COMM 2173 3
COMS 2703 3
15

Junior

Fall	Credits
COMS 3703 Advanced Operating Systems	3
Fine Arts / Hum	3
COMS 3053 Ethical Issues in Technology	3
COMS 3213 Algorithm Design and Analysis	3
COMS 2323	3
COMS 3233 Database Design and Implementation	3
Approved 3000-4000 level Elective[4]	3
Total Hours	**15**

Spring	Credits
FAH 1XXX Fine Arts and Humanities Courses [1]	3
COMS 3053	3
SCIL 1XXX Science with Laboratory [1]	4
COMS 3233	3
STAT 3153 Applied Statistics	3
COMS 3313 Software Engineering	3
Approved 3000-4000 level Elective[4]	3
Total Hours	**16**

Senior

Fall	Credits
USHG 1XXX U. S. History and GovernmentU. S. History and Government [1]	3

Spring	Credits
SS 1XXX Social Science Courses [1]	3

Fall	Credits
FAH 1XXX Fine Arts and Humanities Courses [1]	3
STAT 3153 ~~MATH 4003 Linear Algebra I~~	3 ~~3~~
COMS 4913 ~~COMS 4063 IT Project Administration~~	3 ~~3~~
COMS 4103 Organization of Programming Languages	3
Total Hours	**15**

Spring	Credits
COMS 4413 Parallel and Distributed Computing	3
~~COMS 4913 Capstone~~	~~3~~
Approved 3000-4000 level Elective[4]	3
Total Hours	~~12~~
MATH 4003	3
COMS 4923	3
	15

[1] See appropriate alternatives or substitutions in "General Education Requirements".

[2] TECH 1013 Introduction to the University is a substitution for TECH 1001 Orientation to the University; Electives would reduce from 3 hours to 1 hour

[3] COMM 2003 Public Speaking for COMM 2173 Business and Professional Speaking.

[4] If a math elective is taken, math elective must be beyond pre-calculus.

DEGREE AUDIT CHECK LIST
(BS-COMS) Computer Science

~~2022-23~~ 2023-24

Date		Student's Name	
Grade Point	Graduation Date	T#	

General Education Requirements		Hrs
ENGL #	1013/1043 & 1023/1053	6
MATH #		0
SCIENCE		4
SCIENCE		4
US HIST/GOVT		3
SOC SCI		3
SOC SCI		3
FINE ART/HUM		3
FINE ART/HUM		3
COMM		0
TECH 1001 ♦	or TECH 1013	1
TOTAL GEN ED HOURS		30
Electives		
TOTAL ELECTIVE HOURS		~~3~~

Major Requirements		Hrs
COMS	1011 1013 1333 2203 2213 2223 2703 3053 3213 3233 3313 3703 ~~4063~~ 4103 4413 4913 2163 2323 4923	~~46~~ 52
CSEC	1113 ~~2213~~ 1003	6
COMM	2003 or 2173**	3
~~ELEC~~	~~2130 2134~~	~~4~~
ENGL	2053	3
MATH	2703 2914#** 2924 4003	14
STAT	3153	3
	Approved UD Electives	9 ~~8~~
	C or better in a MATH for Gen Ed	
	TOTAL MAJOR HOURS	~~87~~ 90
	TOTAL HOURS	

Final Check:

Min. hours required **120**
44 hours upper level _____ thru _____
of "D" hours _____ thru _____
Max activity hours 4 _____

Earned Hrs _____
minus P/C HRS _____
to be completed _____
TOTAL _____

**** Satisfying Gen Ed**
♦ Satisfying Institutional Requirement
 # C or better must be earned for Gen Ed

ARKANSAS TECH UNIVERSITY

REQUEST FOR PROGRAM CHANGE

Department Initiating Proposal	Date
Engineering and Computing Sciences	11/21/22

Title	Signature	Date
Department Head	John L. Krohn	12/1/2022
Dean	Judy L. Cypert	12/1/2022
Assessment	[signature]	12/5/22
Registrar	Tammy Williams	1/3/23
Graduate Dean (Graduate Proposals Only)		
Vice President for Academic Affairs		

Committee	Approval Date
General Education Committee (Undergraduate Proposals Only)	
Teacher Education Committee (Graduate or Undergraduate Proposals)	
Curriculum Committee (Undergraduate Proposals Only)	
Faculty Senate (Undergraduate Proposals Only)	
Graduate Council (Graduate Proposals Only)	

Program Title:
Bachelor of Science in Cybersecurity

Outline change in program: (e.g., list changes in program such as (1) delete three hours of elective and (2) add three hours of approved major electives)

- Remove 11 hours:
  - ELEG 2134/2130 Digital Logic and Lab
  - CSEC 2113 Introduction to Information Systems
  - Elective (3000-4000 Level) – 4 hrs
- Add 11 hours:
  - CSEC 1003 Introduction to Cybersecurity
  - COMS 2323 Programming in Python
  - COMS 3233 Database Design and Implementation
  - Elective – 2 hrs

What impact will the change have on staffing, on other programs and space allocation?

- Multiple sections of CSEC 1003 will be needed, as it is being added to all computing degrees. We currently only have 2 Cybersecurity faculty on staff but have needed 3 for quite some time. The addition of this course (which was recommended by the state and will be good for recruiting) will further the need for an additional Cybersecurity faculty member.
- The Programming in Python course is also being added to all of the programs, but current faculty and/or adjuncts should be able to handle the load for that.
- Only one additional section of COMS 3233 will be needed; current staff will be sufficient.
- Our current computer labs/classrooms can accommodate the new courses.

Answer the following Assessment questions:

a. How does the program change align with the university mission?
In keeping with ATU's mission of student success, removal of ELEG 2134/2130 will strengthen our students' success in our CSEC program. Cybersecurity students struggle in this course, as they don't have the background that the engineering majors have. Adding a course in databases and Python will provide CSEC students with additional skills that will prove beneficial to them in other coursework and in their career.

b. If this change in the program is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable.
n/a

c. What is the rationale for this program change?

1. How will the program change impact learning for students enrolled in this program? **As stated above, students will be more successful in the CSEC program.**
2. Provide an example or examples of student learning assessment evidence which supports the changes in the program. **DFWI rates are high in ELEG 2134/2130; many of our students have communicated that they did not feel prepared for the course and struggled all the way through the course. CSEC instructors felt the addition of a database course and a Python course would strengthen their students' skills.**

d. How does this program 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. **In looking at similar programs at other institutions, many do not require a course in digital logic for their Cybersecurity programs. In addition, our accrediting body (ABET) does not list skills**

from this course as required for accreditation. Many institutions require students to learn multiple programming languages.

e. 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.) **Assessment plan for BSCSEC has not changed; current plan on file with Assessment Office.**

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.

Since the restructuring, COMS and ELEG courses are now both under the same department. It has been internally communicated that there will be less demand for ELEG 2134/2130 since Cybersecurity students will no longer be taking the course.

In the attached matrix, include requested changes in the matrix and include course number and title.

Curriculum Matrix for Catalog Curriculum in **BS in Cybersecurity**	
Freshman Fall Semester Add/Change: CSEC 1003 Introduction to Cybersecurity Delete: Total Hours: 16	Freshman Spring Semester Add/Change: Science with lab Delete: U.S. History/Government CSEC 2113 Introduction to Information Systems Total Hours: 14
Sophomore Fall Semester Add/Change: CSEC 2223 Virtualization Delete: ELEG 2134 Digital Logic and ELEG 2130 DL Lab Total Hours: 15	Sophomore Spring Semester Add/Change: Add Elective – 3 hrs Add COMS 2323 Programming in Python Change – catalog currently shows COMM 2003 or COMM 2173. Can you remove the COMM 2003 in the grid and just have it show COMM 2173 there (and leave the footnote)? Delete: Science with lab CSEC 2223 Virtualization Total Hours: 15
Junior Fall Semester Add/Change: CSEC 3243 Computer Architecture Delete: COMS 3703 Advanced Operating Systems Total Hours: 16	Junior Spring Semester Add/Change: COMS 3233 Database Design and Implementation COMS 3703 Advanced Operating Systems Delete: CSEC 3243 Computer Architecture Elective – 3 hrs Total Hours: 15
Senior Fall Semester – no changes Add/Change: Delete: Total Hours: 15	Senior Spring Semester Add/Change: Electives 2 hrs U.S. History/Government Delete: Elective (3000-4000 Level) – ~~4 hrs~~ ~~2 hrs~~ OK Total Hours: 14

DEGREE AUDIT CHECK LIST
(BS-CSEC) Cybersecurity
~~2022-23~~ 2023-24

Date	
Grade Point	Graduation Date

Student's Name
T#

General Education Requirements		Hrs
ENGL #	1013/1043 & 1023/1053	6
MATH #		0
SCIENCE		4
SCIENCE		4
US HIST/GOVT		3
SOC SCI		3
SOC SCI		3
FINE ART/HUM		3
FINE ART/HUM		3
COMM		0
TECH 1001 ♦	or TECH 1013	1
TOTAL GEN ED HOURS		30
Electives		
		5
TOTAL ELECTIVE HOURS ~~(4 UD)~~		~~7~~

Major Requirements		Hrs
CSEC	1113 1213 ~~2113~~ 2213 2223 1003 3123 3223 3233 3243 4123 4133 4143 4153 4213 4233 4243 4293	51
COMS	1011 1013 2203 2213 2223 3703	~~16~~ 22
	2323 3233	
COMM	2173** or 2003	3
~~ELEG~~	2130 2134	~~4~~
MATH	2703 (2243 or 2914**)	6
STAT	2163	3
	TOTAL MAJOR HOURS	~~83~~ 88
	TOTAL HOURS	

Final Check:

Min. hours required 120
40 hours upper level _____ thru _____
of "D" hours _____ thru _____
Max activity hours 4 _____

Earned Hrs _____
minus P/C HRS _____
to be completed _____
TOTAL _____

**** Satisfying Gen Ed**
♦ Satisfying Institutional Requirement
 # C or better must be earned for Gen Ed

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Bachelor of Science in Cybersecurity

DEPARTMENT HOMEPAGE

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 techniques used 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.

Curriculum

The matrix below is a sample plan for all coursework required for this program.

Freshman

Fall	Credits	Spring	Credits
ENGL 1013 Composition I [1]	3	ENGL 1023 Composition II [1]	3
FAH 1XXX Fine Arts and Humanities Courses [1]	3	~~USHG 1XXX U. S. History and Government~~ U. S. History and Government [1]	3
MATH 2243 Calculus for Business and Economics [3]	3	COMS 1011 Programming I Lab and COMS 1013 Programming I	4
TECH 1001 Orientation to the University [2]	1	CSEC 1213 Wireless and Cellular Security	3
CSEC 1113 Introduction to Networking	3	~~CSEC 2113 Introduction to Information Systems~~	~~3~~
Total Hours	~~13~~ 16	**Total Hours**	~~16~~ 14

CSEC 1003 3

Science with Lab 4

Sophomore

Fall	Credits
ELEG 2130 Digital Logic Design Lab and ELEG 2134 Digital Logic Design	4
COMS 2203 Programming II	3
MATH 2703 Discrete Mathematics	3
CSEC 2213 Network Forensics and Incident Response	3
SS 1XXX Social Science Courses [1]	3
Total Hours	16
CSEC 2223	3
	15

Spring	Credits
SCIL 1XXX Science with Laboratory [1]	4
COMM 2003 Public Speaking or COMM 2173 Business and Professional Speaking [4]	3
COMS 2213 Data Structures	3
COMS 2223 Computer Organization and Programming	3
CSEC 2223 Virtualization	3
Total Hours	16
Electives	3
COMS 2823	3
	15

Junior

Fall	Credits
SCIL 1XXX Science with Laboratory [1]	4
CSEC 3243	3
COMS 3703 Advanced Operating Systems	3
STAT 2163 Introduction to Statistical Methods	3
CSEC 4133 Large Scale Distributed Systems	3
CSEC 3123 Cyber Defense I	3
Total Hours	16

Spring	Credits
FAH 1XXX Fine Arts and Humanities Courses [1]	3
COMS 3283	3
Elective	3
CSEC 3223 Programming Embedded Systems	3
CSEC 3233 Cyber Defense II	3
COMS 3703	3
CSEC 3243 Computer Architecture	3
Total Hours	15

Senior

Fall	Credits
SS 1XXX Social Science Courses [1]	3

Spring	Credits

Fall	Credits
CSEC 4123 Applied Cryptography	3
CSEC 4143 Building Secure Software	3
CSEC 4153 Human Factors in Cybersecurity	3
CSEC 4233 Legal Issues in Cybersecurity	3
Total Hours	**15**

Spring	Credits
CSEC 4213 Information Systems Risk Management	3
CSEC 4243 Software Security Analysis and Reverse Engineering	3
CSEC 4293 Cybersecurity Capstone Project	3
~~Elective (3000-4000 Level)~~ US Hist/Govt	~~4~~ 3
~~Elective~~	2
Total Hours	**13**

[1] See appropriate alternatives or substitutions in "General Education Requirements".

[2] TECH 1013 Introduction to the University is a substitution for TECH 1001 Orientation to the University; Electives would reduce from 3 hours to 1 hour.

[3] MATH 2914 Calculus I is a substitution for MATH 2243 Calculus for Business and Economics.

[4] COMM 2003 Public Speaking is a substitution for COMM 2173 Business and Professional Speaking.

ARKANSAS TECH UNIVERSITY

REQUEST FOR PROGRAM CHANGE

Department Initiating Proposal	Date
Engineering and Computing Sciences	11/21/22

Title	Signature	Date
Department Head	John L Krohn	12/1/2022
Dean	Judy L Cyrus	12/1/2022
Assessment		12/5/22
Registrar	Tammy Williams	1/3/23
Graduate Dean (Graduate Proposals Only)		
Vice President for Academic Affairs		

Committee	Approval Date
General Education Committee (Undergraduate Proposals Only)	
Teacher Education Committee (Graduate or Undergraduate Proposals)	
Curriculum Committee (Undergraduate Proposals Only)	
Faculty Senate (Undergraduate Proposals Only)	
Graduate Council (Graduate Proposals Only)	

Program Title:
Bachelor of Science in Information Technology

Outline change in program: (e.g., list changes in program such as (1) delete three hours of elective and (2) add three hours of approved major electives)

Track 1 (Programming, Database, and Web) changes:

- Remove 9 hours:
  - CSEC 2213 Network Forensics and Incident Response
  - COMS 4063 IT Project Administration
  - Elective – 3 hrs
- Add 9 hours:
  - CSEC 1003 Introduction to Cybersecurity
  - COMS 2323 Programming in Python
  - COMS 4923 Capstone II

Track 2 (Network and Security) changes:

- Remove 6 hours:
  - COMS 4063 IT Project Administration
  - Elective – 3 hrs
- Add 6 hours:
  - CSEC 1003 Introduction to Cybersecurity
  - COMS 4923 Capstone II
- Change "COMS 2163 Scripting Languages" to "COMS 2163 Scripting Languages or COMS 2323 Programming in Python" (to allow students a choice between the two courses)

What impact will the change have on staffing, on other programs and space allocation?

- Multiple sections of CSEC 1003 will be needed, as it is being added to all computing degrees. We currently only have 2 Cybersecurity faculty on staff but have needed 3 for quite some time. The addition of this course (which was recommended by the state and will be good for recruiting) will further the need for an additional Cybersecurity faculty member.
- The Programming in Python course is being added to multiple programs, but current faculty and/or adjuncts should be able to handle the load for it.
- Our current computer labs/classrooms can accommodate the new courses.

Answer the following Assessment questions:

a. How does the program change align with the university mission?
In keeping with ATU's mission of student success, the proposed changes will increase our students' success in the program, as well as in their future career by providing them additional skills and experiences. The Network Forensics course is being removed from Track 1 in favor of more generic Intro to Cybersecurity course – which will be part of the ACTS and will be beneficial with recruitment. The IT Project Admin course is being removed so that we can add an official capstone sequence (I and II) to give our students a full year of designing and developing a system. These proposed changes received support from our Advisory Board.

b. If this change in the program is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable. **n/a**

c. What is the rationale for this program change?
   1. How will the program change impact learning for students enrolled in this program? **As stated above, students will be more successful in the IT program and their future career.**
   2. Provide an example or examples of student learning assessment evidence which supports the changes in the program. **Feedback from both students and faculty, as well as a move across the state to include an introductory course in cybersecurity in all computing curriculums, led to this change.**

d. How does this program 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. **As mentioned above, there is a move across the state to include an introductory cybersecurity course in all computing curriculums. Many universities provide a year-long capstone experience.**

e. 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.) **Assessment plan for BSIT does not have any major changes; current plan on file with Assessment Office. The only affected courses will be:**
COMS 4063 Project Management will be replaced with COMS 4913 Capstone I
COMS 4913 Capstone I will be replaced with Capstone II

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

In the attached matrix, include requested changes in the matrix and include course number and title.

Curriculum Matrix for Catalog **Curriculum in BS in Information Technology – Track 1 (Programming, Web, Database)**	
Freshman Fall Semester Add/Change: CSEC 1003 Introduction to Cybersecurity Delete: Social Science Total Hours: 16	Freshman Spring Semester Add/Change: Social Science Delete: COMS 2713 Survey of Operating Systems (*5) Total Hours: 16
Sophomore Fall Semester Add/Change: ENGL 2053 Technical Writing COMS 2163 Scripting Languages Delete: COMM 2173 Business and Professional Speaking (*6) CSEC 2213 Network Forensics and Incident Response Total Hours: 16	Sophomore Spring Semester Add/Change: COMM 2173 Business and Professional Speaking (*6) COMS 2323 Programming in Python COMS 2713 Survey of Operating Systems (*5) Delete: ENGL 2053 Technical Writing COMS 2163 Scripting Languages Elective – 3 hrs Total Hours: 15
Junior Fall Semester Add/Change: COMS 3523 Human Factors in Information Technology Delete: COMS 3053 Ethical Issues in Technology Total Hours: 15	Junior Spring Semester Add/Change: COMS 3053 Ethical Issues in Technology Delete: COMS 3523 Human Factors in Information Technology Total Hours: 15
Senior Fall Semester Add/Change: COMS 4913 Capstone I Delete: COMS 4063 IT Project Administration Total Hours: 15	Senior Spring Semester Add/Change: COMS 4923 Capstone II Delete: COMS 4913 Capstone I Total Hours: 12

Curriculum Matrix for Catalog **Curriculum in BS in Information Technology – Track 2 (Network and Security)**	
Freshman Fall Semester Add/Change: CSEC 1003 Introduction to Cybersecurity Delete: Social Science Total Hours: 16	Freshman Spring Semester Add/Change: Social Science Delete: COMS 2713 Survey of Operating Systems (*5) Total Hours: 16
Sophomore Fall Semester Add/Change: CSEC 2223 Virtualization Delete: COMM 2173 Business and Professional Speaking (*6) Total Hours: 16	Sophomore Spring Semester Add/Change: COMM 2173 Business and Professional Speaking (*6) COMS 2713 Survey of Operating Systems (*5) Change "COMS 2163 Scripting Languages" to "COMS 2163 Scripting Languages or COMS 2323 Programming in Python" Delete: CSEC 2223 Virtualization Elective – 3 hrs Total Hours: 15
Junior Fall Semester Add/Change: Fine Arts and Humanities Delete: COMS 3053 Ethical Issues in Technology Total Hours: 15	Junior Spring Semester Add/Change: COMS 3053 Ethical Issues in Technology Delete: COMS 3523 Human Factors in Information Technology Total Hours: 15
Senior Fall Semester Add/Change: COMS 3523 Human Factors in Information Technology COMS 4913 Capstone I Delete: Fine Arts and Humanities COMS 4063 IT Project Administration Total Hours: 15	Senior Spring Semester Add/Change: COMS 4923 Capstone II Delete: COMS 4913 Capstone I Total Hours: 12

DEGREE AUDIT CHECK LIST
(BS-ITP) Information Technology Programming, Database, & Web
~~2022-23~~ 2023-24

Date	
Grade Point	Graduation Date

Student's Name	
T#	

General Education Requirements		Hrs
ENGL #	1013/1043 & 1023/1053	6
MATH #		0
SCIENCE		4
SCIENCE		4
US HIST/GOVT		3
SOC SCI		3
SOC SCI		3
FINE ART/HUM		3
FINE ART/HUM		3
COMM		0
TECH 1001 ♦		1
TOTAL GEN ED HOURS		30
Electives		
TOTAL ELECTIVE HOURS		0 ~~3~~

Major Requirements		Hrs
COMS	1011 1013 1333 2163 2203 2323 4923	
	2213 2703 (2713 or 3703) 3053 3163 3233	
	3243 3523 3413 4033 ~~4063~~ 4213 4913	~~52~~ 55
CSEC	1113 ~~2213~~ 1003	6
COMM	2173** or 2003	3
ENGL	2053	3
MATH	1113#** (2243 or 2914) 2703	9
STAT	2163	3
	Approved Electives 3XXX - 4XXX	11
	TOTAL MAJOR HOURS	~~87~~ 90
	TOTAL HOURS	

Final Check:

Min. hours required 120
40 hours upper level _____ thru _____
of "D" hours _____ thru _____
Max activity hours 4 _____

Earned Hrs _____
minus P/C HRS _____
to be completed _____
TOTAL _____

**** Satisfying Gen Ed**
♦ Satisfying Institutional Requirement
 # C or better must be earned for Gen Ed

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Bachelor of Science in Information Technology

DEPARTMENT HOMEPAGE

The program in information technology prepares students for careers in administering and supporting the computing infrastructures of an organization. The curriculum consists of an integrated set of courses in networking, web development and administration, database development and administration, systems administration, and computer forensics.

Curriculum Track 1:

Programming, Database, and Web

Both matrices below are sample plans for all coursework required for Track 1 and Track 2.

Freshman

Fall	Credits	Spring	Credits
ENGL 1013 Composition I [1]	3	ENGL 1023 Composition II [1]	3
MATH 1113 College Algebra [2]	3	MATH 2243 Calculus for Business and Economics [4]	3
CSEC 1003 3 ~~SS 1XXX Social Science Courses~~ [1] ~~3~~		COMS 1011 Programming I Lab and COMS 1013 Programming I	4
TECH 1001 Orientation to the University [3]	1	COMS 2703 Computer Hardware and Architecture	3
CSEC 1113 Introduction to Networking	3	social science 3 ~~COMS 2713 Survey of Operating Systems~~ [5] ~~3~~	
COMS 1333 Web and Mobile Technologies	3		
Total Hours	**15**	**Total Hours**	**16**

Sophomore

Fall	Credits

Fall	Credits	Spring	Credits
SCIL 1XXX Science with Laboratory [1]	4	ENGL 2053 Technical Writing COMM 2173 [6]	3 3
COMS 2203 Programming II ENGL 2053	3	COMS 2213 Data Structures	3
COMM 2173 Business and Professional Speaking [6]	3	STAT 2163 Introduction to Statistical Methods COMS 2323	3 3
MATH 2703 Discrete Mathematics COMS 2163	3 3	COMS 2163 Scripting Languages COMS 2113 [5]	3
CSEC 2213 Network Forensics and Incident Response	3	Elective	3
Total Hours	**16**	**Total Hours**	**15**

Junior

Fall	Credits	Spring	Credits
SCIL 1XXX Science with Laboratory [1]	4	FAH 1XXX Fine Arts and Humanities Courses [1]	3
COMS 3053 Ethical Issues in Technology COMS 3523	3 3	COMS 3163 Web Programming	3
COMS 3233 Database Design and Implementation	3	COMS 3523 Human Factors in Information Technology COMS 3053	3 3
COMS 3413 App Development	3	COMS 3243 Data Mining	3
Approved 3000-4000 level Elective	2	Approved 3000-4000 level Elective	3
Total Hours	**15**	**Total Hours**	**15**

Senior

Fall	Credits	Spring	Credits
SS 1XXX Social Science Courses [1]	3	FAH 1XXX Fine Arts and Humanities Courses [1]	3

Fall	Credits
USHG 1XXX U. S. History and GovernmentU. S. History and Government [1]	3
COMS 4033 Systems Analysis and Design	3
~~COMS 4063 IT Project Administration~~ COMS 4913	~~3~~ 3
Approved 3000-4000 level Elective	3
Total Hours	**15**

Spring	Credits
COMS 4213 Database Administration	3
~~COMS 4913 Capstone~~ COMS 4923	~~3~~ 3
Approved 3000-4000 level Elective	3
Total Hours	**12**

Curriculum Track 2:

Network and Security

Freshman

Fall	Credits
ENGL 1013 Composition I [1]	3
MATH 1113 College Algebra [2]	3
SS 1XXX Social Science Courses [1]	3
TECH 1001 Orientation to the University [3]	1
CSEC 1113 Introduction to Networking	3
COMS 1333 Web and Mobile Technologies	3
Total Hours	**15**

Spring	Credits
ENGL 1023 Composition II [1]	3
MATH 2243 Calculus for Business and Economics [4]	3
COMS 1011 Programming I Lab and COMS 1013 Programming I	4
COMS 2703 Computer Hardware and Architecture	3
COMS 2713 Survey of Operating Systems [5]	3
Total Hours	**16**

Sophomore

Fall	Credits
SCIL 1XXX Science with Laboratory [1]	4

Spring	Credits
ENGL 2053 Technical Writing	3

Fall	Credits
COMS 2203 Programming II	3
COMM 2173 Business and Professional Speaking [6]	3
MATH 2703 Discrete Mathematics	3
CSEC 2213 Network Forensics and Incident Response	3
Total Hours	**16**

Spring	Credits
COMS 2163 Scripting Languages	3
COMS 2213 Data Structures	3
CSEC 2223 Virtualization	3
Elective	3
Total Hours	**15**

Junior

Fall	Credits
COMS 3053 Ethical Issues in Technology	3
COMS 3233 Database Design and Implementation	3
COMS 3363 Server Administration	3
CSEC 3123 Cyber Defense I	3
Approved 3000-4000 level Elective	3
Total Hours	**15**

Spring	Credits
SCIL 1XXX Science with Laboratory [1]	4
COMS 3373 Data Center Operations	3
COMS 3523 Human Factors in Information Technology	3
CSEC 3233 Cyber Defense II	3
Approved 3000-4000 level Elective	2
Total Hours	**15**

Senior

Fall	Credits
FAH 1XXX Fine Arts and Humanities Courses [1]	3
USHG 1XXX U. S. History and GovernmentU. S. History and Government [1]	3

Spring	Credits
FAH 1XXX Fine Arts and Humanities Courses [1]	3
COMS 4713 Networking Practicum	3
COMS 4913 Capstone	3

Fall	Credits
SS 1XXX Social Science Courses [1]	3
COMS 4063 IT Project Administration	3
Approved 3000-4000 level Elective	3
Total Hours	**15**

Spring	Credits
Approved 3000-4000 level Elective	3
Total Hours	**12**

[1] See appropriate alternatives or substitutions in "General Education Requirements".

[2] Student may waive this course by taking MATH 2243 Calculus for Business and Economics or MATH 2914 Calculus I instead and take an elective in its place.

[3] TECH 1013 Introduction to the University is a substitution for TECH 1001 Orientation to the University; Elective would reduce from 3 hours to 1 hour.

[4] MATH 2914 Calculus I is a substitution for MATH 2243 Calculus for Business and Economics.

[5] COMS 3703 Advanced Operating Systems is a substitution for COMS 2713 Survey of Operating Systems.

[6] COMM 2003 Public Speaking is a substitution for COMM 2173 Business and Professional Speaking.

DEGREE AUDIT CHECK LIST
(BS-ITN) Information Technology Network & Security

~~2022-23~~ 2023-24

Date		Student's Name	
Grade Point	Graduation Date	T#	

General Education Requirements		Hrs
ENGL #	1013/1043 & 1023/1053	6
MATH #		0
SCIENCE		4
SCIENCE		4
US HIST/GOVT		3
SOC SCI		3
SOC SCI		3
FINE ART/HUM		3
FINE ART/HUM		3
COMM		0
TECH 1001 ♦		1
TOTAL GEN ED HOURS		30
Electives		
		0
TOTAL ELECTIVE HOURS		~~3~~

Major Requirements		Hrs
COMS	1011 1013 1333 ~~2163~~ 2203	
	2213 2703 (2713 or 3703) 3053 3233	
	3363 3373 3523 ~~4063~~ 4713 4913 4923	
		~~46~~ 43
COMS	2163 or 2388	3
CSEC	1113 2213 2223 3123 3233 1003	~~15~~ 18
COMM	2173** or 2003	3
ENGL	2053	3
MATH	1113#** (2243 or 2914) 2703	9
	Approved Electives 3XXX - 4XXX	11
	TOTAL MAJOR HOURS	~~87~~ 90
	TOTAL HOURS	

Final Check:

Min. hours required **120**
40 hours upper level _____ thru _____
of "D" hours _____ thru _____
Max activity hours 4 _____

Earned Hrs _____
minus P/C HRS _____
to be completed _____
TOTAL _____

**** Satisfying Gen Ed**
♦ Satisfying Institutional Requirement
 # C or better must be earned for Gen Ed

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Bachelor of Science in Information Technology

DEPARTMENT HOMEPAGE

The program in information technology prepares students for careers in administering and supporting the computing infrastructures of an organization. The curriculum consists of an integrated set of courses in networking, web development and administration, database development and administration, systems administration, and computer forensics.

Curriculum Track 1:

Programming, Database, and Web

Both matrices below are sample plans for all coursework required for Track 1 and Track 2.

Freshman

Fall	Credits	Spring	Credits
ENGL 1013 Composition I [1]	3	ENGL 1023 Composition II [1]	3
MATH 1113 College Algebra [2]	3	MATH 2243 Calculus for Business and Economics [4]	3
SS 1XXX Social Science Courses [1]	3	COMS 1011 Programming I Lab and COMS 1013 Programming I	4
TECH 1001 Orientation to the University [3]	1	COMS 2703 Computer Hardware and Architecture	3
CSEC 1113 Introduction to Networking	3	COMS 2713 Survey of Operating Systems [5]	3
COMS 1333 Web and Mobile Technologies	3	**Total Hours**	**16**
Total Hours	**15**		

Sophomore

Fall	Credits

Fall	Credits	Spring	Credits
SCIL 1XXX Science with Laboratory [1]	4	ENGL 2053 Technical Writing	3
COMS 2203 Programming II	3	COMS 2213 Data Structures	3
COMM 2173 Business and Professional Speaking [6]	3	STAT 2163 Introduction to Statistical Methods	3
MATH 2703 Discrete Mathematics	3	COMS 2163 Scripting Languages	3
CSEC 2213 Network Forensics and Incident Response	3	Elective	3
Total Hours	**16**	**Total Hours**	**15**

Junior

Fall	Credits	Spring	Credits
SCIL 1XXX Science with Laboratory [1]	4	FAH 1XXX Fine Arts and Humanities Courses [1]	3
COMS 3053 Ethical Issues in Technology	3	COMS 3163 Web Programming	3
COMS 3233 Database Design and Implementation	3	COMS 3523 Human Factors in Information Technology	3
COMS 3413 App Development	3	COMS 3243 Data Mining	3
Approved 3000-4000 level Elective	2	Approved 3000-4000 level Elective	3
Total Hours	**15**	**Total Hours**	**15**

Senior

Fall	Credits	Spring	Credits
SS 1XXX Social Science Courses [1]	3	FAH 1XXX Fine Arts and Humanities Courses [1]	3

Fall	Credits
USHG 1XXX U. S. History and GovernmentU. S. History and Government [1]	3
COMS 4033 Systems Analysis and Design	3
COMS 4063 IT Project Administration	3
Approved 3000-4000 level Elective	3
Total Hours	**15**

Spring	Credits
COMS 4213 Database Administration	3
COMS 4913 Capstone	3
Approved 3000-4000 level Elective	3
Total Hours	**12**

Curriculum Track 2:

Network and Security

Freshman

Fall	Credits
ENGL 1013 Composition I [1]	3
MATH 1113 College Algebra [2]	3
CSEC 1003	3
~~SS 1XXX Social Science Courses~~ [1]	~~3~~
TECH 1001 Orientation to the University [3]	1
CSEC 1113 Introduction to Networking	3
COMS 1333 Web and Mobile Technologies	3
Total Hours	~~15~~ 16

Spring	Credits
ENGL 1023 Composition II [1]	3
MATH 2243 Calculus for Business and Economics [4]	3
COMS 1011 Programming I Lab and COMS 1013 Programming I	4
COMS 2703 Computer Hardware and Architecture	3
Social Science	3
~~COMS 2713 Survey of Operating Systems~~ [5]	~~3~~
Total Hours	**16**

Sophomore

Fall	Credits
SCIL 1XXX Science with Laboratory [1]	4

Spring	Credits
ENGL 2053 Technical Writing	3

Fall	Credits
COMS 2203 Programming II	3
COMM 2173 Business and Professional Speaking [6]	3
MATH 2703 Discrete Mathematics	3
CSEC 2213 Network Forensics and Incident Response	3
Total Hours	**16**

Spring	Credits
COMS 2163 Scripting Languages	3
COMS 2213 Data Structures	3
CSEC 2223 Virtualization	3
Elective	3
Total Hours	**15**

Junior

Fall	Credits
COMS 3053 Ethical Issues in Technology	3
COMS 3233 Database Design and Implementation	3
COMS 3363 Server Administration	3
CSEC 3123 Cyber Defense I	3
Approved 3000-4000 level Elective	3
Total Hours	**15**

Spring	Credits
SCIL 1XXX Science with Laboratory [1]	4
COMS 3373 Data Center Operations	3
COMS 3523 Human Factors in Information Technology	3
CSEC 3233 Cyber Defense II	3
Approved 3000-4000 level Elective	2
Total Hours	**15**

Senior

Fall	Credits
FAH 1XXX Fine Arts and Humanities Courses [1]	3
USHG 1XXX U. S. History and GovernmentU. S. History and Government [1]	3

Spring	Credits
FAH 1XXX Fine Arts and Humanities Courses [1]	3
COMS 4713 Networking Practicum	3
COMS 4913 Capstone	3

Fall	Credits
SS 1XXX Social Science Courses [1]	3
COMS 4063 IT Project Administration	3
Approved 3000-4000 level Elective	3
Total Hours	**15**

Spring	Credits
Approved 3000-4000 level Elective	3
Total Hours	**12**

[1] See appropriate alternatives or substitutions in "General Education Requirements".

[2] Student may waive this course by taking MATH 2243 Calculus for Business and Economics or MATH 2914 Calculus I instead and take an elective in its place.

[3] TECH 1013 Introduction to the University is a substitution for TECH 1001 Orientation to the University; Elective would reduce from 3 hours to 1 hour.

[4] MATH 2914 Calculus I is a substitution for MATH 2243 Calculus for Business and Economics.

[5] COMS 3703 Advanced Operating Systems is a substitution for COMS 2713 Survey of Operating Systems.

[6] COMM 2003 Public Speaking is a substitution for COMM 2173 Business and Professional Speaking.

ARKANSAS TECH UNIVERSITY

REQUEST FOR PROGRAM CHANGE

Department Initiating Proposal	Date
Engineering and Computing Sciences	11/21/22

Title	Signature	Date
Department Head	John L. Krohn	12/1/2022
Dean	Judy L. Cypert	12/1/2022
Assessment		12/5/22
Registrar	Tammy Treadaway	1/3/23
Graduate Dean (Graduate Proposals Only)		
Vice President for Academic Affairs		

Committee	Approval Date
General Education Committee (Undergraduate Proposals Only)	
Teacher Education Committee (Graduate or Undergraduate Proposals)	
Curriculum Committee (Undergraduate Proposals Only)	
Faculty Senate (Undergraduate Proposals Only)	
Graduate Council (Graduate Proposals Only)	

Program Title:
Associate of Applied Science in Cybersecurity

Outline change in program: (e.g., list changes in program such as (1) delete three hours of elective and (2) add three hours of approved major electives)

- Remove 10 hours:
  - ELEG 2134/2130 Digital Logic and Lab
  - CSEC 2113 Introduction to Information Systems
  - U.S. History/Government
- Add 10 hours:
  - CSEC 1003 Introduction to Cybersecurity
  - COMS 2323 Programming in Python
  - Elective – 4 hrs

What impact will the change have on staffing, on other programs and space allocation?

- Multiple sections of CSEC 1003 will be needed, as it is being added to all computing degrees. We currently only have 2 Cybersecurity faculty on staff but have needed 3 for quite some time. The addition of this course (which was recommended by the state and will be good for recruiting) will further the need for an additional Cybersecurity faculty member.
- The Programming in Python course is also being added to all of the programs, but current faculty and/or adjuncts should be able to handle the load for that.
- Our current computer labs/classrooms can accommodate the new courses.

Answer the following Assessment questions:

a. How does the program change align with the university mission?
In keeping with ATU's mission of student success, removal of ELEG 2134/2130 will strengthen our students' success in our CSEC program. Cybersecurity students struggle in this course, as they don't have the background that the engineering majors have. The Programming in Python course is required for the BS Cybersecurity students and is a better fit for the AAS-CSEC degree.

b. If this change in the program is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable.
n/a

c. What is the rationale for this program change?

1. How will the program change impact learning for students enrolled in this program? **As stated above, students will be more successful in the CSEC program.**
2. Provide an example or examples of student learning assessment evidence which supports the changes in the program. **DFWI rates are high in ELEG 2134/2130; many of our students have communicated that they did not feel prepared for the course and struggled all the way through the course. CSEC instructors felt the addition of a database course and a Python course would strengthen their students' skills.**

d. How does this program 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. **In looking at similar programs at other institutions, many do not require a course in digital logic for their Cybersecurity programs. In addition, our accrediting body (ABET) does not list skills from this course as required for accreditation. Many institutions require students to learn multiple programming languages.**

e. 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.) **Assessment plan has not changed; current plan on file with Assessment Office.**

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.

Since the restructuring, COMS and ELEG courses are now both under the same department. It has been internally communicated that there will be less demand for ELEG 2134/2130 since Cybersecurity students will no longer be taking the course.

In the attached matrix, include requested changes in the matrix and include course number and title.

Curriculum Matrix for Catalog Curriculum in **AAS in Cybersecurity**	
Freshman Fall Semester Add/Change: CSEC 1003 Introduction to Cybersecurity Delete: Total Hours: 16	Freshman Spring Semester Add/Change: Science with lab Delete: U.S. History/Government CSEC 2113 Introduction to Information Systems Total Hours: 14
Sophomore Fall Semester Add/Change: CSEC 2223 Virtualization Delete: ELEG 2134 Digital Logic and ELEG 2130 DL Lab Total Hours: 15	Sophomore Spring Semester Add/Change: Add COMS 2323 Programming in Python Change Elective from 2 hrs to 6 hrs Delete: Science with lab CSEC 2223 Virtualization Total Hours: 15

DEGREE AUDIT CHECK LIST
(AAS-CSE) Cybersecurity

~~2022-23~~ 2023-24

Date	
Grade Point	Graduation Date

Student's Name
T#

General Education Requirements		Hrs
ENGL #	1013/1043 & 1023/1053	6
MATH #		0
SCIENCE		4
SCIENCE		0
US HIST/GOVT		0 ~~3~~
SOC SCI		3
SOC SCI		0
FINE ART/HUM		3
FINE ART/HUM		0
COMM		0
TECH 1001 ♦	(1001 or 1013)	1
		17
TOTAL GEN ED HOURS		~~20~~
Electives		
		6
TOTAL ELECTIVE HOURS		~~2~~

Major Requirements		Hrs
CSEC	1113 1213 ~~2113~~ 2213 2223 1003	15
COMS	1011 1013 2203 2213 ~~2323~~	~~10~~ 13
COMM	(2173** or 2003)	3
~~ELEG~~	2130 2134	~~4~~
MATH	(2243 or 2914#**) 2703	6
	TOTAL MAJOR HOURS	~~38~~ 37
	TOTAL HOURS	

Final Check:

Min. hours required 60
40 hours upper level _____ thru _____
of "D" hours _____ thru _____
Max activity hours 4 _____

Earned Hrs _____
minus P/C HRS _____
to be completed _____
TOTAL _____

**** Satisfying Gen Ed**
♦ Satisfying Institutional Requirement
 # C or better must be earned for Gen Ed

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Associate of Applied Science in Cybersecurity

DEPARTMENT HOMEPAGE

An Associates of Applied Science (AAS) in Cybersecurity graduate will understand the techniques used to compromise and infiltrate systems as well as the proven methods to protect data. The AAS in Cybersecurity degree includes courses in programming, wireless technologies, mathematics, and networking with focused concentrations in both theory and hands-on experience.

Curriculum

The matrix below is a sample plan for all coursework required for this program.

Freshman

Fall	Credits	Spring	Credits
ENGL 1013 Composition I [1]	3	ENGL 1023 Composition II [1]	3
FAH 1XXX Fine Arts and Humanities Courses [1]	3	~~USHG 1XXX U.S. History and Government~~ U.S. History and Government [1]	~~3~~
MATH 2243 Calculus for Business and Economics [3]	3	COMS 1011 Programming I Lab and COMS 1013 Programming I	4
TECH 1001 Orientation to the University [2]	1	~~CSEC 2113 Introduction to Information Systems~~	~~3~~
CSEC 1113 Introduction to Networking	3	CSEC 1213 Wireless and Cellular Security	3
Total Hours CSEC 1003	~~13~~ 3 / 16	**Total Hours** Science with Lab	~~16~~ 4 / 14

Sophomore

Fall	Credits
ELEG 2130 Digital Logic Design Lab and ELEG 2134 Digital Logic Design	4
COMS 2203 Programming II	3
MATH 2703 Discrete Mathematics	3
CSEC 2213 Network Forensics and Incident Response	3
Social Science[1]	3
Total Hours	16
CSEC 2223	3
	15

Spring	Credits
COMM 2173 Business and Professional Speaking [4]	3
SCIL 1XXX Science with Laboratory [1]	4
COMS 2213 Data Structures	3
Elective	2 6
CSEC 2223 Virtualization	3
Total Hours	15
COMS 2323	3
	15

[1] See appropriate alternatives or substitutions in "General Education Requirements".

[2] TECH 1013 Introduction to the University is a substitution for TECH 1001 Orientation to the University; Electives would reduce from 2 hours to 0 hours.

[3] MATH 2914 Calculus I is a substitution for MATH 2243 Calculus for Business and Economics.

[4] COMM 2003 Public Speaking is a substitution for COMM 2173 Business and Professional Speaking.

ARKANSAS TECH UNIVERSITY

REQUEST FOR PROGRAM CHANGE

Department Initiating Proposal	Date
Engineering and Computing Sciences	11/21/22

Title	Signature	Date
Department Head	John L Krohn	12/1/2022
Dean	Judy L Cypert	12/1/2022
Assessment	Chris Ault	12/5/22
Registrar	Tammy Tillman	1/3/23
Graduate Dean (Graduate Proposals Only)		
Vice President for Academic Affairs		

Committee	Approval Date
General Education Committee (Undergraduate Proposals Only)	
Teacher Education Committee (Graduate or Undergraduate Proposals)	
Curriculum Committee (Undergraduate Proposals Only)	
Faculty Senate (Undergraduate Proposals Only)	
Graduate Council (Graduate Proposals Only)	

Program Title:
Associate of Applied Science in Information Technology

Outline change in program: (e.g., list changes in program such as (1) delete three hours of elective and (2) add three hours of approved major electives)

- Remove 3 hours:
  - CSEC 2213 Network Forensics and Incident Response
- Add 3 hours:
  - CSEC 1003 Introduction to Cybersecurity

What impact will the change have on staffing, on other programs and space allocation?

- Multiple sections of CSEC 1003 will be needed, as it is being added to all computing degrees. We currently only have 2 Cybersecurity faculty on staff but have needed 3 for quite some time. The addition of this course (which was recommended by the state and will be good for recruiting) will further the need for an additional Cybersecurity faculty member.
- Our current computer labs/classrooms can accommodate the new courses.

Answer the following Assessment questions:

a. How does the program change align with the university mission?
The Network Forensics course is being removed in favor of more generic Intro to Cybersecurity course – which will be part of the ACTS and will be beneficial with recruitment.

b. If this change in the program is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable. **n/a**

c. What is the rationale for this program change?
   1. How will the program change impact learning for students enrolled in this program?
   The Network Forensics course was added last year in an effort to include a cybersecurity course in the curriculum. However, the course has proved very specific and the faculty feel that a more generic course is a better fit for students who aren't majoring in cybersecurity.
   2. Provide an example or examples of student learning assessment evidence which supports the changes in the program. **Feedback from both students and faculty, as well as move across the state to include a similar course in all computing curriculums, lead to this change.**

d. How does this program 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. **As mentioned above, there is a move across the state to include a similar course in all computing curriculums.**

e. 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.) **Assessment plan for AASIT has not changed; current plan on file with Assessment Office.**

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

In the attached matrix, include requested changes in the matrix and include course number and title.

Curriculum Matrix for Catalog **Curriculum in AAS in Information Technology**	
Freshman Fall Semester Add/Change: CSEC 1003 Introduction to Cybersecurity Delete: Social Science Total Hours: 16	Freshman Spring Semester Add/Change: Social Science Delete: COMS 2713 Survey of Operating Systems Total Hours: 16
Sophomore Fall Semester Add/Change: COMS 2713 Survey of Operating Systems Delete: CSEC 2213 Network Forensics and Incident Response Total Hours: 16	Sophomore Spring Semester – no change Add/Change: Delete: Total Hours: 12

DEGREE AUDIT CHECK LIST
(AAS-ITAS) Information Technology

~~2022-23~~ 2023-24

Date	
Grade Point	Graduation Date

Student's Name	
T#	

General Education Requirements		Hrs
ENGL #	1013/1043 & 1023/1053	6
MATH #		0
SCIENCE		4
US HIST/GOVT		0
SOC SCI		3
FINE ART/HUM		0
COMM		0
TECH 1001 ♦	(1001 or 1013)	1
TOTAL GEN ED HOURS		14
Electives		
TOTAL ELECTIVE HOURS		15

Major Requirements		Hrs
COMS	1011 1013 1333 2203 2703 (2713 or 3703)	16
CSEC	1113 ~~2213~~ 1003	6
COMM	(2173 or 2003**)	3
ENGL	2053	3
MATH#	1113 or higher**	3
	TOTAL MAJOR HOURS	31
	TOTAL HOURS	

Final Check:

Min. hours required 60 _____

of "D" hours _____ thru _____

Max activity hours 4 _____

Earned Hrs _____

minus P/C HRS _____

to be completed _____

TOTAL _____

**** Satisfying Gen Ed**

♦ Satisfying Institutional Requirement

 # C or better must be earned for Gen Ed

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Associate of Applied Science in Information Technology

DEPARTMENT HOMEPAGE

The Associate of Applied Science in Information Technology program enables students to develop skills in the areas of web processing, databases, networking, programming, and various operating systems. These skills enable students to seek positions within the information technology industry.

Curriculum

The matrix below is a sample plan for all coursework required for this program.

Freshman

Fall	Credits
ENGL 1013 Composition I [1]	3
CSEC 1003 3 Social Science [1]	3
MATH 1113 College Algebra or higher-level Mathematics	3
TECH 1001 Orientation to the University [2]	1
COMS 1333 Web and Mobile Technologies	3
CSEC 1113 Introduction to Networking	3
Total Hours	**16**

Spring	Credits
ENGL 1023 Composition II [1]	3
COMS 1011 Programming I Lab and COMS 1013 Programming I	4
COMS 2703 Computer Hardware and Architecture	3
Social Science [1] 3	
COMS 2713 Survey of Operating Systems [3]	3
Elective	3
Total Hours	**16**

Sophomore

Fall	Credits
SCIL 1XXX Science with Laboratory [1]	4
COMS 2203 Programming II	3
COMS 2713 ~~CSEC 2213 Network Forensics and Incident Response~~	3 ~~3~~
Elective[5]	6
Total Hours	**16**

Spring	Credits
COMM 2173 Business and Professional Speaking [4]	3
ENGL 2053 Technical Writing	3
Electives[5]	6
Total Hours	**12**

[1] See appropriate alternatives or substitutions in "General Education Requirements".

[2] TECH 1013 Introduction to the University is a substitution for TECH 1001 Orientation to the University. Electives would reduce from 15 hours to 13 hours.

[3] COMS 3703 Advanced Operating Systems is a substitution for COMS 2713 Survey of Operating Systems.

[4] COMM 2003 Public Speaking is a substitution for COMM 2173 Business and Professional Speaking.

[5] Students seeking a Bachelor's degree in computing should take courses that count towards that degree rather than just general electives.

ARKANSAS TECH UNIVERSITY

REQUEST FOR PROGRAM CHANGE

Department Initiating Proposal	Date
Engineering and Computing Sciences	11/21/22

Title	Signature	Date
Department Head	John L Krohn	12/1/2022
Dean		12/1/2022
Assessment		12/5/22
Registrar	Tammy Weaver	1/3/23
Graduate Dean (Graduate Proposals Only)		
Vice President for Academic Affairs		

Committee	Approval Date
General Education Committee (Undergraduate Proposals Only)	
Teacher Education Committee (Graduate or Undergraduate Proposals)	
Curriculum Committee (Undergraduate Proposals Only)	
Faculty Senate (Undergraduate Proposals Only)	
Graduate Council (Graduate Proposals Only)	

Program Title:
CP in Computer Networking

Outline change in program: (e.g., list changes in program such as (1) delete three hours of elective and (2) add three hours of approved major electives)

- **Change program to require ONE of: CSEC 1213 Wireless and Cellular Security or COMS 2703 Computer Hardware and Architecture (certificate currently requires both courses)**
- **Add CSEC 2213 Network Forensics and Incident Response**

NOTE: Certificate stays at 12 hours

What impact will the change have on staffing, on other programs and space allocation?
none

Answer the following Assessment questions:

a. How does the program change align with the university mission? **To enhance student success, it is best to utilize courses that are already part of the required courses in our programs. CSEC 1213 was not required for the majority of our programs, whereas CSEC 2213 is required.**

b. If this change in the program is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable. **n/a**

c. What is the rationale for this program change?
   1. How will the program change impact learning for students enrolled in this program? **Changing the course requirements will allow students to earn a CP, AAS, and BS – stackable degrees. As students progress through the required courses, their knowledge is expanded as each course builds on previous courses.**
   2. Provide an example or examples of student learning assessment evidence which supports the changes in the program. **n/a**

d. How does this program 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. **Courses required for this certificate are comparable to other similar CPs of this nature.**

e. 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.) **Assessment plan has not changed.**

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

In the attached matrix, include requested changes in the matrix and include course number and title.

No matrix needed for CP (per Alexis)

Curriculum Matrix for Catalog	
Freshman Fall Semester Add/Change: Delete: Total Hours:	Freshman Spring Semester Add/Change: Delete: Total Hours:
Sophomore Fall Semester Add/Change: Delete: Total Hours:	Sophomore Spring Semester Add/Change: Delete: Total Hours:
Junior Fall Semester Add/Change: Delete: Total Hours:	Junior Spring Semester Add/Change: Delete: Total Hours:
Senior Fall Semester Add/Change: Delete: Total Hours:	Senior Spring Semester Add/Change: Delete: Total Hours:

DOWNLOAD PDF

Certificate of Proficiency in Computer Networking

DEPARTMENT HOMEPAGE

This program will provide students with foundational skills of computer networking and computer hardware concepts, which could lead to an industry certification in computer networking (Network+) and/or in PC Repair/Maintenance (A+).

The certificate of proficiency in Computer Networking requires the following 12 semester credit hours:

- CSEC 1113 Introduction to Networking
- COMS 2703 Computer Hardware and Architecture
- CSEC 1213 Wireless and Cellular Security or COMS 2703
- CSEC 2223 Virtualization CSEC 2213

Curriculum

The curriculum below is a sample plan for all coursework required for this program.

First Year

Fall

- CSEC 1113 Introduction to Networking
- COMS 2703 Computer Hardware and Architecture

Spring

- CSEC 1213 Wireless and Cellular Security
- CSEC 2223 Virtualization

DEGREE AUDIT CHECK LIST
(CP-CN Computer Networking)

~~2022-23~~ 2023-24

Date		Student's Name	
Grade Point	Graduation Date	T#	

General Education Requirements		Hrs
ENGL #		
MATH #		
SCIENCE		
US HIST/GOVT		
SOC SCI		
FINE ART/HUM		
COMM		
TECH 1001 ♦		
TOTAL GEN ED HOURS		
TOTAL ELECTIVE HOURS (0)		

Minor Requirements		Hrs
CSEC	1113 ~~1213~~ 2223 2213	9
COMS	2703 or CSEC 1213	3
	TOTAL HOURS (12)	
	TOTAL HOURS	

Final Check:

Min. hours required 12
Earned Hrs _____
to be completed _____
TOTAL _____

Must have 2.00 in minor
Must have minimum of 6 hours in residence
Must use same catalog for both major and minor

ARKANSAS TECH UNIVERSITY

REQUEST FOR COURSE ADDITION

Department Initiating Proposal	Date
Department of Physical and Earth Sciences	11/29/2022

Title	Signature	Date
Department Head Dr. Hamed Shojaei		11/30/2022
Dean Dr. Judy L. Cezeaux		12/1/2022
Assessment		12/5/22
Registrar		1/3/23
Graduate Dean (Graduate Proposals Only)		
Vice President for Academic Affairs		

Committee	Approval Date
General Education Committee (Undergraduate Proposals Only)	
Teacher Education Committee (Graduate or Undergraduate Proposals)	
Curriculum Committee (Undergraduate Proposals Only)	
Faculty Senate (Undergraduate Proposals Only)	
Graduate Council (Graduate Proposals Only)	

Course Subject: (e.g., ACCT, ENGL)	Course Number: (e.g., 1003)	Effective Term:
PHYS	**4061**	◉ Spring ○ **Summer I**

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

Engineering Physics Design

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

Engineering Physics Design

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 Research	○ 18 Activity Course	○ 19 Seminar	○ 98 Other

Does this course require a fee? ◉ Yes ○ No How Much? $40 Other

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?

On demand

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

Answer the following Assessment questions:

a. If this course is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable.

ABET Engineering Accreditation Commission Criterion 5.d:

[the program must include] a culminating major engineering design experience that 1) incorporates appropriate engineering standards and multiple constraints, and 2) is based on the knowledge and skills acquired in earlier course work.

b. If this course is required for the major or minor, complete the following.

1. Provide the program-level learning outcome(s) it addresses.

Capstone will address the Engineering Physics Program learning outcomes 1-4 and 6-7:

1) an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2) an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors

3) an ability to communicate effectively with a range of audiences
4) an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
6) an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

2. **Provide tool or measure directly linked to each program learning outcome. (How will student learning in this outcome be measured?)**

   See attached document titled "Physics Program Assessment: Engineering Physics Design"

c. **What is the rationale for adding this course? What evidence demonstrates this need?**
This course is will meet the ABET curriculum requirement for a "culminating engineering design experience".

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).

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.

Physics Program Assessment: Engineering Physics Design

Program learning outcomes 1-4 and 6—7 are to be assessed in Engineering Physics Design. The program learning outcomes will be measured using the following performance indicators

PLO 1: an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics

Performance indicator: Identifies a complex problem with a quantifiable solution that can be approached systematically		
Component	**Assessment Method**	**Notes**
Identifies a problem	Project proposal	The problem should be considered complex
Performance indicator: Selects appropriate method to solve the problem		
Component	**Assessment Method**	**Notes**
Appropriate method	Project proposal	
Considers other solutions to the problem	Project proposal, notebook, and oral presentation	

PLO 2: an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors

Performance indicator: Design the needed system or develop the computer code to solve the problem at hand.		
Component	**Assessment Method**	**Notes**
Defines need and problem to be solved	Project proposal	public health, safety, and welfare, as well as global, cultural, social, environmental, and economic, factors should be considered, as appropriate
Defines constraints	Project proposal	
Prototype/model/code created and validate that meets needs	A written report and oral presentation	

PLO 3: An ability to communicate effectively with a range of audiences.

Performance indicator: Prepare an oral presentation and present to an audience of peers from a variety of backgrounds.		
Component	**Assessment Method**	**Notes**
Organization	Oral presentation at ATU undergraduate research symposium. All physics program faculty assess using program rubric	Ideas should be clearly organized to achieve a clear purpose.
Adaptation to audience		Keep the audience engaged – the level of the topic presentation should be colloquial (avoid jargon)
Delivery		Confident/ natural delivery. Clearly prepared. Appropriate clothing.
Performance indicator: Prepare a written report with professionals in the field as the audience		
Organization	Written report. Assessed by advisor using program rubric	The format should meet a physics or engineering journal requirements
Content		

PLO 4: an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts

Performance indicator: Recognition of ethical dilemma		
Component	**Assessment Method**	**Notes**
Identifies ethical dilemma	Meetings with the professor, lab notebook, and oral presentation. Program rubric	It is possible no ethical dilemmas exist for a chosen project but this needs to be considered in terms of the possible impact the solution might have in global, economic, environmental, and societal contexts
Identifies stakeholders (those that might be affected by the dilemma)		

PLO 6: an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

Performance indicator: Plan experiments to test different hypotheses, analyze the data, and recommend new ideas to improve the experiment.		
Component	**Assessment Method**	**Notes**
Plan experiments	project proposal and lab notebook	
Use fundamental laws of physics to fit models to, analyze and interpret data	Written report – program rubric	
Use engineering principles to analyze the output or product	Written report – program rubric	

PLO 7: an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Performance indicator:		
Component	**Assessment Method**	**Notes**
Acquires new information	Project Proposal	Must examine widely known sources that are reliable
Applies new knowledge	Lab notebook, oral presentation, and written report – program rubric	

PHYS 4061: Engineering Physics Design

I. General Information:
   a. Instructor:
   b. Office:
   c. email:
   d. Office Hours:

II. Course Description: This course is meant to serve as a culminating experience during Engineering Physics students' final semester. Supervised by a faculty member, students carry out engineering design activities relating to a significant problem that is based on physics and engineering skills and knowledge acquired in previous coursework. A formal written report and oral presentation are required. Corequisite: Engineering Physics major with senior standing. $40 course fee.

III. Textbook: None required

IV. Course Rationale: Students will gain experience and insight into the process of engineering design by being involved in the planning, implementation, analysis, and reporting of a design project.

V. Course Objectives: By the end of this course, students will
   a. Implement knowledge and skills acquired in earlier coursework to solve an engineering need or problem that incorporates appropriate engineering standards and multiple constraints.
   b. Demonstrate an ability to communicate effectively with a range of audiences

VI. Expectations: Students are expected to work 3-4 hours per week. The student's work will be documented in a lab journal which should include detailed information about activities in the lab or outside the lab that pertain to the project at hand (i.e. weekly planning meetings w/ the instructor, etc.). Students are expected to generate a proposal and a final report for their project written in the format of a journal appropriate for the topic. A formal presentation is also required.

VII. Grading: The student's grade will be based on evaluation in four areas: Effort, Design Proposal, Final Written Report, and Oral Presentation
   1) **Effort** – 30% (*effort is assessed via attendance, quality/completeness of lab journal, attention to details of the project, etc.*)
   2) **Project Proposal** - 10% (*see outline below*)
   3) **Final Written Report** – 30% (*see below for paper outline)*
   4) **Oral Presentation** - 30% *(students are expected to present at the ATU undergraduate research symposium if graduating in a spring semester. Other presentation venues may be approved by the department)*

Grading Scale: A = 90-100%; B = 80-89%; C 70-79%; D 60-69%; F = <60%

VIII. Class Policies:

- The student will follow safety guidelines as outlined by the instructor
- Academic honesty is expected and required. Plagiarism will not be tolerated. If you are unsure as to what constitutes plagiarism, please speak with me directly. (*see the ATU Student Handbook for details for the consequences of academic dishonesty*)

IX. **Note:** This syllabus is subject to change at the discretion of the instructor

A. Project Proposal: An Outline for the Capstone Project Proposal follows

1. **Title Page**: This should be a separate cover page. Include the Title of the Proposal, your Name, Date, Class, Instructor

2. **Introduction and Background Information**: In this section, you should state the basis of the study. Include background information and a statement of purpose. Why is the project worthwhile? What other work has been done that relates to this question? Number your citations in order of appearance in the text. A minimum of 3 primary literature sources related to your topic is expected.

3. **Hypothesis and/or Engineering problem**: State the specific hypothesis and you intend to test and/or the engineering problem to be solved.

4. **Materials and Methods**:
   a. **Model:** Describe the experimental model. Include information about how you selected the model (organism). Why did you feel this model was most appropriate for you purpose? What are the advantages and disadvantages of your model? Are there other models that might have been used?
   b. **List of equipment and supplies**:
   c. **Methodology**: Describe the experimental and engineering design, experimental methods, materials used, and planned method of statistical analysis, as appropriate to the problem.

5. **Timeline**: Outline your proposed timeline (Grant chart) for the project completion.

Note: *The Proposal should be submitted by the end of the 3rd week of class. You are encouraged to take the time to review a draft with your instructor prior to the due date. (i.e. discuss your progress at the weekly meeting.)*

B. Final Report: An Outline for a Final Report follows. This outline may be used for most reports, or you may use the specific format used by one of the scientific journals that you used in your design. Follow their instructions for authors.

1. **Title page:** This should be a separate cover page. Include the Title of the project (indicate that it is a Final Report), Name, Date, Class, and Instructor.

2. **Abstract**: The abstract should be a concise paragraph (<250 words) outlining your project and results. Include enough information to give the reader an idea about the purpose of the project, an outline of the experimental design, and a *brief* statement regarding results and your interpretation of the results. Do not cite references, figures, tables or specific results. This is a synopsis of your project. (Hint: write the abstract *after* you finish the rest of your report.)

3. **Introduction and Background Information:** In this section, you should state the basis of the study. Include background information and a statement of purpose. Why is the project worthwhile? What other work has been done that relates to this question? Number your citations in order of appearance within the text. Any ethical considerations should be addressed in this section. The project hypothesis and/or engineering problem can be included at the end of this section.

4. **Materials and Methods:**
    a. **Model:** Describe the experimental model. Include information about how you selected the model (organism). Why did you feel this model was most appropriate for your purpose? What are the advantages and disadvantages of your model? Are there other models that might have been used?
    b. **Design and Methodology:** Describe the experimental design, experimental execution, materials used, and the method of statistical analysis. Alternate methods to the problem, solution, and a model or prototype should be discussed in this section.

5. **Results:** Report the results of your project in this section. Do not attempt to explain or interpret results – simply state them. And remember, negative results are still results. Present data in an appropriate format: table, chart, figure. Cite tables and figures in numerical order as they appear in the text. The tables and figures should be included in the text of the paper.

6. **Discussion:** Discuss your results in this section. Did the data support or refute your hypothesis? Do your results validate the design? If the data is inconclusive, identify this and then include suggestions for future studies.

7. **References Cited:** List citations in the order in which they appeared in the text. Citations should be in MLA, APA, or a format appropriate for a journal article in the field. A minimum of 3 primary literature sources should be included.

C. Presentation:

1. Formal presentation at the ATU Undergraduate Research Symposium in the spring of each academic year is required. Exceptions to this rule require professor and department approval.

2. Formal presentations must be submitted to the professor for review and approval 1 week before the presentation is to be given.

INSTRUCTOR - ADD dated timeline with deliverables

ARKANSAS TECH UNIVERSITY

REQUEST FOR PROGRAM CHANGE

Department Initiating Proposal	Date
Physical and Earth Sciences	11/29/2022

Title	Signature	Date
Department Head Dr. Hamed Shojaei		11/30/2022
Dean Dr. Judy L. Cezeaux		12/1/2022
Assessment Dr. Christine Austin		12/5/22
Registrar Ms. Tammy Weaver		1/3/23
Vice President for Academic Affairs Dr. Julie Furst-Bowe		

Committee	Approval Date
General Education Committee (Undergraduate Proposals Only)	
Teacher Education Committee (Graduate or Undergraduate Proposals)	
Curriculum Committee (Undergraduate Proposals Only)	
Faculty Senate (Undergraduate Proposals Only)	
Graduate Council (Graduate Proposals Only)	

Program Title: Engineering Physics

Outline change in program: (e.g., list changes in program such as (1) delete three hours of elective and (2) add three hours of approved major electives)

Delete:

1. MCEG 1002
2. 4 hours of ELEG/MCEG/COMS (3000-4000 level) electives
3. PHYS 4951

MOVE:

1. Move MCEG 3013 to spring Junior
2. Move MCEG/ELEG 4202 to fall senior
3. Move MCEG 3313 to the spring of Junior

ADD:

1. COMS 2203 Programming II
2. COMS ~~2303~~ 2323 Programming in Python
3. PHYS ~~4601~~ 4061 (*NEW COURSE* - Engineering Physics Design)

Answer the following Assessment questions:

a. How does the program change align with the university mission?
Arkansas Tech is dedicated to student success and excellence. Some courses, required for the engineering physics degree, offered by other departments have changed in a way that it is necessary for the required course to be changed. Additionally, we are specifying two new courses and removing four hours of electives. This change is to ensure that students have skills employers would expect of our graduates.

b. If this change in the program is mandated by an accrediting or certifying agency, include the directive. If not, state not applicable.
The addition of the Engineering Physics Design course will help us satisfy the ABET accreditation criteria for engineering programs.

c. What is the rationale for this program change?
Replacing some of the ELEG/MCEG/COMS elective courses with specific COMS classes for engineering physics majors will prepare students for the current challenges that graduates will face. Additionally, the Engineering Design Course is to be added to the curriculum to meet ABET Engineering Accreditation Commission Criterion 5.d:
[the program must include] a culminating major engineering design experience that 1) incorporates appropriate engineering standards and multiple constraints, and 2) is based on the knowledge and skills acquired in earlier course work.

b. How does this program 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.
In order to make our engineering physics program more attractive to students, we need to make sure it is accredited by ABET. Several successful engineering physics programs have accreditation. Currently, Henderson State, John Brown University, and Southern Arkansas University have accredited engineering programs where that offer engineering physics as an option.

c. 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.)

	There will be no change to our assessment plan, since the courses added or deleted were not part of our assessment (They are all from other departments). The only new course that is housed in our department is PHYS 4601, replacing PHYS 4951. The assessment criteria for PHYS 4601 are included in the attached form.
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.	

Tammy Weaver

From: Rebecca Cunningham
Sent: Wednesday, January 4, 2023 5:19 PM
To: Tammy Weaver
Subject: Re: Curriculum Program Change for Physics and Engineering Physics

Yes, we can handle a small amount of additional students. I was afraid he was going to say like 20-30 a year and we can't handle another section anytime in the near future! But 4-5 we can do. ☺

****

Mrs. Becky Cunningham, Assistant Professor
Program Director for Computer Science & Information Technology
Department of Engineering and Computing Sciences
Arkansas Tech University
Office: Corley 232
Phone: 479.880.4610
Virtual meeting room: https://atu.webex.com/meet/rcunningham

From: Tammy Weaver <tweaver@atu.edu>
Sent: Wednesday, January 4, 2023 5:02 PM
To: Rebecca Cunningham <rcunningham@atu.edu>
Subject: RE: Curriculum Program Change for Physics and Engineering Physics

Becky

I have just started reviewing these Physics proposals. Can you support the changes?

Thanks.

Tammy

Tammy Weaver, Registrar
Arkansas Tech University
Office of the Registrar
Brown Building, Suite 307
105 West O Street
Russellville, AR 72801-2222

Telephone: 479.968.0643
Fax: 479.968.0683
Email: tweaver@atu.edu

Please take a minute to complete this survey on the service you received.
http://www.atu.edu/registrar/survey.php

In the attached matrix, include requested changes in the matrix and include course number and title.

Curriculum Matrix for Catalog Curriculum in Engineering Physics (enter title for program changing)	
Freshman Fall Semester Add/Change: Delete: Total Hours: 16	Freshman Spring Semester Add/Change: Delete: Total Hours:15
Sophomore Fall Semester Add/Change: COMS 2203 Delete: MCEG 1002 Total Hours:17	Sophomore Spring Semester Add/Change: Delete: Total Hours: 15
Junior Fall Semester Add/Change: COMS ~~2303~~ 2323 Delete Delete: ~~Move~~ MCEG 3013 ~~to spring Junior~~ Total Hours: 16	Junior Spring Semester Add Add/Change: MCEG 3013 & MCEG 3313 Delete Delete: ~~Move~~ MCEG/ELEG 4202 ~~to fall senior~~ Delete ELEG/MCEG/COMS 3000-4000 level Electives 3 hrs Total Hours: 15
Senior Fall Semester Add/Change: MCEG 4202 Delete Delete: ~~Move~~ MCEG 3313 ~~to the spring of Junior~~ ~~And delete 3 hours ELEG/MCEG/COMS elective (3000-4000 level)~~ Total Hours:14	Senior Spring Semester Add/Change: PHYS 4061 Engineering Physics Design Change 3 hr of COMS/ELEG/ MCEG 3000-4000 to 2 hr of COMS/ ELEG/ MCEG 3000- 4000 Delete: PHYS 4951 Total Hours:12

2023-24

Engineering Physics Proposed ~~2022-2023~~ Degree

Semester 1 - fall	Hrs.	Grade	Semester 1
ENGL 1013: Comp I (ACTS=ENGL 1013)	3	#	
PHSC 1001: Orientation to Physical Science	1		
MATH 2914: Calculus I (ACTS= MATH 2405)	4		
COMS 1013/1011	4		
CHEM2124/2120:Gen. Chem. I (ACTS=CHEM1414) **MILESTONE**	4		
Total hours	16	GPA	

Semester 2 - spring	Hrs.		Semester 2
ENGL 1023: Comp II (ACTS= ENGL 1023)	3	#	
PHSC1011:Orientation to Physical Science II	1		No substitutions allowed.
MATH2924: Calculus II (ACTS= MATH2505)	4		
MCEG2023: Engineering Materials	3		
PHYS 2114/2000: General Physics I (ACTS=PHYS 2034)	4		
Total hours	15	GPA	

Semester 3 – fall	Hrs.		Semester 3
~~Social Sci/Fine Arts/Humanities/Comm~~ SS	3		
MATH2934: Calculus III (ACTS= MATH 2603)	4		
PHYS 2124/2010: General Physics II (ACTS=PHYS 2044)	4		
MCEG 2013 Statics	3		
COMS 2203: programming II	3		
Total hours	17	GPA	

Semester 4 – spring	Hrs.		Semester 4
~~U.S. History & Government~~ FAH	3		
MATH3243: Differential Equations I	3		
PHYS 3213 Modern Physics	3		
ELEG2103: Electric Circuits I	3		
MCEG 2033 Dynamics	3		
Total hours	15	GPA	**PHYS ADVISOR ASSIGNED**

Semester 5 – fall	Hrs.	Grade	Semester 5
~~Social Sci/Fine Arts/Humanities~~ FAH	3		
PHYS 3023 Mechanics (even) or PHYS 4013 QM (odd)	3		
ELEG 2111 and ELEG 2113: Electric Circuits II and Lab	4		
PHYS 3133 EM (even) or PHYS 4023 Computational physics (odd)	3		
~~COMS 2303~~ programming in Python 2323	3		
Total hours	16	GPA	

Semester 6 – spring	Hrs.		Semester 6
~~Social Sci/Fine Arts/Humanities~~ USHC	3		
PHYS 3003 Optics (even) or PHYS 4113 advanced lab (odd)	3		
PHYS 4213/MATH UD elective (even) or PHYS 4003 Statistical Mechanics and Thermodynamics (odd)	3		
MCEG 3313: Thermodynamics 1	3		
MCEG3013 Mech of Materials	3		
Total hours	15	GPA	**APPLY FOR GRADUATION**

Engineering Physics Proposed ~~2022-2023~~ 2023-24 Degree

Semester 7 – fall	Hrs.		Semester 7
MCEG4403: Mechanics of Fluids and Hydraulics	3		
PHYS 3023 Mechanics (even) or PHYS 4013 QM (odd)	3		
ELEG/MCEG/COMS Elective	3		
PHYS 3133 EM (even) or PHYS 4023 Computational physics (odd)	3		
MCEG\ELEG 4202 – Engineering design	2		
Total hours	14	GPA	

Semester 8 – spring	Hrs.		Semester 8
PHYS 3003 Optics (even) or PHYS 4113 advanced lab (odd)	3		
PHYS 4213/MATH UD elective (even) or PHYS 4003 Statistical Mechanics and Thermodynamics (odd)	3		**Graduation Requirements:**
MCEG4443: Heat Transfer	3		Min. hours 3000-4000 level courses: 40
PHYS ~~4601~~ 4061 Capstone	1		No more than 4 PE activity hours
ELEG/MCEG/COMS Elective (3000-4000 level)	2		Min. hours required:120
Total Hours	12	GPA	2.00+ GPA
			No more than 12 hours of "D" grades

Total hours = 120

Physics Program Assessment: Engineering Physics Design

Program learning outcomes 1-4 and 6—7 are to be assessed in Engineering Physics Design. The program learning outcomes will be measured using the following performance indicators

PLO 1: an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics

Performance indicator: Identifies a complex problem with a quantifiable solution that can be approached systematically		
Component	**Assessment Method**	**Notes**
Identifies a problem	Project proposal	The problem should be considered complex
Performance indicator: Selects appropriate method to solve the problem		
Component	**Assessment Method**	**Notes**
Appropriate method	Project proposal	
Considers other solutions to the problem	Project proposal, notebook, and oral presentation	

PLO 2: an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors

Performance indicator: Design the needed system or develop the computer code to solve the problem at hand.		
Component	**Assessment Method**	**Notes**
Defines need and problem to be solved	Project proposal	public health, safety, and welfare, as well as global, cultural, social, environmental, and economic, factors should be considered, as appropriate
Defines constraints	Project proposal	
Prototype/model/code created and validate that meets needs	A written report and oral presentation	

PLO 3: An ability to communicate effectively with a range of audiences.

Performance indicator: Prepare an oral presentation and present to an audience of peers from a variety of backgrounds.		
Component	**Assessment Method**	**Notes**
Organization	Oral presentation at ATU undergraduate research symposium. All physics program faculty assess using program rubric	Ideas should be clearly organized to achieve a clear purpose.
Adaptation to audience		Keep the audience engaged – the level of the topic presentation should be colloquial (avoid jargon)
Delivery		Confident/ natural delivery. Clearly prepared. Appropriate clothing.
Performance indicator: Prepare a written report with professionals in the field as the audience		
Organization	Written report. Assessed by research advisor using program rubric	The format should meet a physics or engineering journal requirements
Content		

PLO 4: an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts

Performance indicator: Recognition of ethical dilemma		
Component	**Assessment Method**	**Notes**
Identifies ethical dilemma	Research meetings with the professor, lab notebook, and oral presentation. Program rubric	It is possible no ethical dilemmas exist for a chosen project but this needs to be considered in terms of the possible impact the solution might have in global, economic, environmental, and societal contexts
Identifies stakeholders (those that might be affected by the dilemma)		

PLO 6: an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

Performance indicator: Plan experiments to test different hypotheses, analyze the data, and recommend new ideas to improve the experiment.		
Component	**Assessment Method**	**Notes**
Plan experiments	project proposal and lab notebook	
Use fundamental laws of physics to fit models to, analyze and interpret data	Written report – program rubric	
Use engineering principles to analyze the output or product	Written report – program rubric	

PLO 7: an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Performance indicator:		
Component	**Assessment Method**	**Notes**
Acquires new information	Project Proposal	Must examine widely known sources that are reliable
Applies new knowledge	Lab notebook, oral presentation, and written report – program rubric	

DEGREE AUDIT CHECK LIST
(BS-ENPH) Engineering Physics

~~2022-23~~ 2023-24

Date	
Grade Point	Graduation Date

Student's Name	
T#	

General Education Requirements		Hrs
ENGL #	1013/1043 & 1023/1053	6
MATH #		0
SCIENCE		0
US HIST/GOVT		3
SOC SCI		3
SOC SCI		0
SOC SCI		0
FINE ART/HUM		3
FINE ART/HUM		3
FINE ART/HUM		0
COMM		0
TECH 1001 ♦		0
TOTAL GEN ED HOURS		18
Electives		
TOTAL ELECTIVE HOURS		0

Major Requirements		Hrs
PHYS	2000 2010 2114 2124 3003 3023 3133 3213 4003 4013 4023 4113	
PHYS	~~4951~~ 4061	
	PHYS 4213 or 3 hrs UD MATH	36
	*exclude Math 3003, 3033, 4113	
CHEM	2124 2120	4
COMS	1011 1013 2203 ~~0323~~	10 ~~4~~
ELEG	2103 2111 2113	7
MATH	2914#** 2924 2934 3243	15
MCEG	~~1002~~ 2013 2023 2033 3013	
	3313 4403 4443	21 ~~23~~
ELEG/MCEG	4202	2
~~COMS/ELEG~~ /MCEG/COM	5 ~~(9UD)~~	5 ~~9~~
PHSC	1001♦ 1011	2
C or better in a MATH for Gen Ed		
	TOTAL MAJOR HOURS	102 ~~102~~
	TOTAL HOURS	

Final Check:

Min. hours required **120**
40 hours upper level _____ thru _____
of "D" hours _____ thru _____
Max activity hours 4 _____

Earned Hrs _____
minus P/C HRS _____
to be completed _____
TOTAL _____

**** Satisfying Gen Ed**
♦ Satisfying Institutional Requirement
 # C or better must be earned for Gen Ed

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Bachelor of Science in Engineering Physics

DEPARTMENT HOMEPAGE

Students graduating with an engineering physics degree will be well qualified for jobs requiring highly technical skills and theoretical knowledge. Also, the degree program will prepare students for graduate studies in the fields of physics and engineering. However, those interested in employment immediately after graduation will have numerous alternatives for career choices. Job opportunities for an engineering physics graduate could include employment in industries such as: McDonnell Douglas/Boeing, Texas Instruments, Honeywell, Microsoft, Polaroid, Union Carbide, National Institute of Standards; Technology, Entergy, Tennessee Valley Authority, and Dow Chemical. Also, government agencies such as NASA, National Bureau of Standards, Office of Naval Research, Department of Energy, etc., provide additional employment opportunities for engineering physics graduates.

To qualify for a baccalaureate degree in engineering physics, the student must complete eight hours in chemistry, three hours in computer and information science, 18 hours in mathematics, 33 hours in physics (including the core physics courses), and 26 hours in engineering.

Curriculum

The matrix below is a sample plan for all coursework required for this program.

Freshman

Fall	Credits	Spring	Credits
ENGL 1013 Composition I [1]	3	ENGL 1023 Composition II [1]	3
PHSC 1001 Orientation to Physical Science	1	PHSC 1011 Orientation to Physical Science II	1
MATH 2914 Calculus I	4	MATH 2924 Calculus II	4

Fall	Credits
COMS 1011 Programming I Lab and COMS 1013 Programming I	4
CHEM 2124 General Chemistry I and CHEM 2120 General Chemistry I Lab	4
Total Hours	**16**

Spring	Credits
MCEG 2023 Engineering Materials	3
PHYS 2114 Calculus-Based Physics I and PHYS 2000 Physics Laboratory I	4
Total Hours	**15**

Sophomore

Fall	Credits
SS 1XXX Social Science Courses [1]	3
COMS 2203	3
~~MCEG 1002 Engineering Graphics~~	~~2~~
MCEG 2013 Statics	3
PHYS 2124 Calculus-Based Physics II with PHYS 2010 Physics Laboratory II	4
MATH 2934 Calculus III	4
Total Hours	~~16~~ 17

Spring	Credits
FAH 1XXX Fine Arts and Humanities Courses [1]	3
ELEG 2103 Electric Circuits I	3
MCEG 2033 Dynamics	3
PHYS 3213 Modern Physics	3
MATH 3243 Differential Equations I	3
Total Hours	**15**

Junior

Fall	Credits
FAH 1XXX Fine Arts and Humanities Courses [1]	3
PHYS 3023 Mechanics or PHYS 4013 Quantum Mechanics	3
ELEG 2113 Electric Circuits II	3
ELEG 2111 Electric Circuits Laboratory	1
COMS 2303	3

Spring	Credits
USHG 1XXX U. S. History and GovernmentU. S. History and Government [1]	3
PHYS 3003 Optics or PHYS 4113 Advanced Physics Laboratory	3
MCEG 3013	3
MCEG 3313	3

Fall	Credits
PHYS 3133 Theory of Electricity and Magnetism or PHYS 4023 Computational Physics	3
MCEG 3013 Mechanics of Materials	3
Total Hours	**16**

Spring	Credits
(PHYS 4213 Advanced Topics in Physics and Astronomy or an upper division Mathematics course) or PHYS 4003 Thermodynamics and Statistical Mechanics	3
ELEG/MCEG/ COMS 3000 -4000 level Electives	3
MCEG 4202 Engineering Design/ELEG 4202 Engineering Design	2
Total Hours	**14** 15

Senior ELEG/ MCEG 4202 2

Fall	Credits
MCEG 4403 Mechanics of Fluids and Hydraulics	3
PHYS 3023 Mechanics or PHYS 4013 Quantum Mechanics	3
PHYS 3133 Theory of Electricity and Magnetism or PHYS 4023 Computational Physics	3
MCEG 3313 Thermodynamics I	3
COMS/ELEG/MCEG Elective (3000-4000 level)	3
Total Hours	**15** 14

Don't Delete or COMS/ELEG/MCEG Elec 3000-4000

Spring	Credits
PHYS 3003 Optics or PHYS 4113 Advanced Physics Laboratory	3
(PHYS 4213 Advanced Topics in Physics and Astronomy or an upper division Mathematics course) or PHYS 4003 Thermodynamics and Statistical Mechanics	3
MCEG 4443 Heat Transfer	3
PHYS 4951 Undergraduate Research in Physics	1
COMS/ELEG/MCEG Elective (3000-4000 level)	3 2
Total Hours	**13** 12

PHYS 4061 1

[1] See appropriate alternatives or substitutions in "General Education Requirements". A specific general education core course does not have to be taken in the semester listed, any other part of the general education core at any time is acceptable as well.

[2] Excluding MATH 3003 Foundations of Advanced Mathematics, MATH 3033 Methods of Teaching Elementary Mathematics.

and MATH 4113 History of Mathematics.

[3] PHYS 3023 Mechanics and PHYS 4003 Thermodynamics and Statistical Mechanics will satisfy the prerequisites for MCEG 3013 Mechanics of Materials and MCEG 4403 Mechanics of Fluids and Hydraulics for engineering physics majors.

[4] Must complete both the PHYS class and one MATH upper division elective (PHYS course offered in alternating years).

ARKANSAS TECH UNIVERSITY

REQUEST FOR PROGRAM CHANGE

Department Initiating Proposal	Date
Physical and Earth Sciences	11/29/2022

Title	Signature	Date
Department Head Dr. Hamed Shojaei		11/30/2022
Dean Dr. Judy L. Cezeaux		12/1/2022
Assessment Dr. Christine Austin		12/5/22
Registrar Ms. Tammy Weaver		1/3/23
Vice President for Academic Affairs Dr. Julie Furst-Bowe		

Committee	Approval Date
General Education Committee (Undergraduate Proposals Only)	
Teacher Education Committee (Graduate or Undergraduate Proposals)	
Curriculum Committee (Undergraduate Proposals Only)	
Faculty Senate (Undergraduate Proposals Only)	
Graduate Council (Graduate Proposals Only)	

Program Title: Physics

Outline change in program: (e.g., list changes in program such as (1) delete three hours of elective and (2) add three hours of approved major electives)

Delete:

1. STAT 2304
2. 3 hours of general electives
3. 3 hours of UD electives

MOVE:

1. Move Biological science to spring of sophomore

ADD:

1. COMS 2203 Programming II
2. COMS ~~2303~~ 2323 Programming in Python
3. STAT 3153
4. 1 hour of general electives

What impact will the change have on staffing, on other programs and space allocation?

None anticipated

Answer the following Assessment questions:

a. How does the program change align with the university mission?
Arkansas Tech is dedicated to student success and excellence. Some courses, required for the physics degree, offered by other departments have changed in a way that it is necessary for the required course to be changed. Additionally, we are specifying two new courses and removing six hours of electives. This change is to ensure that students have skills employers would expect of our graduates.

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. What is the rationale for this program change?
The current curriculum includes several general elective classes. Replacing some of the general elective courses with more appropriate COMS and STAT classes for physics majors will prepare students for the current challenges that graduates will face.

b. How does this program 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.
There are several physics programs in the state of Arkansas institutions. We are planning to be one of the first ones that obtain ANSAC accreditation. These new changes will help us with recruiting and keeping good students. The current curriculum doesn't address several new challenges our graduates will face. For example, data analysis and statistical methods are becoming more and more useful for physics graduates. We are adding a STAT course and a COMS course to address this.

c. 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.)
There will be no change to our assessment plan, since the courses added or deleted were not part of our assessment (They are all from other departments).

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.

Tammy Weaver

From: Rebecca Cunningham
Sent: Wednesday, January 4, 2023 5:19 PM
To: Tammy Weaver
Subject: Re: Curriculum Program Change for Physics and Engineering Physics

Yes, we can handle a small amount of additional students. I was afraid he was going to say like 20-30 a year and we can't handle another section anytime in the near future! But 4-5 we can do. ☺

****

Mrs. Becky Cunningham, Assistant Professor
Program Director for Computer Science & Information Technology
Department of Engineering and Computing Sciences
Arkansas Tech University
Office: Corley 232
Phone: 479.880.4610
Virtual meeting room: https://atu.webex.com/meet/rcunningham

From: Tammy Weaver <tweaver@atu.edu>
Sent: Wednesday, January 4, 2023 5:02 PM
To: Rebecca Cunningham <rcunningham@atu.edu>
Subject: RE: Curriculum Program Change for Physics and Engineering Physics

Becky

I have just started reviewing these Physics proposals. Can you support the changes?

Thanks.

Tammy

Tammy Weaver, Registrar
Arkansas Tech University
Office of the Registrar
Brown Building, Suite 307
105 West O Street
Russellville, AR 72801-2222

Telephone: 479.968.0643
Fax: 479.968.0683
Email: tweaver@atu.edu

Please take a minute to complete this survey on the service you received.
http://www.atu.edu/registrar/survey.php

In the attached matrix, include requested changes in the matrix and include course number and title.

Curriculum Matrix for Catalog Curriculum in_____ (enter title for program changing)	
Freshman Fall Semester Add/Change: Delete: Total Hours: 16	Freshman Spring Semester Add/Change: Delete: Total Hours:16
Sophomore Fall Semester Add/Change: COMS 2203 Delete Delete: ~~Move~~ Biological science ~~to spring of sophomore~~ Total Hours:14	Sophomore Spring Semester Add Add/Change: Biological sciences Delete: 3 hr of Gen elective Total Hours: 16
Junior Fall Semester Add/Change: COMS ~~2303~~ 2323 Delete: STAT 2304 Total Hours: 16	Junior Spring Semester Add/Change: STAT 3153 Change Electives^3 1 hour to Electives^3 2 hours Delete: 3 hrs Gen upper division elective Total Hours: 14
Senior Fall Semester Add/Change: Delete: Total Hours:15	Senior Spring Semester Add/Change: Delete: Total Hours:13

2023-24

Physics Proposed ~~2022-~~2023 Degree map

Semester 1 - fall	Hrs.	Grade	Semester 1
ENGL 1013: Comp I (ACTS=ENGL 1013)	3	#	
PHSC 1001: Orientation to Physical Science	1		
MATH 2914: Calculus I (ACTS= MATH 2405)	4		
COMS 1013/1011	4		
CHEM2124/2120:Gen. Chem. I (ACTS=CHEM1414) **MILESTONE**	4		
Total hours	16	GPA	

Semester 2 - spring	Hrs.		Semester 2
ENGL 1023: Comp II (ACTS= ENGL 1023)	3	#	
PHSC1011:Orientation to Physical Science II	1		
MATH2924: Calculus II (ACTS= MATH2505)	4		
CHEM 2134/2130	4		
PHYS 2114/2000: General Physics I (ACTS=PHYS 2034)	4		
Total hours	16	GPA	

Semester 3 – fall	Hrs.		Semester 3
~~Social Sci/Fine Arts/Humanities/Comm~~ SocSci	3		
MATH2934: Calculus III (ACTS= MATH 2603)	4		
PHYS 2124/2010: General Physics II (ACTS=PHYS 2044)	4		
COMS 2203 Programming II	3		
Total hours	14	GPA	

Semester 4 – spring	Hrs.		Semester 4
U.S. History & Government	3		
MATH3243: Differential Equations I	3		
PHYS 3213 Modern Physics	3		
ELEG2103: Electric Circuits I	3		
Biological Sciences with Lab	4		
Total hours	16	GPA	**PHYS ADVISOR ASSIGNED**

Semester 5 – fall	Hrs.	Grade	Semester 5
~~Social Sci/Fine Arts/Humanities~~ FAH	3		
PHYS 3023 Mechanics (even) or PHYS 4013 QM (odd)	3		
ELEG 2111 and ELEG 2113: Electric Circuits II and Lab	4		
PHYS 3133 EM (even) or PHYS 4023 Computational physics (odd)	3		
COMS ~~2303:~~ Programing in Python 2323	3		
Total hours	16	GPA	

Semester 6 – spring	Hrs.		Semester 6
~~Social Sci/Fine Arts/Humanities~~ FAH	3		
PHYS 3003 Optics (even) or PHYS 4113 advanced lab (odd)	3		
PHYS 4213/MATH UD elective (even) or PHYS 4003 Statistical Mechanics and Thermodynamics (odd)	3		
STAT 3153: Applied statistics	3		
Gen Elective	2		
Total hours	14	GPA	**APPLY FOR GRADUATION**

Physics Proposed ~~2022-2023~~ 2023-24 Degree map

Semester 7 – fall	Hrs.		Semester 7
Social Sci/Fine Arts/Humanities ~~Soc Science~~	3		
PHYS 3023 Mechanics (even) or PHYS 4013 QM (odd)	3		
MATH 4003	3		
PHYS 3133 EM (even) or PHYS 4023 Computational physics (odd)	3		
Gen Elective 3	3		
Total hours	15	GPA	

Semester 8 – spring	Hrs.		Semester 8
Social Sci/Fine Arts/Humanities 1Com	3		
PHYS 4213/MATH UD elective (even) or PHYS 4003 Statistical Mechanics and Thermodynamics (odd)	3		**Graduation Requirements:**
PHYS 3003 Optics (even) or PHYS 4113 advanced lab (odd)	3		Min. hours 3000-4000 level courses: 40
PHYS 4951	1		No more than 4 PE activity hours
Gen UD Elective	3		Min. hours required:120
Total Hours	13	GPA	2.00+ GPA
			No more than 12 hours of "D" grades

Total hours = 120

DEGREE AUDIT CHECK LIST
(BS-PHYS) - Physics

~~2022-23~~ 2023-24

Date	
Grade Point	Graduation Date

Student's Name	
T#	

General Education Requirements		Hrs
ENGL #	1013/1043 & 1023/1053	6
MATH #		0
SCIENCE		0
US HIST/GOVT		3
SOC SCI	(6-9)	
SOC SCI		
SOC SCI		
FINE ART/HUM	(6-9)	
FINE ART/HUM		
FINE ART/HUM		
COMM	(0-3)	15
TECH 1001 ♦		0
TOTAL GEN ED HOURS		24
Electives		
		2
TOTAL ELECTIVE HOURS		~~4~~

Major Requirements		Hrs
PHYS	2000 2010 2114 2124 3003 3023	
	3133 3213 4003 4013 4023 4113	
PHYS	4951	
	PHYS 4213 or 3 hrs UD MATH	36
	*exclude Math 3003, 3033, 4113	
BIOL		4
CHEM	2124 2120 2134 2130	8
COMS	1011 1013 2203 2323	10 ~~4~~
ELEG	2103 2111 2113	7
MATH	2914##** 2924 2934 3243 4003	18
PHSC	1001♦ 1011	2
STAT	~~2304~~ 3153	3 ~~4~~
ELEC	BIOL, CHEM, COMS, ELEG, GEOL, MCEG, PHSC, PHYS	6 ~~9~~
		94
	TOTAL MAJOR HOURS	~~92~~
	TOTAL HOURS	

Final Check:

Min. hours required **120**
40 hours upper level _____ thru _____
of "D" hours _____ thru _____
Max activity hours 4 _____

Earned Hrs _____
minus P/C HRS _____
to be completed _____
TOTAL _____

**** Satisfying Gen Ed**
♦ Satisfying Institutional Requirement
 # C or better must be earned for Gen Ed

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Bachelor of Science in Physics

DEPARTMENT HOMEPAGE

The physics curriculum is designed to serve the needs of students in the fields of engineering, medicine, and other sciences. The junior and senior courses are tailored for students who desire a concentration in physics for a bachelor of science degree in physical science and/or wish to pursue graduate study in areas such as physics, meteorology, and astronomy.

To qualify for a bachelor of science degree in physical science, the student must take eight hours in chemistry, three hours in computer and information science, 25 hours in mathematics, and a minimum of 30 hours in physics. Twenty-two semester hours in these courses must be at the 3000 or 4000 level. A minimum of 38 hours must be taken in the Department of Physical Sciences

Curriculum

The matrix below is a sample plan for all coursework required for this program.

Freshman

Fall	Credits	Spring	Credits
ENGL 1013 Composition I [1]	3	ENGL 1023 Composition II [1]	3
COMS 1011 Programming I Lab and COMS 1013 Programming I	4	MATH 2924 Calculus II	4
MATH 2914 Calculus I	4	PHYS 2114 Calculus-Based Physics I and PHYS 2000 Physics Laboratory I	4
PHSC 1001 Orientation to Physical Science	1	PHSC 1011 Orientation to Physical Science II	1
CHEM 2124 General Chemistry I and CHEM 2120 General Chemistry I Lab	4	CHEM 2134 General Chemistry II and CHEM 2130 General Chemistry II Lab	4

Fall	Credits
Total Hours	**16**

Spring	Credits
Total Hours	**16**

Sophomore

COMS2203 3

BIOL 1011 Lab 4

Fall	Credits
SS 1XXX Social Science Courses [1]	3
PHYS 2124 Calculus-Based Physics II and PHYS 2010 Physics Laboratory II	4
MATH 2934 Calculus III	4
~~BIOL XXXX Biological Science with Laboratory~~	~~4~~
Total Hours	~~15~~ 14

Spring	Credits
USHG 1XXX U. S. History and GovernmentU. S. History and Government [1]	3
ELEG 2103 Electric Circuits I	3
PHYS 3213 Modern Physics	3
MATH 3243 Differential Equations I	3
~~Elective [3]~~	~~3~~
Total Hours	~~15~~ 16

Junior

Fall	Credits
FAH 1XXX Fine Arts and Humanities Courses [1]	3
PHYS 3023 Mechanics or PHYS 4013 Quantum Mechanics	3
ELEG 2113 Electric Circuits II	3
ELEG 2111 Electric Circuits Laboratory	1
PHYS 3133 Theory of Electricity and Magnetism or PHYS 4023 Computational Physics	3

Spring	Credits
FAH 1XXX Fine Arts and Humanities Courses [1]	3
PHYS 3003 Optics or PHYS 4113 Advanced Physics Laboratory	3
(PHYS 4213 Advanced Topics in Physics and Astronomy or an upper division Mathematics course) or PHYS 4003 Thermodynamics and Statistical Mechanics	3
STAT 3153 3	
~~Elective (3000-4000 level) [3]~~	~~3~~

Fall	Credits
~~STAT 2304 Programming Languages for Data Science~~ COMS 2303	~~4~~ 3
Total Hours	~~17~~ 16

Spring	Credits
Electives [3]	~~1~~ 2
Total Hours	~~13~~ 14

Senior

Fall	Credits
SS 1XXX Social Science Courses [1]	3
PHYS 3023 Mechanics or PHYS 4013 Quantum Mechanics	3
PHYS 3133 Theory of Electricity and Magnetism or PHYS 4023 Computational Physics	3
MATH 4003 Linear Algebra I	3
Elective (3000-4000 level) [3]	3
Total Hours	**15**

Spring
SFHS 1XXX Social Sciences/Fine Arts/Humanities/Communicatio Courses [1]
PHYS 3003 Optics or PHYS 4113 Advanced Physics Laboratory
(PHYS 4213 Advanced Topics in Physics and Astronomy or an upper division Mathematics course) or PHYS 4003 Thermodynamics and Statistical Mechanics
PHYS 4951 Undergraduate Research in Physics
Electives (3000-4000 level) [3]
Total Hours 13 hrs

[1] See appropriate alternatives or substitutions in "General Education Requirements". A specific general education core course does not have to be taken in the semester listed, any other part of the general education core at any time is acceptable as well.

[2] Excluding MATH 3003 Foundations of Advanced Mathematics, MATH 3033 Methods of Teaching Elementary Mathematics, and MATH 4113 History of Mathematics.

[3] Seven hours of electives must be from physical sciences, biology, engineering, computer science.

[4] Must complete both the PHYS 4113 Advanced Physics Laboratory and 3 hours PHYS electives (PHYS course offered in alternating years).