

**University Curriculum Committee
October 19, 2017 Meeting Minutes**

The University Curriculum Committee met on **Thursday, October 19** at **3:00** in the Deans' Conference Room, DBRY 200.

Members Present:

Melinda Anderson	Julie Baker	Rita Barnes	Doug Bates
Jeff Boles	Mike Gotcher	Kristine Craven	Edith Duvier
Kurt Eisen	Steve Frye	Julie Galloway	Adam Grim
Dennis Duncan	Mike Harrison	Darrell Hoy	Sharon Huo
Steve Isbell	Wayne Johnson	Hayden Mattingly	Allan Mills
Wendy Mullen	Ted Pelton	Mohan Rao	Lori Maxwell
Stephen Robinson	Martin Sheehan	Barry Stein	Mark Stephens
Thomas Timmerman	Kim Hanna	Jeremy Wendt	Janet Whiteaker
Brenda Wilson	Brittany Copley	Lisa Zagumny	Ellie Fetzer- student
Courtney Fowler-student	Zach Grainger- student	Cayley Tuck- student	Cayley Tuck- student

Members Absent:

Pedro Arce	Leslie Crickenberger	Ahmed Elsayw	Jerry Gannod
Brandi Hill	Christy Killman	Ben Mohr	Thomas Payne
Richard Rand	Liz Self-Mullens	Paul Semmes	Jennifer Shank
Kim Winkle	Tea Phillips- student	James Carter- student	Whitney Battles-student

Official Representative(s):

Elizabeth Propes	For:	Jeff Roberts	Martha Kosa (absent)	For:	Jerry Gannod
Dan Combs	For:	Robert Kissell			

Guest(s):

Dale Wilson- Mechanical Engineering

Outline of Proceedings:

1. Approval of Agenda
2. Approval of September 21, 2017 minutes
3. School of Music:
 - a. Degree Option Removal: B.M. Music Performance
 - b. Course Change- New Course Proposal
4. Mechanical Engineering: New Vehicle Engineering concentration
5. Electrical and Computer Engineering: Creation of a Vehicle Engineering concentration
6. English: Curriculum Revisions
7. Agriculture:
 - a. Course and Curriculum Changes
 - b. Course Addition AGET 4510
 - c. Course Addition AGET 3540
 - d. Course Addition AGET 3520
8. Interdisciplinary Studies: Major GPA Calculation
9. Other Such Matters

Proceedings

Perceiving a quorum, Dr. Wendt called the meeting to order at 3:00

1. Approval of agenda.

Motion to approve. Dennis Duncan

Second. Barry Stein

Vote. Motion carried.

2. Approval of previous meeting's minutes- September 21, 2017.

Motion to approve. Barry Stein

Second. Steve Isbell

Vote. Motion carried.

3. School of Music

A. Memo- March 20, 2017 Degree Option Removal: B.M. Music Performance, Music Business Op.

The Bachelor of Music: Music Performance Concentration, Music Business Option degree does not meet the National Association of Schools of Music (NASM) requirements for accreditation. The current Bachelor of Music: Music Performance Concentration structure prohibits the needed modifications. The department plans to propose a Bachelor of Science in Music degree that includes music business options that will meet accreditation standards.

Motion to approve. Wendy Mullen

Second. Steve Frye

Vote. Motion carried.

B. Memo- September 26, 2017 Course Changes, New Course Proposal: Afro-Caribbean Ensemble

I. Course Addition.

MUS 1075 Afro-Caribbean Ensemble, Lec. 2, Credit 1. Prerequisite: Permission of the instructor.

Motion to approve. Wendy Mullen

Second. Julie Galloway

Vote. Motion carried.

4. Mechanical Engineering

A. Memo- September 28, 2017 New Vehicle Engineering (VE) Concentration for 2018-19 Catalog Year

I. Course Additions.

- a) **VE 3400: Introduction to Automotive Systems**, Lec. 3. Cr. 3. Prerequisites: Junior standing in engineering; consent of instructor.
- b) **VE 3500: Sensors, Transducers and Instrumentation**, Lec. 2. Lab. 2. Cr. 3. Prerequisites: ECE 2010; PHYS 2120; consent of instructor.
- c) **VE 4100: Senior Design Project I**, Lec. 2. Lab. 2. Cr. 3. Prerequisites: VE 3400; senior standing in engineering; consent of instructor.
- d) **VE 4500: Reliability and Quality Engineering**, Lec. 3. Cr. 3. Prerequisite: MATH 3470.
Friendly Amendment- Prerequisite: MATH 3470 or 4470.

II. Course Changes.

From:

ME 3050: Dynamic Modeling and Controls, Lec. 3. Cr. 3.

Prerequisites: ME 2330, ME 3023 and ME 3001. Corequisite: ME 3060. Modeling and simulation of lumped parameter systems, mechanical, electrical, thermal, fluid, and/or mixed, stability, time and frequency response; vibration applications; control algorithms.

To:

ME 3050: Dynamic Modeling and Controls, Lec. 3. Cr. 3.

Prerequisite: ME 2330; ME 3001; ME 3023 **or VE 3500**. Corequisite: ME 3060

From:

ME 4751: Energy Systems Lab, Lec. 1. Lab. 2. Cr. 2.

Prerequisite: ME 3023, ME 3710 and ME 3720.

To:

ME 4751: Energy Systems Lab, Lec. 1. Lab. 2. Cr. 2.

Prerequisite: ME 3710; ME 3720; ME 3023 **or VE 3500**

III. Curriculum Changes.

New Vehicle Engineering Concentration Addition to BSME.

Motion to approve. Mohan Rao

Second. Darrell Hoy

Vote. Motion carried with friendly amendment.

5. Electrical and Computer Engineering

A. **Memo- September 27, 2017 Creation of a Vehicle Engineering Concentration in the BSEE degree**

I. Catalog Changes.

From:

As part of this mission, the department offers two undergraduate academic programs, one leading to the Bachelor of Science in Electrical Engineering (B.S.E.E.) degree and the other leading to the Bachelor of Science in Computer Engineering (B.S.Cmp.E.) degree. In addition, a concentration in Mechatronics (electronic control of mechanical systems) is available in the B.S.E.E. program. The department also offers graduate programs leading to the Master of Science (M.S.) in Electrical Engineering and Doctor of Philosophy (Ph.D.) in Engineering degrees; these programs are described in the Graduate Catalog.

To:

As part of this mission, the department offers two undergraduate academic programs, one leading to the Bachelor of Science in Electrical Engineering (B.S.E.E.) degree and the other leading to the Bachelor of Science in Computer Engineering (B.S.Cmp.E.) degree. In addition, **a concentrations in Mechatronics (electronic control of mechanical systems) and Vehicle Engineering (electrical/electronic systems in vehicles) is** are available in the B.S.E.E. program. The department also offers graduate programs leading to the Master of Science (M.S.) in Electrical Engineering and Doctor of Philosophy (Ph.D.) in Engineering degrees; these programs are described in the Graduate Catalog.

The Bachelor of Science in Electrical Engineering also offers a concentration in Vehicle Engineering. This concentration provides a combination of electrical and vehicle engineering courses to prepare students to design of electrical and electronics systems for vehicles.

Motion to approve. Wayne Johnson

Second. Mohan Rao

Vote. Motion carried.

6. English

A. *Memo- September 14, 2017 Curriculum Revisions*

I. Course Description Change.

From:

THEA 3600-Film Studies, Lec. 3. Credit 3.

This course focuses on the film work of significant movie directors, performers, cinematographers or on a particular film genre. The student will gain a sense of the work of that director, performer, cinematographer, as well as the challenges they face putting together a film.

To:

THEA 3600-Film Studies, Lec. 3. Credit 3.

This course focuses on the film work of significant movie directors, performers, cinematographers or on a particular film genre. The student will gain a sense of the work of that director, performer, cinematographer, as well as the challenges they face putting together a film. **Course may be repeated provided the content is different each time.**

Motion to approve. Ted Pelton

Second. Lori Maxwell

Vote. Motion carried.

7. Agriculture

A. *Memo- October 1, 2017 Course and Curriculum Changes*

I. New Courses.

Concentration- Agricultural Communications

- a) **AGCM 2010. Introduction to Agricultural Communications.** Lec. 2 Lab. 2 Credit 3
Prerequisites: None. An introduction to agricultural communications emphasizing agricultural media production in print and digital forms.
- b) **AGCM 3010. Theory and Practice of Agricultural Publishing.** Lec. 2 Lab. 2 Credit 3
Prerequisite: AGCM 2010. An introduction to the agricultural publishing industry, including the role magazines play in agricultural communications.
- c) **AGCM 4890. Agricultural Publication Production.** Lec. 2 Lab. 2 Credit 3
Prerequisite: AGCM 3010. An authentic immersion into organizing, funding, and managing a professional, agricultural publication business.

II. Course Deletions.

Concentration- Agricultural Communications

- a) **AGED 2120. Introduction to Agricultural and Extension Education** (credit 3).
- b) **AGED 4200. Methods and Techniques of Teaching in Agricultural and Extension Education** (credit 3).
- c) **AGED 4300. Development of Youth Programs in Agricultural and Extension Education** (credit 3).

Removed for further discussion and development.

B. *Memo- September 26, 2017 Course Addition*

I. New Course.

AGET 4510/5510 Agricultural Remote Sensing. Lec.2 Lab 2 Credit 3.

C. *Memo- September 26, 2017 Course Addition*

I. New Course.

AGET 3540 Fundamentals of GIS and GPS in Agriculture and Natural Resources. Lec. 2, Lab 2, Cr. 3

D. *Memo- September 26, 2017 Course Addition*

I. New Course.

AGET 3520 Agricultural Spatial Technologies I. Lec. 2 Lab. 2 Credit 3.

Motion to approve. Dennis Duncan

Second. Melinda Anderson

Vote. Motion carried.

8. Interdisciplinary Studies

A. Memo- October 9, 2017 Major GPA Calculation for Interdisciplinary Studies majors

I. Courses Additions to Major GPA Calculations.

- a) **Courses designated on the Emphasis Area form** as part of the two declared emphasis areas
- b) The **LIST/PRST 4995 Senior Project** course
- c) **Any additional course with the LIST prefix** that are not already listed among the Emphasis Area courses

Friendly Amendment- Effective Date Summer 2018

Motion to approve. Steve Frye

Second. Joe Roberts

Vote. Motion carried with friendly amendment.

9. Other Such Matters.

Dr. Rao requested discussion of an adjustment to the undergraduate grading scale now that TTU is no longer a TBR university.

Dr. Huo advised this question is relevant to UCC as it will involve a catalog change.

Dr. Wendt proposed the formation of a subcommittee to deliver their recommendations and for discussion at the next UCC meeting in February 2018.

Subcommittee is as follows:

Ted Pelton- English

Mohan Rao- Mechanical Engineering

Dennis Duncan- Agriculture

Ellie Fetzer- Student Rep.

There being no other such matters brought for discussion, Dr. Wendt entertained a motion to adjourn.

Motion to adjourn. Julie Baker

Second. Multiple

Meeting adjourned at 3:42 p.m.

MEMORANDUM

TO: University Curriculum Committee
VIA: College of Education Executive Leadership Committee
FROM: Wendy Mullen, Chair, Department of Music
DATE: March 20, 2017
SUBJECT: Degree Option Removal: B.M. Music Performance, Music Business Option

The Department of Music proposes the following changes to the undergraduate music curriculum.

PROGRAM CHANGES

1. **ADDITIONS**

None.

2. **DELETIONS**

Bachelor of Music, Music Performance Concentration, Music Business Option

3. **MODIFICATIONS**

None.

Justification:

The Bachelor of Music: Music Performance Concentration, Music Business Option degree does not meet the National Association of Schools of Music (NASM) requirements for accreditation. The current Bachelor of Music: Music Performance Concentration structure prohibits the needed modifications. The department plans to propose a Bachelor of Science in Music degree that includes music business options that will meet accreditation standards.

The effective date is Fall 2017 and the anticipated last student to graduate from this program will be Spring 2020.

Financial Impact: None.



MEMORANDUM

TO: University Curriculum Committee
VIA: College of Fine Arts Executive Leadership Council
FROM: Dr. Wendy Mullen, Director, School of Music
DATE: September 26, 2017
SUBJECT: Course Change - New Course Proposal: Afro-Caribbean Ensemble

I. Course Addition:

MUS 1075 Afro-Caribbean Ensemble, Lec. 2, Credit I
Prerequisite: Permission of the instructor.

MUS 5075 Afro-Caribbean Ensemble, Lec. 2, Credit I
Prerequisite: Permission of the instructor.

Curriculum Changes: None

Justification:

The Afro-Caribbean Ensemble, provides an opportunity for students to experience and perform this rich culture of music. The course will serve as an elective for both music and non-music majors. Funding for this ensemble was recently secured through a TBR Student Engagement, Retention, and Success Grant and supplemented by two TTU sponsored fundraising events. No additional resources are needed.

Students will explore and learn about the Afro-Caribbean culture through a hands-on study of Afro-Caribbean instruments, imported from Trinidad and Tobago, as well as other authentic resources. This hands-on pedagogical approach will enhance the students' educational interest, understanding, and appreciation for the Afro-Caribbean diaspora, while increasing their involvement with the campus and community. As part of the students' assessment, members of this ensemble will be expected to participate in public concerts, educational workshops, and assembly presentations. These service opportunities will provide students with an enriched educational experience and promote personal growth as they become community ambassadors for cultural diversity.

Effective Date: Spring 2018

Financial Impact: None.

A sample syllabus for both the undergraduate and the graduate level course is attached.

Tennessee Tech University

School of Music
MUS 1075

Course: Afro-Caribbean Ensemble (Special Problems)
Instructor: Colin Hill
Credits: 1 Credit
Semester: Fall 2017
Dates: August 28 – December 8
Room: Bryan Fine Arts Building 101
Time: Tuesdays and Thursdays from 1:30 – 2:50
Email: cjhill@tntech.edu
Telephone: 931-372-6082
Office Hours: By appointment only - Bryan Fine Arts 315
Prerequisites: None

Required Texts and References:

- Individually Assigned Percussion Parts (provided by instructor)

Required Special Instructional Materials

- Music Folder
- Pencil

Preferred Materials:

- Audio / video recording device (for rehearsals and recording assignments)

Note: Students must have the required materials in their possession by the second rehearsal. Failure to do so will result in a deduction of their grade.

1. Course Description

Students will explore and learn about the Afro-Caribbean culture through a hands-on study of traditional Afro-Caribbean instruments, imported from Trinidad and Tobago, and other authentic resources. This hands-on pedagogical approach will enhance the students' educational interest, understanding, and appreciation for the Afro-Caribbean diaspora, while increasing their involvement with the campus and community. As part of the students' assessment, members of this ensemble will be expected to participate in public concerts, educational workshops, and assembly presentations. These service opportunities will provide students with an enriched educational experience and promote personal growth as they become community ambassadors for cultural diversity.

2. Course Objectives

- Students will learn how to prepare and perform Afro-Caribbean literature with musical understanding and control.
- Students will develop techniques that enable them to achieve artistic excellence on a variety of percussion instruments.
- Students will learn to interact musically in a chamber environment, embracing the subtle differences and challenges.

3. Topics to be Covered

The TTU Afro-Caribbean Ensemble will provide each student with a diverse education in Afro-Caribbean literature, orchestration, and timbre. Careful consideration will be given to part assignments to insure that each student gets necessary the experience and enjoyment of learning a variety of instruments and techniques.

4. Major Teaching Methods

Rehearsals

Students will be responsible for the preparation of assigned repertoire. A rehearsal schedule for the week, complete with rehearsal sections and target tempos, will be posted in advance to ensure adequate preparation. It is crucial that students take responsibility to learn their own parts prior to rehearsal. Rehearsal time is a limited commodity that will be valued and utilized to its greatest potential. Rehearsals will focus on ensemble balance, group cohesiveness, and interpretation. **Students may be removed from their part at any time if a lack of preparation is demonstrated for two or more rehearsals.**

Concerts

Concerts will be given each semester to showcase the hard work and achievement of the ensemble. This semester's concerts include:

November 30 at 7:30pm - Concert (Dress from 5:30pm-7pm)

December 8, TBA – Christmas Concert

Unless otherwise notified, the dress for concerts will be Hawaiian shirts and khaki pants.

5. Statement of Attendance Policy

Each player will be assigned individual parts, therefore, attendance and promptness is crucial to the success of the ensemble. Students are required to be set-up and ready to play by the start of class. This will require arriving at least fifteen minutes prior to rehearsal, as often times, individual set-ups impact the positioning and layout of the ensemble.

Final grades will be reduced by one letter grade for each unexcused absence and half a letter grade for each unexcused tardy. We will start all rehearsals 5 minutes after the official start time. Three unexcused absences will result in an automatic failure of the course and Each tardy lowers your final grade by 5%. Concerts constitute the culmination of the semester's work, and an absence at a dress rehearsal or performance will result in automatic failure of the course.

The following are defined as acceptable reasons for excused absences:

- Serious illness
- Serious illness or the death of a family member
- University-related trips
- Major religious holidays
- Other situation deemed acceptable by the instructor

Absences related to illness should be verified through a doctor's note or the University Health Services. Absences related to major religious holidays should be communicated at the beginning of the semester.

6. Grading and Evaluation Procedures

Grading Policy:

Final averages will be assigned a letter grade, as listed below:

A	90% and above
B	80% and above
C	70% and above
D	60% and above
F	Below 60% low 60

Final grades will be determined by the following:

Weekly Preparation:	40%
Playing Tests:	40%
Assignments:	20%

Weekly preparation grades will be based upon the student's knowledge and ability to play their assigned parts. This includes the student's technique, sound quality, and execution of the assigned passages, but most importantly, their improvement in these areas.

7. Plagiarism Policy

Cheating and plagiarism will not be tolerated. Any occurrence will result in 0 for that particular assignment or exam and will be reported to the University for appropriate discipline.

8. Disability Accommodation

Students with a disability requiring accommodations should contact the Office of Disability Services (ODS). An Accommodation Request (AR) should be completed as soon as possible, preferably by the end of the first week of the course. The ODS is located in the Roaden University Center, Room 112; phone 372-6119.

9. Hearing Health Statement

Loud music (amplified or acoustic) can lead to permanent hearing loss. Although many factors contribute to hearing loss, including time of exposure, volume/decibel levels, proximity to sources, and hereditary predisposition, we urge everyone to wear hearing protection when exposed to high sound levels for extended periods. Good hearing health requires regular examinations, proper diagnosis, and advice from a licensed audiologist. While the faculty member will provide specific information related to musician's health as appropriate to this course, it is fundamentally the responsibility of the individual student to avoid risk and prevent injury. More information on hearing health can be found at:

- http://nasm.arts-accredit.org/index.jsp?page=NASM-PAMA_Hearing_Health
- http://nasm.arts-accredit.org/site/docs/PAMA-NASM_Advisories/3a_NASM_PAMA-Student_Orientation_Script-Standard.pdf

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Office Hours: By appointment only - Bryan Fine Arts 315
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- http://nasm.arts-accredit.org/index.jsp?page=NASM-PAMA_Hearing_Health
- http://nasm.arts-accredit.org/site/docs/PAMA-NASM_Advisories/3a_NASM_PAMA-Student_Orientation_Script-Standard.pdf



Mechanical Engineering

TENNESSEE TECH

Box 5014 • Cookeville, TN 38505-0001

Phone: (931)372-3254; Fax (931)372-6340

e-mail: <mailto:me@tntech.edu>

<http://www.tntech.edu/me>

MEMORANDUM

TO: University Undergraduate Curriculum Committee

THRU: College of Engineering Undergraduate Curriculum Committee

VIA: Dr. Mohan Rao, Chair, Mechanical Engineering

FROM: Dale A. Wilson, VE AOC Coordinator
Undergraduate Program Committee, Mechanical Engineering

DATE: September 28, 2017

SUBJECT: New Vehicle Engineering (VE) Concentration for 2018-19 catalog year

I. COURSE ADDITIONS, DELETIONS, AND CHANGES

A. NEW COURSE ADDITION

VE 3400: Introduction to Automotive Systems

Catalog Data: Lec. 3. Cr. 3.

Prerequisites: **Junior** standing in engineering; consent of instructor.

Introduction to a vehicle as a complex system, interactions of the subsystems in terms of overall performance. Overview of propulsion systems, suspensions and steering systems, tire-road interface, structural behavior and crash worthiness, materials and manufacturing, driver-passenger vehicle interactions, and onboard electronics.

B. NEW COURSE ADDITION

VE 3500: Sensors, Transducers and Instrumentation

Catalog Data: Lec. 2. Lab. 2. Cr. 3.

Prerequisites: **ECE 2010; PHYS 2120;** consent of instructor.

Introduction to sensors used in vehicles including: oxygen, tire pressure, emission, temperature, blind spot monitoring, etc. Focus on principles of measurements, theory

of instruments and sensors for measuring typical physical quantities in mechanical and electrical systems. Calibration, measurement uncertainty and noise.

C. NEW COURSE ADDITION

VE 4100: Senior Design Project I

Catalog Data: Lec. 2. Lab. 2. Cr. 3.

Prerequisites: **VE 3400**; senior standing in engineering; consent of instructor.

Principles of vehicle engineering design with emphasis on contemporary industrial design processes and engineering economics with applications in product design. Development phase for capstone team design project in vehicle engineering: preliminary design, supporting analyses and drawings with bill of materials.

D. NEW COURSE ADDITION

VE 4200: Senior Design Project II

Catalog Data: Lec. 1. Lab. 4. Cr. 3.

Prerequisites: **VE 3500**; **VE 4100**; consent of instructor.

Prototyping and testing phase for capstone team design project in vehicle engineering. Final design reporting (written and oral).

E. NEW COURSE ADDITION

VE 4500: Reliability and Quality Engineering

Catalog Data: Lec. 3. Cr. 3.

Prerequisite: **MATH 3470**.

Basic engineering and statistics principles as well as advanced tools focusing on design of experiment, statistical process control and reliability engineering are presented. Theoretical and practical methods to improve the capability of systems to perform their designated functionalities, to predict the probability of their functioning without failures in certain environments for desired periods, to assess their maintainability, availability and safety based on sampled data, and to make decisions on corrective and mitigation.

F. EXISTING COURSE PREREQUISITE CHANGE

ME 3050: Dynamic Modeling and Controls

Catalog Data: Lec. 3. Cr. 3.

Prerequisites: **ME 2330, ME 3023 and ME 3001**. Corequisite: **ME 3060**. Modeling and simulation of lumped parameter systems, mechanical, electrical, thermal, fluid, and/or mixed, stability, time and frequency response; vibration applications; control algorithms.

to

ME 3050: Dynamic Modeling and Controls

Catalog Data: Lec. 3. Cr. 3.

Prerequisite: **ME 2330; ME 3001; ME 3023 or VE 3500**. Corequisite: **ME 3060**. Modeling and simulation of lumped parameter systems, mechanical, electrical, thermal, fluid, and/or mixed, stability, time and frequency response; vibration applications; control algorithms.

G. EXISTING COURSE PREREQUISITE CHANGE

ME 4751: Energy Systems Lab

Catalog Data: Lec. 1. Lab. 2. Cr. 2.

Prerequisite: **ME 3023, ME 3710 and ME 3720**. Basic instrumentation and principles of measuring pressure, temperature, fluid velocity, and fluid flow rate; demonstrations, measurements, and evaluations of heat transfer and fluid flow processes.

to

ME 4751: Energy Systems Lab

Catalog Data: Lec. 1. Lab. 2. Cr. 2.

Prerequisite: **ME 3710; ME 3720; ME 3023 or VE 3500**. Basic instrumentation and principles of measuring pressure, temperature, fluid velocity, and fluid flow rate; demonstrations, measurements, and evaluations of heat transfer and fluid flow processes.

II. CURRICULUM CHANGES

A. New CONCENTRATION ADDITION TO BSME

There is growing opportunities for ME majors in the automotive industry with the move to hybrid and electric vehicles, autonomous vehicles and ever improving safety, economy, connectivity and infotainment features based on electronics. The automotive industry is a major manufacturing segment in the Tennessee economy. With the expansion of manufacturing comes the opportunity for more automotive design work in Tennessee if there is a sufficient talent pool. This new concentration in Vehicle Engineering will provide BSME students an option to enhance their knowledge related to this industry segment and secure jobs in the automotive industry. This concentration is being developed in coordination with the Electrical and Computer Engineering Department at Tennessee Tech, which will also offer a Vehicle Engineering Concentration in the BSEE degree. Students in both majors will share common classes and the two Senior Capstone Design Project courses.

This interdisciplinary education will enhance the collaboration between these two departments and provide interdisciplinary training of the students, which is necessary for engineers in the automotive and other vehicle industries.

III. IMPACT ON FACULTY AND FINANCES: Please see attached Appendix for impact and requested resources. The ME faculty approved this proposal contingent on department receiving the requested resources to start the program.

IV. EFFECTIVE DATE: Fall 2018

JUSTIFICATIONS: This proposal outlines the request for the creation of a new area of concentration in Vehicle Engineering in both Mechanical and Electrical Engineering at Tennessee Technological University (TTU). The proposed concentration programs builds upon Tech's long history of success with accredited undergraduate engineering programs. It will support our state's need for a vibrant automotive and associated supplier industries economy while growing the renewable and sustainable transportation and manufacturing sectors. The program will support the growth requirements for Nissan, Volkswagen and General Motors. Graduates of the program will benefit from the increased depth and breadth of the program, as well as emerging areas in embedded software, math modeling, and electronic controls as the industry moves toward electric and autonomous vehicles.

Within TTU, this plan will create new opportunities for collaboration with groups such as Baja SAE, SAE Formula, and it will sustain existing interdisciplinary projects between vehicle students, mechanical, mechatronics, electrical and computer engineering students. These synergistic efforts will lead to national recognition for TTU in the area of vehicle engineering.

Proposed BSME Vehicle Engineering Area of Concentration (VE AOC)

Freshman			
ENGL 1010	3	ENGL 1020	3
HUFA1	3	HUFA2	3
MATH 1910	4	MATH 1920	4
CHEM 1110	4	PHYS 2110	4
ENGR 1110	2	ENGR 1120	2
ENGR 1020	1		
	16+1		16
Sophomore			
ENGL 2130, 2230 or 2330	3	SPCH 2410 or PC 2500	3
MATH 2120	3	MATH 2110	4
MATH 2010	3	ECE 2010	3
PHYS 2120	4	ME 3010	3
CEE 2110	3	ME 2330	3
	16		16
Junior			
ME 3001	3	ME 3610	3
VE 3400 Introduction to Automotive Systems	3	VE 3500 Sensors, Transducers and Instrumentation	3
ME 3210	3	ME 3220	3
ME 3720	3	ME 3710	3
ME 4910	1	ME 4010	3
CEE 3110	3	MATH 3470 Introductory Probability and Statistics	3
	16		18
Senior			
SBS1	3	SBS2	3
ME 3050	3	VE 4200 Senior Design Project II	3
ME 3060	1	VE 4500 Reliability and Quality Engineering	3
VE 4100 Senior Design Project I	3	AOE1 from BSME Approved List	3
ME 4020 or ME 4720	3	AOE2 from BSME Approved List	3
ME 4751	2		3
	15		15

Appendix:

Impact of the new Concentration:

The addition of the VE concentration to the degree programs in the College of Engineering would have a positive impact on the overall offerings of the College and is projected to lead to an overall increase in total number of Bachelor's degrees in Engineering and Technology awarded by the College. In particular, the inter-disciplinary nature of the course offerings is very-well suited to fill the demand in industry for engineers who have a "big picture" view of science and engineering, rather than being specialized in any one particular engineering discipline. This is particularly important in engineering management and project management type positions, which industry is always seeking new engineers to fill.

As a unique program offering, it is anticipated that many of the enrollees into the VE concentration program will be new students to TTU. At the same time, it is also likely to be some transfer of students from existing engineering programs at TTU into the program, particularly those who might have an inclination toward employment in automotive and mobility industry. However, it is expected that this shift from current offerings will be more than offset by new students transferring into the program from outside TTU including other universities and community colleges. Retaining these students in STEM disciplines would be a net plus to the University and the State. Furthermore, increased fees from the increased student enrollment will allow further expansion of labs and specialized equipment which are needed for the long term sustainability of the program.

Resources Needed:

The proposed concentration in Vehicle Engineering will be housed within the Mechanical Engineering (ME) Department in the CoE at Tennessee Tech. Several specialized resources of the CoE will be also be available to the VE program students and faculty, including the Clay N. Hixson Student Success Center, Center for Manufacturing Research (CMR) and Center for Energy Systems Research (CESR).

This new concentration will not only complement the existing engineering programs, but also aligns with University's new initiatives--Tennessee Center for Intelligent Mobility (TCIM). This proposal builds on the success of TTU's experience-based engineering programs such as the recently established DENSO Autonomous Vehicle Laboratory allowing students an opportunity to experiment in the areas of improving driving safety, intelligent interface with the vehicle, design of lightweight vehicles, efficient use of the vehicle power source, and design of new safety sensors, algorithms, and new materials to reduce the vehicle weight. We already have a set of vehicle related classes in Mechanical Engineering, Electrical Engineering and Computer Science departments that fit well within the proposed vehicle engineering curriculum.

The following existing laboratories in the CoE will be made available to students enrolled in the new VE concentration:

1. Measurement Laboratory-for general Pressure, Temperature, Strain and Flow Measurements.
2. Mechatronics Laboratory-for Microcontroller, Mechatronics and Sensors in Vehicles.
3. Dynamic Modeling and Control Laboratory-for Vehicle Dynamics, Modeling, Simulation and Control of Vehicle Subsystems and Systems.
4. Flow Measurement Laboratory- for Air and Fuel Flow Measurements.
5. Vibration and Noise Laboratory-for all Vehicle Noise, Vibration and Harshness Measurement and Reduction.
6. Smart Grid Laboratory- for testing Charging and Discharging Strategies for Electric Vehicle Batteries.
7. IC Engine Lab- for Engines including Intake, Emission and Exhaust testing.
8. Energy Systems Laboratory-for Heat Transfer, Fluid Flow, Fuel Cell, and HVAC Experiments.
9. Baja-SAE Laboratory for off-road Vehicle Design, Development and Fabrication
10. SAE Formula Car Design and Innovation Laboratory.

Anticipated new cost:

Since TTU already has well established engineering programs with associated infrastructure including classrooms and laboratories, any anticipated new cost to support the proposed program will be mostly tied to recruiting new faculty and purchasing some new equipment to support vehicle related laboratory courses. As mentioned earlier, this program will be housed within the ME Department, hence most of ME facilities, classrooms, faculty and staff will be available including one open faculty line that will be used to recruit a new lecturer with automotive expertise. We expect to start with an initial enrollment of about 30 students in the first year of the program and grow to about 120 students in five years. Below is an estimate of new cost anticipated for this program.

1. Two new Lecturers with automotive expertise. One of these will be filled using an existing open line in ME and a second new lecturer position.
Total Cost for two Lecturers (\$75k salary +35% fringe benefits) = \$202.5k. These positions will complement existing strengths in ME in the areas of Manufacturing, Batteries, Noise and Vibration, Materials, Hybrid Vehicles, and Computational Fluid Dynamics.
2. One Laboratory Engineer to support all laboratories: \$50,000+35% Fringe benefits = \$67.5k.
3. Salary supplement for the faculty coordinator, Dr. Dale Wilson (one month summer supplement) = \$17k.
4. Equipment upgrades to existing measurements, mechatronics and energy laboratories: \$50k (one-time expense).

Total anticipated new cost: \$337k out of which \$101.25k will be cost shared from ME using the open faculty line. The balance \$235.75k new funds are requested out of which \$50k is one-time expense and the remaining \$185.75 recurring every year. The Mechanical Engineering faculty approved to start this new concentration only under the conditions that the department receives the requested resources.

Tuition revenues (each new student/year @ \$8,353/year, 2% tuition increase/year):

First Year (30 students): \$250,590
Second Year (50 students): \$426,003
Third Year (70 students): \$608,332
Fourth Year (90 students): \$797,784



Curriculum Comparison Table for a Revised or New Concentration

Curriculum Comparison Table

Program: BSME

Proposed change: Addition of Vehicle Engineering Concentration

Current or Existing (128)*			Proposed (Revised or New) (128)		
Name of the Concentration: Mechatronics			Name of the Concentration: Vehicle Engineering		
<i>Rubric</i>	<i>Title</i>	<i>SCH</i>	<i>Rubric</i>	<i>Title</i>	<i>SCH</i>
General Education			General Education		
36			36		
	ENGL 1010 - Writing I	3		ENGL 1010 - Writing I	3
	ENGL 1020 - Writing II	3		ENGL 1020 - Writing II	3
	COMM 2025 - Introduction to Speech Communication or PC 2500 - Communicating in the Professions	3		SPCH 2410 - Introduction to Speech Communication or PC 2500 - Communicating in the Professions	3
	MATH 1910 - Calculus I	4		MATH 1910 - Calculus I	4
	ENGL 2130 - American Literature or ENGL 2230 - British Literature or ENGL 2330 - World Literature	3		ENGL 2130 - American Literature or ENGL 2230 - British Literature or ENGL 2330 - World Literature	3
	Humanities and/or Fine Arts Electives	6		Humanities and/or Fine Arts Electives	6
	Social/Behavioral Sciences Electives	6		Social/Behavioral Sciences Electives	6
	CHEM 1010 - Introduction to Chemistry I	4		CHEM 1010 - Introduction to Chemistry I	4
	PHYS 2110 - Calculus-based Physics I	4		PHYS 2110 - Calculus-based Physics I	4
Major Core (Required)			Major Core (Required)		
74			74		
	MATH 1920 Calculus II	4		MATH 1920 Calculus II	4
	MATH 2010 Matrix Algebra	3		MATH 2010 Matrix Algebra	3
	ENGR 1120 Programming	2		ENGR 1120 Programming	2
	MATH 2120 Differential Equations	3		MATH 2120 Differential Equations	3
	ENGR 1110 Engineering Graphics	2		ENGR 1110 Engineering Graphics	2
	ME 3010 Materials	3		ME 3010 Materials	3
	MATH 2110 Calculus III	4		MATH 2110 Calculus III	4
	PHYS 2120 Calculus-based Physics II w/Lab.	4		PHYS 2120 Calculus-based Physics II w/Lab.	4
	ME 3001 Mechanical Analysis	3		ME 3001 Mechanical Analysis	3
	ME 3210 Thermodynamics	3		ME 3210 Thermodynamics	3
	ME 3720 Fluid Dynamics	3		ME 3720 Fluid Dynamics	3
	ECE 2010 Circuits	3		ECE 2010 Circuits	3
	CEE 2110 Statics	3		CEE 2110 Statics	3
	CEE 3110 Mechanics of Materials	3		CEE 3110 Mechanics of Materials	3
	ME 3220 Thermodynamics II	3		ME 3220 Thermodynamics II	3
	ME 3710 Heat Transfer	3		ME 3710 Heat Transfer	3
	ME 4010 Machine Design	3		ME 4010 Machine Design	3
	ME 4020 Applied Machine Design or ME 4720 Thermal Design	3		ME 4020 Applied Machine Design or ME 4720 Thermal Design	3
	ME 3050 Dynamic Modeling and Controls	3		ME 3050 Dynamic Modeling and Controls	3
	ME 3060 Dynamic Modeling and Controls Lab	1		ME 3060 Dynamic Modeling and Controls Lab	1
	ME 4751 Energy Systems Lab	2		ME 4751 Energy Systems Lab	2
	ME 3610 Dynamics of Machinery	3		ME 3610 Dynamics of Machinery	3
	Area of Emphasis I	3		Area of Emphasis I	3

Area of Emphasis II	3	Area of Emphasis II	3
ME 4910 Professionalism and Ethics	1	ME 4910 Professionalism and Ethics	1
ME 2330 Dynamics	3	ME 2330 Dynamics	3
Concentration	18	Concentration	18
ME 3023 Measurements	3	VE 3400 Introduction to Automotive Systems	3
Area of Emphasis III	3	VE 3500 Sensors, Transducers and Instrumentation	3
Area of Emphasis IV	3	MATH 3470 Introduction to Probability and Statistics	3
Area of Emphasis V	3	VE 4500 Reliability and Quality Engineering	3
ME 4410 Senior Design I	3	VE 4100 Senior Design Project I	3
ME 4420 Senior Design II	3	VE 4200 Senior Design Project II	3
<i>Electives</i>	0	<i>Electives</i>	0
Total	128	Total	128

* Include all current concentrations in comparison, expanding the table as needed.



MEMORANDUM

TO: Undergraduate Curriculum Committee
VIA: COE Undergraduate Curriculum Committee
FROM: Wayne Johnson, Chair, ECE Dept. *WJ*
Charles Carnal, Chair, BSEE Curriculum Committee
DATE: September 27, 2017
SUBJECT: Creation of a Vehicle Engineering Concentration in the BSEE degree

I. ADDITIONS

None

II. DELETIONS

None

III. CATALOG DESCRIPTION CHANGES:

Current:

As part of this mission, the department offers two undergraduate academic programs, one leading to the Bachelor of Science in Electrical Engineering (B.S.E.E.) degree and the other leading to the Bachelor of Science in Computer Engineering (B.S.Cmp.E.) degree. In addition, a concentration in Mechatronics (electronic control of mechanical systems) is available in the B.S.E.E. program. The department also offers graduate programs leading to the Master of Science (M.S.) in Electrical Engineering and Doctor of Philosophy (Ph.D.) in Engineering degrees; these programs are described in the Graduate Catalog.

New:

As part of this mission, the department offers two undergraduate academic programs, one leading to the Bachelor of Science in Electrical Engineering (B.S.E.E.) degree and the other leading to the Bachelor of Science in Computer Engineering (B.S.Cmp.E.) degree. In addition, ~~a~~ concentrations in Mechatronics (electronic control of mechanical systems)

and Vehicle Engineering (electrical/electronic systems in vehicles) is available in the B.S.E.E. program. The department also offers graduate programs leading to the Master of Science (M.S.) in Electrical Engineering and Doctor of Philosophy (Ph.D.) in Engineering degrees; these programs are described in the Graduate Catalog.

New:

The Bachelor of Science in Electrical Engineering also offers a concentration in Vehicle Engineering. This concentration provides a combination of electrical and vehicle engineering courses to prepare students to design of electrical and electronics systems for vehicles.

Justification: There is growing opportunities for EE majors in the automotive industry with the move to hybrid and electric vehicles, autonomous vehicles and ever improving safety, economy, connectivity and infotainment features. This new concentration will provide EE students an option to enhance their knowledge related to this industry segment.

Financial Impact: None – no new ECE courses. (Required courses being developed in Mechanical Engineering)

Effective: Fall 2018

IV. CURRICULUM CHANGE:

New:

Curriculum – Vehicle Engineering Concentration in EE

Freshman Year

ENGL 1010 - English Composition I Credit: 3.

ENGL 1020 - English Composition II Credit: 3.

MATH 1910 - Calculus I Credit: 4.

MATH 1920 - Calculus II Credit: 4.

MATH 2010 - Introduction to Linear Algebra Credit: 3.

CHEM 1110 - General Chemistry I Credit: 4.

CSC 1300 - Introduction to Problem Solving and Computer Programming Credit: 4.

Social/Behavioral Sciences Elective² Credit: 3.

ECE 1020 - Connections to Electrical and Computer Engineering Credit: 1. ¹

Total: 28

Sophomore Year

ENGL 2130 - Topics in American Literature Credit: 3. or

ENGL 2235 - Topics in British Literature Credit: 3. or

ENGL 2330 - Topics in World Literature Credit: 3.

COMM 2025 - Fundamentals of Communication Credit: 3. or
PC 2500 - Communicating in the Professions Credit: 3.

Social/Behavioral Sciences Elective² Credit: 3.
ECE 2001 - Computer-Aided Engineering in ECE Credit: 1.
MATH 2110 - Calculus III Credit: 4.
MATH 2120 - Differential Equations Credit: 3.
PHYS 2110 - Calculus-based Physics I Credit: 4.
PHYS 2120 - Calculus-based Physics II Credit: 4.
ECE 2010 - Electric Circuits I Credit: 3.
ECE 2011 - Electrical Engineering Lab I Credit: 1.
ECE 2020 - Electric Circuits II Credit: 3.
ECE 2110 - Introduction to Digital Systems Credit: 3.
Total: 35

Junior Year

ECE 3010 - Signals and Systems Credit: 3.
ECE 3020 - Discrete-Time Signals and Systems Credit: 3.
ECE 3060 - Electrical Engineering Lab II Credit: 1.
ECE 3130 - Microcomputer Systems Credit: 4.
ECE 3300 - Electronics I Credit: 3.
ECE 3310 - Electronics II Credit: 3.
ECE 3510 - Electromagnetic Fields I Credit: 3.
ECE 3920 - Professional Issues in Electrical and Computer Engineering Credit: 1.
EE Breadth Electives³ Credit: 9 6.
EE Lab Elective³ Credit: 1.
MATH 3470 - Introductory Probability and Statistics Credit: 3.
VE 3400 - Introduction to Automotive Systems Credit: 3.
Total: 34

Senior Year

VE 4100 - Senior Design Project I Credit: 3.
VE 4200 - Senior Design Project II Credit: 3.
VE 4500 Reliability and Quality Engineering Credit: 3.
VE 3500 Sensors, Transducers and Instrumentation Credit: 3.
EE Vehicle Elective³: Credit 3
~~EE Depth Electives³ Credit: 6.~~
EE Breadth Elective³ Credit: 3 6.
EE Senior Elective³ Credit: 3
EE Lab Elective³ Credit: 1.
Humanities/Fine Arts Electives² Credit: 6.
~~Career Electives³ Credit: 6.~~
Total: 31

Notes:

¹ This course is not included in the 128-hour curriculum.

² Select from University approved list.

³ Select from ECE Department approved list.



Curriculum Comparison Table for a Revised or New Concentration

Curriculum Comparison Table

Program: BSEE

Proposed change: Addition of Vehicle Engineering Concentration

Current or Existing (128)*			Proposed (Revised or New) (128)		
Name of the Concentration: Mechatronics			Name of the Concentration: Vehicle Engineering		
<i>Rubric</i>	<i>Title</i>	<i>SCH</i>	<i>Rubric</i>	<i>Title</i>	<i>SCH</i>
General Education			General Education		
		36			36
	ENGL 1010 - Writing I	3		ENGL 1010 - Writing I	3
	ENGL 1020 - Writing II	3		ENGL 1020 - Writing II	3
	COMM 2025 - Introduction to Speech Communication or PC 2500 - Communicating in the Professions	3		SPCH 2410 - Introduction to Speech Communication or PC 2500 - Communicating in the Professions	3
	MATH 1910 - Calculus I	4		MATH 1910 - Calculus I	4
	ENGL 2130 - American Literature or ENGL 2230 - British Literature or ENGL 2330 - World Literature	3		ENGL 2130 - American Literature or ENGL 2230 - British Literature or ENGL 2330 - World Literature	3
	Humanities and/or Fine Arts Electives	6		Humanities and/or Fine Arts Electives	6
	Social/Behavioral Sciences Electives	6		Social/Behavioral Sciences Electives	6
	CHEM 1010 - Introduction to Chemistry I	4		CHEM 1010 - Introduction to Chemistry I	4
	PHYS 2110 - Calculus-based Physics I	4		PHYS 2110 - Calculus-based Physics I	4
Major Core (Required)			Major Core (Required)		
		57			57
	MATH 1920 Calculus II	4		MATH 1920 Calculus II	4
	MATH 2010 Matrix Algebra	3		MATH 2010 Matrix Algebra	3
	CSC 1300 Intro. to Problem Solving & Computer Programming	4		CSC 1300 Intro. to Problem Solving & Computer Programming	4
	MATH 2120 Differential Equations	3		MATH 2120 Differential Equations	3
	ECE 2010 Electric Circuits I	3		ECE 2010 Electric Circuits I	3
	ECE 2011 Electrical Engineering Lab. I	1		ECE 2011 Electrical Engineering Lab. I	1
	<i>MATH 2110 Calculus III</i>	4		<i>MATH 2110 Calculus III</i>	4
	PHYS 2120 Calculus-based Physics II w/Lab.	4		PHYS 2120 Calculus-based Physics II w/Lab.	4
	ECE 2001 Computer Aided Engr. in ECE	1		ECE 2001 Computer Aided Engr. in ECE	1
	ECE 2020 Electric Circuits II	3		ECE 2020 Electric Circuits II	3
	ECE 2110 Intro. to Digital Systems	3		ECE 2110 Intro. to Digital Systems	3
	ECE 3010 Signals & Systems	3		ECE 3010 Signals & Systems	3
	ECE 3060 Electrical Engineering Lab. II	1		ECE 3060 Electrical Engineering Lab. II	1
	ECE 3300 Electronics I	3		ECE 3300 Electronics I	3
	ECE 3130 Microcomputer Systems	4		ECE 3130 Microcomputer Systems	4
	ECE 3510 Electromagnetic Fields I	3		ECE 3510 Electromagnetic Fields I	3
	ECE 3020 Discrete-Time Signals & Systems	3		ECE 3020 Discrete-Time Signals & Systems	3
	ECE 3920 Professional Issues in ECE	1		ECE 3920 Professional Issues in ECE	1
	MATH 3470 Intro. Probability & Statistics	3		MATH 3470 Intro. Probability & Statistics	3
	EE Senior Elec	3		EE Senior Elec	3
Concentration			Concentration		
		35			35
	ENGR 1110 Engineering Graphics	2		ECE 3310 - Electronics II	3

CEE 2110 Engineering Mechanics - Statics	3	EE Breadth Electives	12
ECE 3160 Digital Systems Lab.	1	EE Lab Electives	2
ME 2330 Engineering Mechanics - Dynamics	3	VE 3400 - Introduction to Automotive Systems and Systems Integration	3
ME 3610 Dynamics of Machinery	3	VE 4500 Reliability and Quality Engineering	3
ECE 3210 Control System Analysis	3	VE 3500 Sensors, Transducers and Instrumentation	3
ECE 3260 Control System Lab.	1	EE Vehicle Elective	3
ECE 3270 Prog. Logic Controller Lab.	1	VE 4961 - Capstone Design I	3
ECE 3610 Intro. to Power Systems	3	VE 4971 - Capstone Design II	3
ECE 4140 Embedded System Design	3		
ECE 4210 Control System Design I	3		
ECE 4961 Capstone Design I	3		
ECE 4971 Capstone Design II	3		
ME 4140 Intro. to Robotics and Intelligent Machines Engineering	3		
<i>Electives</i>	0	<i>Electives</i>	0
Total	128	Total	128

* Include all current concentrations in comparison, expanding the table as needed.

VE 3400 Introduction to Automotive Systems

Required Course for VE Concentration

Catalog Description:

Lec. 3. Credit 3.

Prerequisites: Junior standing in engineering; consent of instructor.

Introduction to vehicle as a complex system, interactions of the subsystems in terms of overall performance. Overview of propulsion systems, suspensions and steering systems, tire-road interface, structural behavior and crash worthiness, materials and manufacturing, driver-passenger vehicle interactions, and onboard electronics.

Math & Basic Sciences: 0 credits

Engineering Topics: 3 credits

General Education: 0 credits

Other: 0 credits

Course Coordinator: Dale A. Wilson (AOC Coordinator)

Contains significant design

Text Book(s) and Supplemental Material(s):

Automotive Engineering Fundamentals, R. Stone and J. Ball, SAE International, 2004

Course Goal(s): See above catalog description

Instructional Outcomes for the Course:

Upon completion of this course, the student will be able to:

- Describe the workings of an automobile
- Understand the basic components, subsystems and major systems of a vehicle and their interactions
- Have knowledge on the propulsion, suspension, steering, onboard electronics and other systems
- Know the basics of materials and manufacturing methods in vehicle production.

ABET Criterion 3 Student Outcomes addressed by this Course:

3a. an ability to apply knowledge of mathematics, science, and engineering.

3c. an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.

3k. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Course Topics:

Introduction and Overview

Basics of Propulsion Systems- Thermodynamics of Prime Movers

Transmission and Driveline Systems

Steering and Suspension Systems

Brakes and Tires, Road Interaction

Onboard Electronics

Vehicle Aerodynamics and Performance

Alternate Vehicles

Mass Production, Materials and Manufacturing

VE 3500 Sensors, Transducers and Instrumentation

Required Course for VE Concentration

Catalog Description:

Lec. 2. Lab. 2. Credit 3.

Prerequisite: **ECE 2010**; **PHYS 2120**; consent of instructor.

Introduction to sensors used in vehicles including: oxygen, tire pressure, emission, temperature, blind spot monitoring, etc. Focus on principles of measurements, theory of instruments and sensors for measuring typical physical quantities in mechanical and electrical systems. Calibration, measurement uncertainty and noise.

Math & Basic Sciences: 0 credits

Engineering Topics: 3 credits

Contains significant design

General Education: 0 credits

Other: 0 credits

Course Coordinator: Dale A. Wilson

Text Book(s) and Supplemental Material(s):

Measurement Systems: Applications and Design, E. Doebelin, McGraw-Hill, 2004

Course Goal(s): See above catalog description

Instructional Outcomes for the Course:

Upon completion of this course, the student will be able to demonstrate a working knowledge of:

- Fundamentals of measurement theory, including errors & uncertainty, data validity, static & dynamic calibration, standards, use of statistics in data analysis.
- Measurement techniques for velocity, acceleration, force, torque, pressure/vacuum, temperature applicable to vehicle systems. Application and use of measurement systems via hands-on lab exercises.
- Design of experiments that implement the measurement techniques.
- Formal lab report writing.

ABET Criterion 3 Student Outcomes addressed by this Course:

3a. an ability to apply knowledge of mathematics, science, and engineering.

3b. an ability to design and conduct experiments, as well as to analyze and interpret data

3e. an ability to identify, formulate, and solve engineering problems.

3g. an ability to communicate effectively

3k. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Course Topics:

Introduction to Measurements

Basic Instrumentation

Sensors and Transducers

Velocity and Acceleration Measurement

Force and Torque Measurement

Pressure and Vacuum Measurement

Temperature Measurement

Other Measurements Useful for Vehicle Sensing and Control

VE 4100 Capstone Design Experience I
Required Course for VE Concentration

Catalog Description:

Lec 2, Lab 2, Credit 3

Prerequisites: VE 3400; senior standing in engineer; consent of instructor

Principles of engineering design with emphasis on contemporary industrial design processes and engineering economics with applications to Hybrid Baja design. First Semester: Development phase for capstone team design project in vehicle engineering: preliminary design, supporting analyses and drawings with bill of materials.

Math & Basic Sciences: 0 credits

Engineering Topics: 2 credits

General Education: 0 credits

Other: 0 credits

Course Coordinator: Dale A. Wilson

Contains significant design

Text Book(s) and Supplemental Material(s):

Course Notes

Course Goal(s):

The goals of this course is to provide a culminating experience for students to use material taught in the BSVE curriculum to address a customer's needs and help a real-world client design or improve a system. Students will use a system design process, discover system requirements, identify project and technical risks, and develop a project plan and schedule. Students will communicate orally and in writing. A series of design reviews will monitor project goals, schedule, risk and progress.

Instructional Outcomes for the Course:

Upon completion of these courses, the student will be able to:

- Engage in the various elements of the engineering design process [c,e,g,h,i,k]
- Complete a group-based, hands-on, capstone design project [a,c,d,e,f,g,h,j,k,l]
- Design a systems incorporating control devices[a,k,l]
- Know product liability issues and safety concerns[f,j]
- Understand failure mode and effect analysis [f,h,j]
- Appreciate the impact of engineering design on ethical and societal concerns [f,h,i,l]
- Work in teams on an engineering design project [c,d,g,i]
- Know the impact of engineering design on ethical and societal concerns [f,h,i]
- Communicate through written and oral reports [b,d,g]

- Apply cost estimation techniques (c,j,k,l)

Criterion 3 Student Outcomes addressed by this Course:

ABET:

- a. an ability to apply knowledge of mathematics, science, and engineering;
- b. an ability to design and conduct experiments, as well as to analyze and interpret data;
- c. an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability;
- d. an ability to function on multidisciplinary teams;
- e. an ability to identify, formulate, and solve engineering problems;
- f. an understanding of professional and ethical responsibility;
- g. an ability to communicate effectively;
- h. the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context;
- i. a recognition of the need for, and an ability to engage in life-long learning;
- j. a knowledge of contemporary issues;
- k. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Course Topics:

1. Needs Analysis
2. Quality Function Deployment and HoQ
3. Project Management
4. Product Design Specifications
5. Concept Generation and Selection
6. Design and Tolerance Analysis
7. Bill of Materials
8. Failure Mode and Effect Analysis
9. Material Selection
10. Design for X
11. Design Project - Design and fabrication

VE 4200 Capstone Design Experience II

Required Course for VE Concentration

Catalog Description:

Lec 1, Lab 4, Credit 3

Prerequisites: VE 3500; VE 4100; consent of instructor

Secod semester of the year long Capstone Design Project Course - Prototyping and testing phase for capstone team design project. Final design reporting (written and oral).

Math & Basic Sciences: 0 credits

Engineering Topics: 2 credits

General Education: 0 credits

Other: 0 credits

Course Coordinator: Dale A. Wilson

Contains significant design

Text Book(s) and Supplemental Material(s):

Course Notes

Course Goal(s):

The goals of this course is to provide a culminating experience for students to use material taught in the BSVE curriculum to address a customer's needs and help a real-world client design or improve a system. Students will use a system design process, discover system requirements, identify project and technical risks, and develop a project plan and schedule. Students will communicate orally and in writing. A series of design reviews will monitor project goals, schedule, risk and progress.

Instructional Outcomes for the Course:

Upon completion of these courses, the student will be able to:

- Engage in the various elements of the engineering design process [c,e,g,h,i,k]
- Complete a group-based, hands-on, capstone design project [a,c,d,e,f,g,h,j,k,l]
- Design a systems incorporating control devices[a,k,l]
- Know product liability issues and safety concerns[f,j]
- Understand failure mode and effect analysis [f,h,j]
- Appreciate the impact of engineering design on ethical and societal concerns [f,h,i,l]
- Work in teams on an engineering design project [c,d,g,i]
- Know the impact of engineering design on ethical and societal concerns [f,h,i]
- Communicate through written and oral reports [b,d,g]
- Apply cost estimation techniques (c,j,k,l)

Criterion 3 Student Outcomes addressed by this Course:

ABET:

- a. an ability to apply knowledge of mathematics, science, and engineering;
- b. an ability to design and conduct experiments, as well as to analyze and interpret data;
- c. an ability to design a system, component, or process to meet desired needs within realistic ;constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability;
- d. an ability to function on multidisciplinary teams;
- e. an ability to identify, formulate, and solve engineering problems;
- f. an understanding of professional and ethical responsibility;
- g. an ability to communicate effectively;
- h. the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context;
- i. a recognition of the need for, and an ability to engage in life-long learning;
- j. a knowledge of contemporary issues;
- k. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Course Topics:

1. Needs Analysis
2. Quality Function Deployment and HoQ
3. Project Management
4. Product Design Specifications
5. Concept Generation and Selection
6. Design and Tolerance Analysis
7. Bill of Materials
8. Failure Mode and Effect Analysis
9. Material Selection
10. Design for X
11. Design Project - Design and fabrication

VE 4500 Reliability and Quality Engineering

Required Course for VE Concentration

Catalog Description:

Lec. 3. Credit 3

Prerequisite: MATH 3470

Basic engineering and statistics principles as well as advanced tools focusing on design of experiment, statistical process control and reliability engineering are presented. Theoretical and practical methods to improve the capability of systems to perform their designated functionalities, to predict the probability of their functioning without failures in certain environments for desired periods, to assess their maintainability, availability and safety based on sampled data, and to make decisions on corrective and mitigation.

Math & Basic Sciences: 0 credits

Engineering Topics: 3 credits

General Education: 0 credits

Other: 0 credits

Course Coordinator: Dale A. Wilson (AOC Coordinator)

Contains significant design

Text Book(s) and Supplemental Material(s):

Introduction to Quality and Reliability Engineering, R. Jiang, Springer, 2015.

Course Goal(s): See above catalog description

Instructional Outcomes for the Course:

Upon completion of this course, the student will be able to:

- Develop an understanding of best practice approaches to Quality Engineering within contemporary industrial environments in Operations Quality, Vendor Quality and Process Control.
- Apply basic quality problem solving tools.
- Develop, apply and interpret relevant statistical approaches in support of product/process characterization and control, and
- Understand the fundamental concepts and methodologies used in reliability engineering.

ABET Criterion 3 Student Outcomes addressed by this Course:

3a. an ability to apply knowledge of mathematics, science, and engineering.

3e. an ability to identify, formulate, and solve engineering problems.

3k. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Course Topics:

Introduction and Fundamentals: Quality Control vs. Assurance, Stages of Quality Control, Elements of Quality Cost, Attributes/Variables & Data Types/Measurement Scales, Defect Classification methods.

Managing Vendor Quality: Vendor Management, Operating Characteristic Theory

Quality Assurance Standards: Role of Standards, ISO9001:2008 Quality standard,

Operations Quality Control, Operations Quality Metrics (PPM, DPM, DPMO, RolledThruYield),

Process Capability/Process Control: Process capability

Introduction to Six Sigma Structured Problem Solving.

Fundamentals of Reliability Engineering: BathTub Curve, Life Cycle Costs., MBTF/MTTR, Failures rates, Censored Data.

MEMORANDUM

TO: The University Curriculum Committee

VIA: The Department Curriculum Committee

VIA: The English Department

VIA: The Arts and Sciences Curriculum Committee

FROM: Ted Pelton, English Department Chair

DATE: September 14, 2017

RE: Curriculum revisions
(To become effective Spring 2018)

I. Course Change

A. Change the course description of THEA 3600-Film Studies, Lec. 3. Credit 3.

From:

This course focuses on the film work of significant movie directors, performers, cinematographers or on a particular film genre. The student will gain a sense of the work of that director, performer, cinematographer, as well as the challenges they face putting together a film.

To:

This course focuses on the film work of significant movie directors, performers, cinematographers or on a particular film genre. The student will gain a sense of the work of that director, performer, cinematographer, as well as the challenges they face putting together a film. **Course may be repeated provided the content is different each time.**

Course Overview: The overall goal in the class is to understand how film works, who makes film happen, why films are significant and how students can better appreciate and support films in their communities.

Justification: Film Studies is already a popular course offering in the Theatre Concentration. As the genre of film is different each time the class is offered, students should have the option to repeat the course if they choose.

Prerequisite: None. Course may be repeated provided the content is different each time.

The course fulfills the following English Department goals:

1. Requires students to write and speak clearly, read perceptively, and think critically;
2. Enriches students' cultural experience through better understanding of how and why theatre/film happens;
3. Prepares students for all professions requiring a high level of expression, imagination, and intellectual and cultural activity.

Attention: Adding this course number will require no additional funds or personnel.

REQUESTED COURSE CHANGES

TO: University Curriculum Committee

VIA: College of Agriculture and Human Ecology Curriculum Committee *MSwofford*

VIA: Dr. Dennis Duncan, Director, School of Agriculture *DDuncan*

FROM: Dr. Liz Mullens, Dean, College of Agriculture and Human Ecology *LSMullens*

DATE: 10/01/2017

RE: Course and Curriculum Changes

Course Addition:

- A. AGCM 2010. Introduction to Agricultural Communications. Lec. 2 Lab. 2 Credit 3
Prerequisites: None. An introduction to agricultural communications emphasizing agricultural media production in print and digital forms.

Justification: The current curriculum for agricultural communications does not provide adequate preparation for careers within the discipline. This course will provide students with the introductory knowledge and skills needed for careers in agricultural communications.

- B. AGCM 3010. Theory and Practice of Agricultural Publishing Lec. 2 Lab. 2 Credit 3
Prerequisite: AGCM 2010. An introduction to the agricultural publishing industry, including the role magazines play in agricultural communications.

Justification: AGCM 3010 will introduce students to a specific sector within the field of agricultural communications. The course will begin preparing students with the requisite skills needed in many career options within the industry.

- C. AGCM 4890. Agricultural Publication Production. Lec. 2 Lab. 2 Credit 3
Prerequisite: AGCM 3010. An authentic immersion into organizing, funding, and managing a professional, agricultural publication business.

Justification: This course will provide students with real-world experience by mirroring a professional, agricultural publication company. Students will act as the professional magazine staff in developing an annual magazine for the School of Agriculture at Tennessee Tech.

Curriculum Change:

Additions:

- A. AGCM 2010. Introduction to Agricultural Communications. Lec. 2. Lab. 2 Credit 3. to the following concentrations:

Agricultural Communications

Justification: AGCM 2010 would be a proper introductory course for students in the Agricultural Communications concentration. Their current introductory course is geared toward school-based agricultural education and agricultural extension education.

- B. AGCM 3010. Theory and Practice of Agricultural Publishing. Lec. 2. Lab. 2 Credit 3. to the following concentrations:

Agricultural Communications

Justification: This course will introduce students to the field of publishing in agricultural industries. Current requirements force students to learn how to become teachers, which doesn't align with their career goals.

- C. AGCM 4890. Agricultural Publication Production. Lec. 2. Lab. 2 Credit 3. to the following concentrations:

Agricultural Communications

Justification: This will serve as a capstone experience for students in the Agricultural Communications concentration, allowing them real-world experience organizing and managing an agricultural publication.

Deletions:

- A. AGED 2120. Introduction to Agricultural and Extension Education (credit 3). from the following concentrations:

Agricultural Communications

Justification: This course is not suitable for students pursuing careers in Agricultural Communications.

- B. AGED 4200. Methods and Techniques of Teaching in Agricultural and Extension Education (credit 3) from the following concentrations:

Agricultural Communications

Justification: This course is not suitable for students pursuing careers in Agricultural Communications.

- C. AGED 4300. Development of Youth Programs in Agricultural and Extension Education (credit 3). from the following concentrations:

Agricultural Communications

Justification: This course is not suitable for students pursuing careers in Agricultural Communications.

Effective Date: Spring 2018. This date is effective for all changes requested.

REQUESTED COURSE CHANGES

TO: University Curriculum Committee

VIA: College of Agriculture and Human Ecology Curriculum Committee

FROM: Dr. Dennis Duncan, Director School of Agriculture

DATE: September 26, 2017

RE: Course addition

Course Changes:

I. Course Additions

A. AGET 4510/5510 Agricultural Remote Sensing. Lec.2 Lab 2 Credit 3.

Justification: Remote sensing (RS) has been found to be a valuable tool in evaluation, monitoring and management of land, water and crop resources. Agricultural production systems are highly vulnerable to variations in climate, soil and topography of different regions. For sustainable agricultural management, all these factors need to be analyzed on spatial/temporal basis. The advanced techniques like remote sensing, global positioning system and geographical information system can be of great use for their assessment and management. Remote sensing is a very important tool having a wide range of applications to tackle these issues. RS technologies have a variety of applications in agriculture including crop discrimination, soil moisture estimation, crop growth monitoring / stress detection, crop inventory, site-specific management / precision agriculture and crop acreage estimation.

This course will provide the student with an opportunity to gain an appreciation of the field of remote sensing. The student will learn how to develop a comprehension of concepts and theories used in remote sensing and integrate them into a skill set using state-of-the-art technology.

Prerequisite: None

Effective Date: January 1, 2018.

Financial impact: Eighty-five percent of the course tuition of each student outside the College of Agriculture and Human Ecology (CAHE) who complete this course would be acquired by the CAHE.

TENNESSEE TECH UNIVERSITY
SCHOOL OF AGRICULTURE
AGET 4510/5510
AGRICULTURAL REMOTE SENSING

DATES, TIME, CLASSROOM, NUMBER OF CREDIT HOURS, SEMESTER

Lecture hours: TBD

Credit hours: 3

Semester: Spring, 2018

INSTRUCTOR INFORMATION

Dr. D. Keith Morris

Office: Oakley Hall Room 131

Phone: (931) 372-6134

e-mail: kmorris@tntech.edu

OFFICE HOURS: TBD

COURSE INFORMATION

PREREQUISITES (IF APPLICABLE)

None

TEXTS AND REFERENCES

Required: Remote Sensing and Image Interpretation Lillesand and Kiefer 6th Edition ISBN 978-0-470-05245-7

References (if applicable):

COURSE DESCRIPTION

This course will teach the fundamentals of remote sensing concepts and software used in agricultural, environmental, and natural resource applications.

COURSE OBJECTIVES/STUDENT LEARNING OUTCOMES

This course provides the student with an opportunity to gain an appreciation of the field of remote sensing. The student will demonstrate how to develop a comprehension of concepts and theories used in remote sensing and integrate them into a project using state-of-the-art technology. Students will demonstrate depth in a specialty area to support their professional goals. Specific objectives of the course include:

1. Demonstrate how use Remote Sensing (RS) as it relates to GIS and GPS Technologies
2. Demonstrate the importance of spatial, spectral and temporal resolutions in RS analysis
3. Demonstrate how to use RS for documenting land resources
4. Demonstrate where to find RS Information

MAJOR TEACHING METHODS

(e.g. lectures, labs, demonstrations, discussion, reading, or written assignments, etc.)

Lecture, demonstration, reading assignments, Project

TOPICS TO BE COVERED

1. Introduction to class & Introduction to Remote Sensing
2. Concepts of Remote Sensing
3. Elements of Photographic Systems (History)
4. Basic Principles of Photogrammetry
5. Multispectral, Thermal and Hyperspectral
6. Digital Image Interpretation

GRADING AND EVALUATION PROCEDURES

Students are expected to complete all assignments and submit them by the date and time they are due. Late assignments will have their grade reduced by 10 points for every 24 hours it is late. (I do not count Sat. / Sun.).

Two exams will be administered during the semester. Examination dates may be changed at the discretion of the instructor.

Graduate students will be required to complete a semester project

Grading system

Activity	Percentage of Grade
Labs (averaged) undergraduate	20
Labs (averaged) graduate	10
Quizzes (averaged)	10
GPS Labs	10
Two-semester exams	60
Project (Graduate)	10

GRADING SCALE (IF APPLICABLE)

Letter Grade	Grade Range
A	90-100
B	80-89
C	70-79
D	60-69
F	59 and below

COURSE POLICIES

STUDENT ACADEMIC MISCONDUCT POLICY

Maintaining high standards of academic integrity in every class at Tennessee Tech is critical to the reputation of Tennessee Tech, its students, alumni, and the employers of Tennessee Tech graduates. The Student Academic Misconduct Policy describes the definitions of academic misconduct and policies and procedures for addressing Academic Misconduct at Tennessee Tech. For details, view the Tennessee Tech's Policy 217 – Student Academic Misconduct Policy at [Policy Central](#).

ATTENDANCE POLICY:

Attendance is expected at all lectures and activities. Any material missed with either an excused or unexcused absence is the responsibility of the student to obtain or make-up.

ASSIGNMENTS AND RELATED POLICY

B. Homework Assignments

Written or reading assignments will be assigned at the instructor's discretion. When possible, some of these will be available in iLearn. They will be found under the Quizzes section, although these questions will be homework and not actual quizzes. Homework questions will be available in iLearn under the Content/assignments heading. The student should enter their answers before the due date and time under the Quizzes tab.

C. Quizzes

Announced or unannounced (pop) quizzes may be given at any time in lecture or lab. Missed quizzes cannot be made up. One quiz grade will be dropped at the end of the semester.

DISABILITY ACCOMMODATION

Students with a disability requiring accommodations should contact the Office of Disability Services (ODS). An Accommodation Request (AR) should be completed as soon as possible, preferably by the end of the first week of the course. The ODS is located in the Roaden University Center, Room 112; phone 372-6119. For details, view the Tennessee Tech's Policy 340 – Services for Students with Disabilities at [Policy Central](#).

REQUESTED COURSE CHANGES

TO: University Curriculum Committee

VIA: College of Agriculture and Human Ecology Curriculum Committee

FROM: Dr. Dennis Duncan, Director School of Agriculture

DATE: September 26, 2017

RE: Course addition

Course Changes:

I. Course Additions

A. AGET 3540 Fundamentals of GIS and GPS in Agriculture and Natural Resources . Lec. 2 Lab 2 Credit 3.

Justification: Geographic Information Systems (GIS) and related technologies are integral and essential in modern agricultural production and natural resources management disciplines. The key to realizing the promise of a dynamic GIS in a 21st century agriculture production system is the development of connections between a relational database (input layers) and the decision support system (output layers). Both agriculturalist and natural resource managers in the 21st century will be required to make those connections.

This course will provide students with a fundamental knowledge of GIS software and GPS hardware.

Effective Date: January 1, 2018.

Financial impact: Eighty-five percent of the course tuition of each student outside the College of Agriculture and Human Ecology (CAHE) who complete this course would be acquired by the CAHE.

TENNESSEE TECH UNIVERSITY

SCHOOL OF AGRICULTURE

AGET 3540

FUND. OF GIS & GPS IN AGRICULTURE AND NATURAL RESOURCES

DATES, TIME, CLASSROOM, NUMBER OF CREDIT HOURS, SEMESTER

Lecture hours: TBD

Credit hours: 3

Semester: Spring, 2018

INSTRUCTOR INFORMATION

Dr. D. Keith Morris

Office: Oakley Hall Room 131

Phone: (931) 372-6134

e-mail: kmorris@tntech.edu

OFFICE HOURS: TBD

COURSE INFORMATION

PREREQUISITES (IF APPLICABLE)

NONE

TEXTS AND REFERENCES

Required: Getting to Know ArcGIS for ArcGIS 10.2 & 10.3, fourth edition, ISBN: 978-1-58948-382-8..

References (if applicable):

COURSE DESCRIPTION

This introductory course will teach fundamentals of the Global Positioning System (GPS) and Geographic Information System (GIS) concepts, equipment, and software used in agricultural, environmental, and natural resource applications.

COURSE OBJECTIVES/STUDENT LEARNING OUTCOMES

The student will demonstrate how to gather information from the internet and collect GPS data and integrate them into a GIS project using state-of-the-art technology. Students will demonstrate depth in a specialty area to support their professional goals. Specific objectives of the course include:

1. The student will be able to use GIS technologies to solve practical problems.
2. The student will acquire and demonstrate the ability to collect and present GPS/GIS data and results in an informative and professional manner as it applies to agriculture and natural resources.
3. The student will identify and understand the environmental implications of spatial technologies on agricultural, environmental and natural resource issues

MAJOR TEACHING METHODS

(e.g. lectures, labs, demonstrations, discussion, reading, or written assignments, etc.)

Lecture, demonstration, reading assignments, Computer assignments

TOPICS TO BE COVERED

1. Introduction to class, introduce GIS exercises
2. Introduction to Geographic Information Systems
3. Interacting with maps and data
4. Exploring online resources
5. Working with coordinate systems and projections
6. Symbolizing features
7. Classifying features
8. Labeling features
9. Making maps for presentation
10. Introduction to GPS, GPS lab
11. Building geodatabases
12. Creating and editing features
13. Querying data

14. Selecting features by location
15. Joining and relating data
16. Preparing data for analysis
17. Geoprocessing vector data
18. Using spatial analyst

GRADING AND EVALUATION PROCEDURES

Students are expected to complete all assignments and submit them by the date and time they are due. Late assignments will have their grade reduced by 10 points for every 24 hours it is late. (I do not count Sat. / Sun.).

Two exams will be administered during the semester. Examination dates may be changed at the discretion of the instructor.

Grading system

Activity	Percentage of Grade
Labs (averaged)	50
Quizzes (averaged)	10
Mid-Term exam	20
Final Exam	20

GRADING SCALE (IF APPLICABLE)

Letter Grade	Grade Range
A	90-100
B	80-89
C	70-79
D	60-69
F	59 and below

COURSE POLICIES

STUDENT ACADEMIC MISCONDUCT POLICY

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ATTENDANCE POLICY:

Attendance is expected at all lectures and labs. Any material missed with either an excused or unexcused absence is the responsibility of the student to obtain or make-up.

ASSIGNMENTS AND RELATED POLICY

- A. No make-up exams or quizzes will be given for a scheduled exam/quiz or a pop quiz unless the student has a legitimate documented excuse (e.g. a letter from a physician stating that he/she is/was sick or a letter from court clerk that he/she must appear in court). If you know that you will be missing class, let me know in advance. **Make-up exercises have to be completed within one week of the absence. ½ credit will be given for each made-up exercise.**

DISABILITY ACCOMMODATION

Students with a disability requiring accommodations should contact the Office of Disability Services (ODS). An Accommodation Request (AR) should be completed as soon as possible, preferably by the end of the first week of the course. The ODS is located in the Roaden University Center, Room 112; phone 372-6119. For details, view the Tennessee Tech's Policy 340 – Services for Students with Disabilities at [Policy Central](#).

REQUESTED COURSE CHANGES

TO: University Curriculum Committee

VIA: College of Agriculture and Human Ecology Curriculum Committee

FROM: Dr. Dennis Duncan, Director School of Agriculture

DATE: September 26, 2017

RE: Course addition

Course Changes:

I. Course Additions

A. AGET 3520 Agricultural Spatial Technologies I. Lec. 2 Lab. 2 Credit 3.

Justification: Agricultural Spatial Technology (Precision Agriculture) is a management strategy that uses a suite of information technologies such as GPS, GIS, VRT (variable rate technology) and RS (remote sensing) to bring data from multiple sources to bear on decisions associated with crop production. These technologies require a specialized set of skills for the 21st century technologist/agronomist.

This course will be the first in a series of courses that will equip student with the necessary skill set(s) to compete in the ever changing world of production agriculture.

Prerequisite: AGRN 2300 - Soils

Effective Date: August 1, 2018.

Financial impact: Eighty-five percent of the course tuition of each student outside the College of Agriculture and Human Ecology (CAHE) who complete this course would be acquired by the CAHE.

TENNESSEE TECH UNIVERSITY
SCHOOL OF AGRICULTURE
AGET 3520
AGRICULTURAL SPATIAL TECHNOLOGY I

DATES, TIME, CLASSROOM, NUMBER OF CREDIT HOURS, SEMESTER

Lecture hours: TBD

Credit hours: 3

Semester: Fall, 2018

INSTRUCTOR INFORMATION

Dr. D. Keith Morris

Office: Oakley Hall Room 131

Phone: (931) 372-6134

e-mail: kmorris@tntech.edu

Office Hours: TBD

COURSE INFORMATION

PREREQUISITES (IF APPLICABLE) - AGRN 2300 - Soils

TEXTS AND REFERENCES

Required: The Precision-Farming Guide for Agriculturists, by Morgan and Ess, Deere & Company, 2010, ISBN: 0-86691-358-0 3rd Edition.

References (if applicable):

COURSE DESCRIPTION:

Principles and applications of geospatial technologies supporting precision agriculture/farming and planning for natural resource data management. Global positioning system (GPS), geographic information system (GIS), remote sensing (RS), yield monitoring and mapping, Internet information access, and computer software for management decisions.

COURSE OBJECTIVES/STUDENT LEARNING OUTCOMES

This course covers the use of information and technologies that are used for precision agriculture and its applications. Specifically, this course will:

1. Describe what precision agriculture is and why it is important.
2. Explain the basic principles and applications of the Global Positioning System (GPS).
3. Become familiar with Geographic Information System (GIS) software and be able to utilize it.
4. Demonstrate the basics of project design using GIS data sets.
5. Describe what yield monitoring/mapping systems are and their applications

MAJOR TEACHING METHODS

(e.g. lectures, labs, demonstrations, discussion, reading, or written assignments, etc.)

Lecture, demonstration, reading assignments, Project

TOPICS TO BE COVERED

1. Introduction to class, introduce precision farming, GPS, GPS fundamentals
 - a. GPS Data Collection
 - b. GPS: programmable options which modify precision, accuracy, repeatability and reliability
 - c. Differential Corrections
2. Introduction to Geographic Information Systems (GIS) fundamentals
 - a. Geo-referenced data processing
3. Exploring GIS concepts:
 - a. Coordinate systems, data organization, file formats, etc.
 - b. Boundary and acreage calculations

4. Yield Monitors:

Hardware: sensor calibration, grain flow, moisture meters, distance sensors

- a. Yield data processing: mapping, data filtering
- b. Yield data processing: statistical analysis
- c. Yield data processing: SMS Advanced

5. Emerging Technologies for Site-Specific Agriculture

GRADING AND EVALUATION PROCEDURES

Students are expected to complete all assignments and submit them by the date and time they are due. Late assignments will have their grade reduced by 10 points for every 24 hours it is late. (I do not count Sat. / Sun.).

Three exams will be administered during the semester. Examination dates may be changed at the discretion of the instructor.

Grading system

Activity	Percentage of Grade
Labs (averaged)	10
Quizzes (averaged)	10
Three-semester exams	60
Final Project	20

GRADING SCALE (IF APPLICABLE)

Letter Grade	Grade Range
A	90-100
B	80-89
C	70-79
D	60-69
F	59 and below

COURSE POLICIES

STUDENT ACADEMIC MISCONDUCT POLICY

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ATTENDANCE POLICY:

Attendance is expected at all lectures and activities. Any material missed with either an excused or unexcused absence is the responsibility of the student to obtain or make-up.

Some activities require that students go to Tech Farm and work outside. I will try to let you know ASAP if we will be in the field. Students are expected to dress appropriately: no open toed shoes, warm clothing if the weather is cold/cool. If these labs are missed, they cannot be made up and you will receive a zero for that lab.

ASSIGNMENTS AND RELATED POLICY

B. Homework Assignments

Written or reading assignments will be assigned at the instructor's discretion. When possible, some of these will be available in iLearn. They will be found under the Quizzes section, although these questions will be homework and not actual quizzes. Homework questions will be available in iLearn under the Content/assignments heading. The student should enter their answers before the due date and time under the Quizzes tab.

C. Quizzes

Announced or unannounced (pop) quizzes may be given at any time in lecture or lab. Missed quizzes cannot be made up. One quiz grade will be dropped at the end of the semester.

DISABILITY ACCOMMODATION

Students with a disability requiring accommodations should contact the Office of Disability Services (ODS). An Accommodation Request (AR) should be completed as soon as possible, preferably by the end of the first week of the course. The ODS is located in the Roaden University Center, Room 112; phone 372-6119. For details, view the Tennessee Tech's Policy 340 – Services for Students with Disabilities at [Policy Central](#).

B.S. in Agriculture
 AGRI/Agricultural Communications
 AGRI/AGCM (120 Hrs)

Name _____

T. # _____

AGRICULTURE (50 hrs)

Animal Science

ANS 1200 Intro Animal Science 3 hrs _____

Agronomy

AGRN 1100 Plant Science 3 hrs _____

AGRN 2300 Soils 3 hrs _____

Agribusiness

AGBE 2100 Economics of Ag 3 hrs _____

Agricultural Education

~~AGED 2120 Intro to Ag & Extension 3 hrs _____~~

AGED 3010 Professional Leadership 3 hrs _____

AGED 4150 Comm & Public Relations 3 hrs _____

~~AGED 4200 Methods & Techniques 3 hrs _____~~

~~AGED 4300 Dev of Youth Programs 3 hrs _____~~

Agricultural Communications

AGCM 2010 Introduction to Ag Comm 3 hrs _____

AGCM 3010 Theory & Practice 3 hrs _____

AGCM 4850 Internship 4 hrs _____

AGCM 4860 Internship 4 hrs _____

AGCM 4890 Ag Publication Production 3 hrs _____

Ag Engineering Technology

AGET 2110 Ag Engineering Technology 2 hrs _____

AGET 2115 Ag Engineering Tech Lab 1 hr _____

Or AGET 3110 Natural Resource Systems (2 hrs) _____

AGET 3115 Natural Resource Systems Lab(1 hr) _____

Agriculture

AGR 1020 Connections to Agriculture 1 hr _____

AGR 4930 Senior Seminar 2 hrs _____

Upper Division Ag Electives* (9 hrs)

_____ 3 hrs _____

_____ 3 hrs _____

_____ 3 hrs _____

BUSINESS MANAGEMENT (3 hrs)

BMGT 3720 Bus Communication I 3 hrs _____

COMMUNICATIONS (9 hrs)

ENGL 1010 English Composition I 3 hrs _____

ENGL 1020 English Composition II 3 hrs _____

COMM 2025 Fundamentals 3 hrs _____

Or PC 2500 Communicating in the Professions (3hrs) _____

DECISION SCIENCE (3 hrs)

DS 2810 Computer Applications 3 hrs _____

HISTORY (6 hrs)

HIST 2010 Early U.S. History 3 hrs _____

HIST 2020 Modern U.S. History 3 hrs _____

HUMANITIES (9 hrs)

ENGL 2130 Topics in American Lit 3 hrs _____

Or ENGL 2235 Topics in British Lit (3 hrs) _____

Or ENGL 2330 Topics World Lit (3 hrs) _____

Elective** _____ 3 hrs _____

Elective** _____ 3 hrs _____

JOURNALISM (6 hrs)

2200 Intro to Mass Communication 3 hrs _____

2220 News Reporting & Copy 3 hrs _____

MATHEMATICS (6 hrs)

MATH 1130 College Algebra 3 hrs _____

MATH 1630 Finite Mathematics 3 hrs _____

NATURAL SCIENCES (12 hrs)

CHEM 1010 Intro to Chemistry I 4 hrs _____

CHEM 1020 Intro to Chemistry II 4 hrs _____

BIOL 1114 General Zoology 4 hrs _____

Or BIOL 2110 General Botany (4 hrs) _____

PROFESSIONAL COMMUNICATION (3 hrs)

PC 3500 Rhetoric and the Internet 3 hrs _____

SOCIAL BEHAVIORAL SCIENCES (6 hrs)

Select six hours from the following courses:

ECON 2010 Microeconomics 3 hrs _____

ECON 2020 Macroeconomics 3 hrs _____

PSY 1030 Intro to Psychology (3 hrs) _____

SOC 1010 Intro to Sociology (3 hrs) _____

ELECTIVES (7 hrs)

_____ _____

_____ _____

Ag Comp Exam _____

Senior Exit Exam _____

* No more than one course from any Agriculture discipline (AGBE, AGED, AGET, AGHT, AGRN, and ANS).

**Select from the University approved list.

Tennessee Tech University

School of Agriculture

AGCM 2010. Introduction to Agricultural Communications. Lec. 2 Lab. 2 Credit 3

Spring 2018, 3 credits, Tuesday/Thursday 3:00 pm to 4:50 pm, Oakley Hall 012

Instructor Information

Name: Dr. OP McCubbins

Office Location: Oakley Hall, Room 131

My office hours are on Monday and Wednesday, from 10:30 am through 12:00 pm and by appointment.

You can reach me at 931-372-6047 or at omccubbins@tntech.edu

Course Information

This course does not have any prerequisites. The format will require active participation from each member of the course.

Course Description

Introduction to mass communication, its history, role in society, and especially its role in agriculture. The course will provide an understanding how the importance of mass communication and various communication methods in modern society and will lay the groundwork for an understanding of agricultural news and information as it relates to various audiences.

Course Objectives

We will build on the following primary objectives throughout the term:

1. Describe public relations and its role in agricultural communication.
2. Discriminate between objectives, strategies and tactics and their relative role in an agricultural public relations campaign.
3. Identify the components of a public relations program including the component's target agricultural audience and intended result.
4. Evaluate agricultural public relations campaigns and identify their relative success or failure based on provided return on investment standards.

Textbooks and Materials

Guth, D.W., & Marsh, C. (2012). Public relations: A values driven approach (5th ed.). New York: Allyn & Bacon/Longman. ISBN: 9780205811809

If an alternate format of the text is required, please contact Dr. McCubbins at omccubbins@tntech.edu

Teaching Methods

Written Assignments

You will be required to complete various writing assignments throughout the semester. General format of the written assignment will be at your discretion, but the citation format must adhere to APA 6th Edition guidelines. Eight blog posts are required throughout the semester and should follow basic conventions of grammar, punctuation, spelling, and capitalization.

Field Experience

You will engage in three field experience activities throughout the term. Each field experience will have unique guidelines for completion.

Electronic Portfolio

You will be required to build an electronic portfolio via Google Sites. Additional information will be available on the course website, and during class discussion.

Note to Students

The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary. Changes in dates and topics will be announced in class and may not be communicated in writing.

Grading

Teaching and learning involve a true partnership, with responsibilities incumbent on both teachers and learners. How do we encourage students to assume their responsibility for learning? One way is to clarify our expectations, to make explicit our own values as they pertain to classroom performance.

Grading Scale

A: 100 – 90

B: 89 – 80

C: 79 – 70

F: 69 – 0

Technology Usage

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Accommodation Statement

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Course Schedule

Week 1

Course Introduction. What is agricultural public relations? (Ch. 1)

Week 2

What do agricultural public relations professionals do? (Ch. 2 & 16)

Week 3

History of public relations and the growth of agricultural public relations. (Ch. 3)

Week 4

Agricultural public relations audiences. (Ch. 4)

Week 5

Communication theory, public opinion and agricultural public relations. (Ch.5)

Week 6

Ethics in agricultural public relations. (Ch. 6) Exam 1

Week 7

Public relations research, evaluation, focus groups and surveys. The special insights from agricultural public relations research. (Ch. 7)

Week 8

New Technology and agricultural public relations –Personal Digital Assistants, Global Positioning Systems, the Web and other technologies

Week 9

Spring Break

Week 10

Public relations strategies – Working from company objectives to get to the right strategies for agricultural companies and products. (Ch. 8). Research Memo due

Week 11

Tactics for public relations campaigns and how they work with agricultural publics. (Ch. 9) Exam 2

Week 12

Why you should never say “I want to go into public relations so I don’t have to write.” -- Especially if you want to work in agricultural public relations. (Ch. 10 & 11)

Week 13

Crisis communications and crisis management – real events and how agriculture public relations professionals react. (Ch. 12)

Week 14

Integrated marketing communications, public relations and agriculture – one of the most integrated markets of all. (Ch. 13).

Week 15

Cross cultural communication – a key to agricultural public relations' future. (Ch. 14). Public relations and the law – Agriculture and the first amendment. (Ch. 15). Second case brief due!

Week 16

Final Exam

Tennessee Tech University

School of Agriculture

AGCM 3010. Theory and Practice of Agricultural Publishing Lec. 2 Lab. 2 Credit
3

Fall 2018, 3 credits, Monday, Wednesday 11:15 am to 12:10 pm, Oakley Hall
012

Instructor Information

Name: Dr. OP McCubbins

Office Location: Oakley Hall, Room 131

My office hours are on Monday and Wednesday, from 10:30 am through 12:00 pm and by appointment.

You can reach me at 931-372-6047 or at omccubbins@tntech.edu

Course Information

Prerequisite: AGCM 2010. The format will require active participation from each member of the course.

Course Description

A detailed overview of the agricultural magazine industry including organization and the role magazines play in agricultural communication. Topics include management, economics, content, working with staff members and freelancers. New media, as they relate to the agricultural publishing industry, will also be discussed in the course. Brochures, booklets and other agricultural information sources also will be discussed.

Course Objectives

We will build on the following primary objectives throughout the term:

1. Relate the dynamics of agricultural publications to current conditions in agriculture.
2. Identify and explain the components of magazine production including content and technical aspects.
3. Describe the role agricultural publications play in mass communication.
4. Identify the steps necessary to write, design and produce various printed pieces including brochures, booklets and fact sheets.
5. Appraise a communication problem and describe a published communication piece that can help solve that problem.

Textbooks and Materials

Johnson, S. & Prijatel, P. (2012). *The Magazine from Cover to Cover*. 3rd Ed., New York: Oxford University Press.

If an alternate format of the text is required, please contact Dr. McCubbins at omccubbins@tntech.edu

Teaching Methods

Written Assignments

You will be required to complete various writing assignments throughout the semester. General format of the written assignment will be at your discretion, but the citation format must adhere to APA 6th Edition guidelines. Eight blog posts are required throughout the semester and should follow basic conventions of grammar, punctuation, spelling, and capitalization.

Field Experience

You will engage in three field experience activities throughout the term. Each field experience will have unique guidelines for completion.

Electronic Portfolio

You will be required to build an electronic portfolio via Google Sites. Additional information will be available on the course website, and during class discussion.

Note to Students

The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary. Changes in dates and topics will be announced in class and may not be communicated in writing.

Grading

Teaching and learning involve a true partnership, with responsibilities incumbent on both teachers and learners. How do we encourage students to assume their responsibility for learning? One way is to clarify our expectations, to make explicit our own values as they pertain to classroom performance.

Grading Scale

A: 100 – 90

B: 89 – 80

C: 79 – 70

F: 69 – 0

Technology Usage

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Course Schedule

Week 1

Agricultural publications, magazines and their role in the industry. Magazines in mass communication: Ch. 1

Week 2

The role of advertising. Advertising in agricultural publications as compared to other publication types. Ch. 2

Week 3

History of magazines and magazine trends over time. Ch. 3

Week 4

Trends in agricultural magazines.

Week 5

The social and political role of magazines. Ag magazines in politics and social change. Ch. 4 Exam 1

Week 6

Magazine formulas. Ag publication successes and failures Ch. 5.

Week 7

Magazine business plans – Paid vs. controlled circulation as debated in Ag media. Ch. 6

Week 8

Introduction of media analysis of trade, producer and specialty agricultural publications. Media Analysis Examples. Ch. 7

Week 9

Fall Break

Week 10

Magazine staff structures. Comparing and contrasting Ag. Media Media Analysis Due. Ch. 8

Week 11

Magazine editorial – Story types and content. Ch. 9 Exam 2

Week 12

Magazine designs – how's and why's of the way magazines look. Ag publications compared to general magazines. Ch. 10

Week 13

Magazine production. How it all comes together. Various agricultural publications and how their production styles fit their missions and audiences Ch. 11.

Week 14

Magazines and the law. Ag publication legal issues. Non- magazine agricultural publications including collateral, fact sheets and other printed pieces. Examine the role they play and how they are produced.

Week 15

The future of modern magazines – where to agricultural publications fit?

Week 16

Final Exam

Tennessee Tech University

School of Agriculture

AGCM 4890. Agricultural Publication Production. Lec. 2 Lab. 2 Credit 3

Spring 2019, 3 credits, Monday, Wednesday, Friday 9:00 to 9:50 am, Oakley Hall 012

Instructor Information

Name: Dr. OP McCubbins

Office Location: Oakley Hall, Room 131

My office hours are on Monday and Wednesday, from 10:30 am through 12:00 pm and by appointment.

You can reach me at 931-372-6047 or at omccubbins@tntech.edu

Course Information

Prerequisite: AGCM 3010. The format will require active participation from each member of the course.

Course Description

To produce a magazine through classroom study mirroring a professional magazine staff, and to provide an opportunity for students to have their writing, advertisements, photographs, and artwork published in The School of Ag Magazine.

The School of Ag Magazine is a student-produced magazine for the School of Agriculture at Tennessee Tech University. The magazine is a 4-color publication with distribution to more than 1,500 readers.

Subscribers to the magazine include current students, former students, faculty and businesses.

Course Objectives

We will build on the following primary objectives throughout the term:

1. Execute the steps necessary to be a freelance writer
2. Identify feature story ideas, contact sources, and develop publishable stories
3. Recognize the importance of publication advertising, develop an advertising plan, and participate in publication advertising practices
4. Comprehend publication design principles and current practices used in print communication industries
5. Create, produce, publish and publicize a magazine in print

Textbooks and Materials

Associated Press Stylebook, 2013 or newer. New York: Perseus Publishing.

Recommended Software

Adobe Creative Suite Design Premium. The Agricultural Education, Communications, and Leadership Lab has this software installed.

Equipment

Digital cameras and related equipment are available for checkout. You **MUST** reserve this equipment and complete an equipment use agreement. See your instructors for check out. If equipment malfunctions, contact the instructor immediately; students can be held accountable for equipment costs if malicious use is detected.

If an alternate format of the text is required, please contact Dr. McCubbins at omccubbins@tntech.edu

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Attendance

Timely and regular attendance is an expectation of all students. Your role as a staff member or part of the editorial team affects your peers (co-workers) and instructors (management); therefore, the expectation is you will arrive on time and be engaged in lecture and lab (work hours). To be successful in this class, students must attend each lecture and lab session prepared and ready to work. Attendance will be taken daily by instructors. Only university approved absences are excused.

As an employee you earn PTO (paid time off), which may be used as vacation or sick-leave. Every student begins the semester with 5 hours of PTO. This course meets for 4 hours per week (2 hours of lecture and 2 hours of lab) for 14 weeks (56 hours). PTO may be used by completing the leave request form available through Google Classroom and submitting it prior to the class period. If the PTO is used for sick-leave documentation from a medical professional is required. If the leave is for a university-approved activity, please include your documentation with the PTO request (judging team activities, approved class field trips, participation in athletic events, etc).

Leadership Positions

- Editor
- Associate Editor - 2 positions
- Copy Editors - 2 positions
- Photo editor
- Graphic Designer
- Advertising Manager
- Advertising Graphic Designer Manager

Magazine Components

- Aggie Connection
- Alumni Spotlight
- Faculty Spotlight
- Student Organization Spotlight
- School of Ag Award Winners
 - Outstanding Seniors
 - Outstanding Juniors
 - Outstanding Sophomores
 - Outstanding Freshman
- Feature Story

Course Schedule

Week 1

Course Introduction, All about magazines

Week 2

Magazine structure and roles/responsibilities, Peer editing

Week 3

Source identification/ Story development, Interviewing, working with sources

Week 4

Quoting your sources/ selling advertisements, Advertising

Week 5

News vs. Feature writing/ Leads, Design software

Week 6

Photography fundamentals, Photography

Week 7

Illustrating your story, Story layouts

Week 8

The “other” story pieces, Headlines, cutlines, pull quotes

Week 9

Spring Break

Week 10

Designing layouts

Week 11

Working with a professional print company, Full magazine layout

Week 12

Designing an online magazine & banner advertising, Roundtable copyediting

Week 13

Genius Hour, Student-Choice, Work Session

Week 14

Work Session

Week 15

Final proof of School of Ag Magazine

Week 16

Finalize magazine

Memo

To: Graduation Office

From: Steven Frye, Interim Director, School of Interdisciplinary Studies



Via: College of Interdisciplinary Studies Curriculum Committee

Via: Dean Mike Gotcher



RE: Major GPA calculation for Interdisciplinary Studies Majors

Date: October 9, 2017

Calculating the Major GPA for Interdisciplinary Studies majors has been a challenge, due to the varied nature of declared emphasis areas. This has led to confusion and extra work for staff in the Undergraduate Graduation office. To clarify this process, the College of Interdisciplinary Studies Curriculum Committee considered various approaches and approved the following standard for calculating the major GPA for students with a major in Interdisciplinary Studies:

The following courses are to be included in the Interdisciplinary Studies major GPA calculation:

1. Courses designated on the Emphasis Area form as part of the two declared emphasis areas
2. The LIST/PRST 4995 Senior Project course
3. Any additional courses with the LIST prefix that are not already listed among the Emphasis Area courses

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OCT 12 2017

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