

University Curriculum Committee
October 29, 2015

The University Curriculum Committee met on Thursday, October 29, 2015 at 3:30 in the Deans' Conference Room, DBRY 200.

Members present:

Dr. Curtis Armstrong	Dr. Thomas Payne
Dr. Julie Baker	Dr. Ted Pelton
Dr. Rita Barnes	LTC Stephen Peterson
Dr. Jeff Boles	Dr. Richard Rand
Dr. Kristine Craven	Dr. James Raymondo
Mr. Ward Doubet	Dr. Joseph Rencis
Ms. Edith Duvier	Dr. Thomas Riley
Dr. Kurt Eisen	Dr. Jeff Roberts
Ms. Julie Galloway	Dr. Joe Roberts
Dr. Bahman Ghorashi	Dr. Barry Stein
Dr. Mark Groundland	Dr. Ann Thurmond
Dr. Mike Harrison	Dr. Huey-Ming Tzeng
Dr. Bobby Hodum	Dr. Jeremy Wendt
Dr. Sharon Huo	Dr. Ken Wiant
Dr. Steve Isbell	Dr. Brenda Wilson
Dr. Christy Killman	Mr. Elijah Fetzer
Dr. Darrell Hoy	Ms. Kellie Collins
Dr. Allan Mills	

Members absent:

Dr. Melinda Anderson	Dr. Paul Semmes
Dr. Pedro Arce	Dr. Jennifer Shank
Dr. Alice Camuti	Dr. Mark Stephens
Dr. Ahmed Elsayy	Mr. Daniel Tribble
Dr. Steve Frye	Mr. Wolfgang Bronner
Dr. Hayden Mattingly	Mr. Chase Womble
Dr. Ben Mohr	Mr. Aaron Walls
Dr. Mohan Rao	
Dr. Liz Self-Mullens	

Official Representatives:

Ms. Sharon Holderman for Dr. Bates	Dr. Paula Engelhardt for Dr. Robinson
Ms. Cari Williams for Ms. Hill	Dr. Debra Bryant for Ms. Whiteaker
Dr. Charles Carnal for Dr. Johnson	Ms. Denise Burgess for Ms. Winningham
Dr. Chris Brown for Dr. Kissell	

Guests:

Dr. Stephen Canfield	Dr. Julie Longmire
Dr. Ann Davis	Dr. Michael Rogers
Ms. Amy Jared	Mr. Charles Wilkerson
Dr. Barbara Jared	

SUMMARY OF PROCEEDINGS

1. Approval of agenda
2. Approval of September 24, 2015 minutes as corrected
3. Approval of course deletions and curriculum changes from the Department of Biology
4. Approval of course changes and catalog change from the Department of Art
5. Approval of curriculum changes from the Department of Curriculum and Instruction
6. Approval of curriculum changes from the Department of Music
7. Approval of catalog change from the Department of Music
8. Approval of course addition from the Department of Earth Sciences
9. Approval of revised curriculum for ETSU/TTU B.S. in Engineering from the College of Engineering
10. Approval of course changes from the Department of Mechanical Engineering
11. Approval of course deletions and changes from the Department of Electrical and Computer Engineering
12. Approval of course additions, changes; curriculum changes; and two new concentrations from the Department of Computer Science
13. Approval of Prefix request from the Department of Communication
14. Approval Communication course additions, changes and curriculum changes from the Department of Communication
15. Approval of Speech course addition, changes and curriculum changes from the Department of Communication
16. Approval of TBR 30 Day Review Process Form for Substantive Curriculum Modifications from the Department of Communication
17. Approval of course addition from the Department of Economics, Finance, and Marketing
18. Approval of course addition from the School of Interdisciplinary Studies
19. Information Only – TBR Letter of Application for B.S. in Vehicle Engineering from the College of Engineering
20. Approval of course addition and curriculum changes from the School of Nursing
21. Information only – Progress on Accelerated BSN Curriculum for Second Degree Students
22. Approval of TBR 30 Day Review Process form for TTU Innovation and Entrepreneurship Certificate From the College of Interdisciplinary Studies
23. Other Such Matters –
 - 1) Catalog Term statement
 - 2) Double counting course credits toward a major and a minor

PROCEEDINGS

1. Approval of Agenda

Motion. Dr. Killman moved to approve the agenda as submitted. The motion was seconded and carried.

2. Approval of September 24, 2015 Minutes as Corrected

Motion. Dr. Isbell moved to approve the September 24 minutes with the correction of the misspelling of Mr. Ward Doubet's last name. The motion was seconded by Dr. Killman and carried.

3. Approval of Course Deletions and Curriculum Changes from the Department of Biology

In a memorandum dated October 5, 2015 approval was requested for the following:

Course Deletions:

BIOL 2250 (Plants and People)
BIOL 4418 (Biology Lab for Additional Endorsement Program)
BIOL 4430 (Vascular Plant Biology)
BIOL 4940 (Radiation Biology)

Curriculum Changes:

1. Add SPCH 2410 as an option for all WFS and Biology majors for the oral communication portion of the general education requirement listed in the sophomore year of each curriculum in the catalog.

FROM:

PC 2500 - Communicating in the Professions Credit: 3.

TO:

PC 2500 - Communicating in the Professions Credit: 3. or
SPCH 2410 – Introduction to Speech Communication Credit: 3.

2. Remove BIOL 4430 (5430) from the list of directed electives for the Botany Option within the Biology Concentration

FROM:

Choose two of the four: BIOL 4300 (5300) , BIOL 4310 (5310) , BIOL 4430 (5430) , BIOL 4780 (5780)

TO:

Choose two of the three: BIOL 4300 (5300) , BIOL 4310 (5310) , BIOL 4780 (5780)

3. Remove BIOL 4940 (5940) from the list of directed electives for the Health Sciences Biology Concentration

FROM:

Choose two courses from BIOL 3040 , BIOL 3060 , BIOL 4000 (5000) , BIOL 4040 (5040) , BIOL 4060 (5060) , BIOL 4750 (5750) , BIOL 4940 (5940) .

TO:

Choose two courses from BIOL 3040 , BIOL 3060 , BIOL 4000 (5000) , BIOL 4040 (5040) , BIOL 4060 (5060) , BIOL 4750 (5750).

Motion. Dr. Brown, representing Dr. Kissell, moved to approve the changes effective Spring 2015. The motion was seconded by Dr. Eisen and carried.

4. Approval of Course and Catalog Changes from the Department of Art

In a memorandum dated October 14, approval was requested for the following:

Course Changes:

Course Change: [credit hours]

From: ART 3205 METHODS & MEDIA, Lec. 1. Lab. 1. Credit 2.

This course will offer art educational curricula with classroom lectures and studio methodology that has significance and relevance for today's students and teachers at all grade levels.

To: ART 3205 METHODS & MEDIA, Lec. 2. Lab, Field 1. Credit 3.

This course surveys and applies art educational curricula with classroom lectures, studio methodologies and application that are most significant and relevant for today's students and teachers at all grade levels.

Effective date: Fall 2016

Course Change: [description]

From: ART 3430 - INDEPENDENT STUDIES IN PAINTING I
Studio 6. Credit 3.

Prerequisite: ART 3421 or consent of instructor. Directed study in painting arranged between the instructor and student.

To: ART 3430 - INDEPENDENT STUDIES IN PAINTING I
Studio 6. Credit 3.

Prerequisite: ART 3421 or consent of instructor. Directed study in painting arranged between the instructor and student. May be repeated up to 12 credit hours.

From: ART 3430 - INDEPENDENT STUDIES IN PAINTING II
Studio 6. Credit 3.

Prerequisite: ART 3421 or consent of instructor. Directed study in painting arranged between the instructor and student.

To: ART 3430 - INDEPENDENT STUDIES IN PAINTING II
Studio 6. Credit 3.

Prerequisite: ART 3421 or consent of instructor. Directed study in painting arranged between the instructor and student. May be repeated up to 12 credit hours.

From: ART 4310 - INDEPENDENT STUDIES IN DRAWING I
Studio 6. Credit 3.

Prerequisite: Permission of the instructor. Directed study in selected drawing media in specific projects arranged between the instructor and student.

To: ART 4310 - INDEPENDENT STUDIES IN DRAWING I
Studio 6. Credit 3.

Prerequisite: Permission of the instructor. Directed study in selected drawing media in specific projects arranged between the instructor and student. May be repeated up to 12 credit hours.

From: ART 4311 - INDEPENDENT STUDIES IN DRAWING II
Studio 6. Credit 3.

Prerequisite: Permission of the instructor. Directed study in selected drawing media in specific projects arranged between the instructor and student.

To: ART 4311 - INDEPENDENT STUDIES IN DRAWING II
Studio 6. Credit 3.

Prerequisite: Permission of the instructor. Directed study in selected drawing media in specific projects arranged between the instructor and student. May be repeated up to 12 credit hours.

Effective date: Fall 2016

Course Change: [removal of pre-req]

From: ART 1250 - INTRODUCTION TO DIGITAL IMAGING
Studio 6. Credit 3.

Prerequisite: ART 1010 or consent of instructor. Introduction to photographic techniques, image capture, formatting and manipulating still imagery in digital media for art and design work.

To: ART 1250 - INTRODUCTION TO DIGITAL IMAGING
Studio 6. Credit 3.

Introduction to photographic techniques, image capture, formatting and manipulating still imagery in digital media for art and design work.

Effective date: Fall 2016

Curricular Change:

An explanatory note is added to the listing of requirements for the BFA concentration in art education in the undergraduate catalog as follows:

“In the BFA concentration in art education only, the general education core requirement in humanities and/or fine arts is fulfilled by ART 2110 Art History I – 3 credits and ART 2120 Art History II – 3 credits, in combination with the approved literature course selected by the student for the total of the 9 credit hour requirement.”

Rationale: This note is added for the purpose of clarifying the requirements for the BFA concentration in art education. This exception to the general education core requirement in humanities and/or fine arts was approved when the degree requirements were reduced to 120 credits over 10 years ago.

Motion. Dr. Baker moved to approve the changes effective as listed above. The motion was seconded by Dr. Killman and carried.

5. Approval of Curriculum Changes from the Department of Curriculum and Instruction

In a memorandum dated July 22, 2015, approval was requested for the following:

Curriculum Changes:

SEED/French:

Add: Electives (credit 3)

Seed/Speech Communication & Theatre:

Add: THEA 2200 Stagecraft (credit 3)

Add: THEA Electives (credit 3)

Motion. Dr. Wendt moved to approve the change effective Fall 2016. The motion was seconded by Dr. Groundland and carried.

6. Approval of Curriculum Changes from the Department of Music

In a memorandum dated August 27, 2015, approval was requested for the following:

All Music Majors are required to participate in Ensembles of Record. The Department of Music seeks to correct the stated required Ensemble of Record to what was originally intended.

Curriculum Changes – to Concentration requirements

From: Composition students follow the Lower Division Ensemble of Record requirement throughout their curriculum. Music Business and Vocal option students in the Upper Division will enroll in at least one ensemble per semester from the table below as assigned by their advisors.

Music Business: Wind Ensemble (fall) and Symphony Band (spring)

To: Composition and Music Business option students follow the Lower Division Ensemble of Record requirement throughout their curriculum. Vocal option students in the Upper Division will enroll in at least one ensemble per semester from the table below as assigned by their advisors.

[Music Business: Wind Ensemble (fall and Symphony Band (spring))

Effective Date: Fall 2016

Music, Music Performance Concentration, Music Business Option, B.M.

Admission to the performance option is by recommendation of the studio instructor. Students in this option select an emphasis in composition, instrumental, jazz, music business, piano or vocal performance.

Students majoring in any performance option must:

1. Enroll for private study in the major performing medium each semester of full-time residency. Four semesters of private study must be at the 3000 level.

2. Participate each semester in the Ensemble of Record specific to the student's instrument:
Lower Division (Freshman and Sophomore)

a. Piano: Concert Choir, University Bands, or University Orchestra

b. Strings: University Orchestra

c. Voice: Concert Choir or Chorale

d. Wind/Percussion:

Fall – Marching Band

Spring – Symphony Band or Concert Band as assigned by audition

Upper Division (Junior and Senior)

NOTE: Composition [and Music Business option] students follow the Lower Division Ensemble of Record requirement throughout their curriculum. [Music Business and]Vocal option students in the Upper Division will enroll in at least one ensemble per semester from the table below as assigned by their advisors. Enrollment in a minimum of two (2) ensembles per semester is required of Upper Division performance majors in the Instrumental, Jazz and Piano options as follows:

a. Piano: The appropriate major ensemble (instrumental or vocal) plus Chamber Music as assigned by the piano coordinator.

- b. Strings: University Orchestra and Chamber Music
- c. Voice: Chorale or Concert Choir
- d. Wind/Percussion:
 - Jazz: Jazz Ensemble plus Symphony band or Wind Ensemble
 - [Music Business: Wind Ensemble (fall and Symphony Band (spring))]
 - All other non-Jazz: Wind Ensemble (fall) and Symphony Band (spring) plus University Orchestra or Bryan Symphony Orchestra, or Jazz Ensemble as assigned by the advisor

Motion. Dr. Thurmond moved to approve the changes effective Fall 2016. The motion was seconded by Dr. Baker and carried.

7. Approval of Catalog Change from the Department of Music

In a memorandum dated September 25, 2015, approval was requested for the following:

Catalog Change/ Addition:

Addition: All music majors must achieve a grade of "C" in each music course. If a lower grade is earned, the student must repeat the course.

Motion. Dr. Thurmond moved to approve the change effective Fall 2016. The motion was seconded by Dr. Baker and carried.

8. Approval of Course Addition from the Department of Earth Sciences

In a memorandum dated October 15, 2015, approval was requested for the following:

Course Addition:

GEOL 4300/5300 Environmental Aqueous Geochemistry Lec., 3, Cr. 3

Prerequisites: GEOL 1040, CHEM 1010 or CHEM 1110, or consent of instructor.

Principles of water quality, chemical thermodynamics and equilibrium; chemical reactions; modeling of aquatic systems and a survey of practical applications of equilibrium aqueous geochemistry.

Motion. Dr. Harrison moved to approve the course addition effective Fall 2016. The motion was seconded by Dr. Eisen and carried.

9. Approval of Curriculum for Joint ETSU/TTU B.S. in Engineering Program

In a memorandum dated October 5, 2015, approval was requested for the following:

Curriculum Changes:

Revised curriculum for Joint ETSU/TTU Bachelor of Science in Engineering Program

Four-year Program of Study
Bachelor of Science in Engineering

ETSU Course Number/Name (TTU Course Number/Name)

FRESHMAN YEAR (34)					
FALL SEMESTER			SPRING SEMESTER		
ENGL 1010	Critical Reading and Expository Writing (Writing I)	3	ENGL 1020	Critical Thinking and Argumentation (Writing II)	3
MATH 1910	Calculus I	4	MATH 1920	Calculus II	4
CHEM 1110 & 1111 (1110)	General Chemistry Lecture I & General Chemistry Laboratory I (General Chemistry I)	4	CHEM 1120 & 1121 (1120)	General Chemistry Lecture II & General Chemistry Laboratory II (General Chemistry II)	4
ENGR 1110	Engineering Graphics	2	ENGR 1120	Programming for Engineers	2
HUFA	Humanities/Fine Arts	3	HUFA	Humanities/Fine Arts	3
ENTC 1510 (ENGR 1020)	Student in University (Connections to Engineering; TTU requirement outside of BSE Curriculum*)	2(1*)			
Fall Total		18	Spring Total		16

SOPHOMORE YEAR (34)					
FALL SEMESTER			SPRING SEMESTER		
MATH 2110	Calculus III	4	MATH 2120	Differential Equations	3
PHYS 2110	Technical Physics I - Calculus Based (Cal-based Physics I)	5(4)	PHYS 2120	Technical Physics II - Calculus Based (Cal-based Physics II)	5(4)
CEE 2110	Statics	3	SPCH 2300 (2410)	Public Speaking (Introduction to Speech Communication)	3
CEE 3710	Principles of Engineering Economy	2	ME 2330	Dynamics	3
LIT	Gen Ed Literature	3	MATH 2010	Linear Algebra (Matrix Algebra)	3
Fall Total		17	Spring Total		17

JUNIOR YEAR (33)					
FALL SEMESTER			SPRING SEMESTER		
ENGR 2810	Electrical Engineering Basics I	3	ME 3720	Fluid Mechanics	3
CEE 3720	Engineering Statistics	2	ME 3010	Materials and Processes in Engineering	3
ME 3023	Measurements in Mechanical Systems	3	ENGR 2820	Electrical Engineering Basics II	3
CEE 3110	Mechanics of Materials	3	ENGR 3120	Solid Modeling	3
ME 3210	Thermodynamics I	3	SBS	Social/Behavioral Science	3
SBS	Social/Behavioral Science	3	ENGR 2821	Electrical Engineering Basics Lab	1
Fall Total		17	Spring Total		16

SENIOR YEAR (27)					
FALL SEMESTER			SPRING SEMESTER		
ENGR 4950	Senior Design I	3	ENGR 4960	Senior Design II	3
ENGR 4900	Professionalism & Ethics	3	ENGR 4510	Engineering Management	3
CSC 3020	Numerical Methods	3	Technical Electives	See list of approved electives	6
Technical Electives	See list of approved electives	6	(Free Elective)	(Any course(s)) [TTU]	(3)
Fall Total		15	Spring Total		12

Total B.S.E = 128

Curriculum, Accreditation, and Residency Requirements – on file in the Office of the Associate Provost.

Motion. Dr. Hoy moved to approve the revised curriculum effective Fall 2016.

Dr. Hoy stated the American History exemption statement will be included in the curriculum and catalog. The motion was seconded by Dr. Eisen and carried.

10. Approval of Course Changes from the Department of Mechanical Engineering

In a memorandum dated October 8, 2015, approval was requested for the following:

Course Changes:

From:

ME 4140 (5140): Introduction to Robotics and Intelligent Machines Engineering Lec. 3. Cr. 3.

Prerequisite: ECE 3810, ECE 3860; ME 3050 and ME 3060. Robotic concepts and subsystems; mechanics of robots; sensors and intelligence; actuators; and trajectory planning and control.

To:

ME 4140 (5140): Introduction to Robotics and Intelligent Machines Engineering Lec. 3. Cr. 3.

Prerequisites: ME 3050 and ME 3060; or ECE 3210 and ECE 3260. Robotic concepts and subsystems; mechanics of robots; sensors and intelligence; actuators; and trajectory planning and control. The combination of ME 3050 and ME 3060 or the combination of ECE 3210 and ECE 3260 may be taken concurrently.

From:

ME 4020: Applied Machine Design Lec. 2. Lab 2. Cr. 3.

Prerequisite: ME 3610 and ME 4010. Design for strength and rigidity under dynamic loads; shaft design; design of joints (threaded fasteners, welds, springs, keys, etc.); design of gear trains; lubrication and bearing design; finite element analysis; and optimization, and statistical consideration in design.

To:

ME 4020: Applied Machine Design Lec. 2. Lab 2. Cr. 3

Prerequisite: ME 3610, ME 3900 and ME 4010. Design for strength and rigidity under dynamic loads; shaft design; design of joints (threaded fasteners, welds, springs, keys, etc.); design of gear trains; lubrication and bearing design; finite element analysis; and optimization, and statistical consideration in design.

Motion. Dr. Hoy moved to approve the changes effective Fall 2016. The motion was seconded by Dr. Stein and carried.

11. Approval of Deletion and Course Changes from the Department of Electrical & Computer Engineering

In a two memorandums dated September 29 and October 8, 2015, approval was requested for the following:

Course Change: (Oct. 8 memo)

From:

ECE 3270 - PROGRAMMABLE LOGIC CONTROLLER LABORATORY Lab. 3. Credit 1.

Prerequisite: C or better in ECE 3060 or ME 3023 or CHE 2011 or CEE 3030 or MET 3200. Introduction to Ladder Logic Programming, Relays, PLC in Automation & Control, Safety, Hardware Troubleshooting, Hands-on laboratory experiments and projects.

To:

ECE 3270 - PROGRAMMABLE LOGIC CONTROLLER LABORATORY Lab. 3. Credit 1.

Prerequisite: C or better in ECE 3060 or ME 3023 or CHE 2020 or CEE 3030 or MET 3200. Introduction to Ladder Logic Programming, Relays, PLC in Automation & Control, Safety, Hardware Troubleshooting, Hands-on laboratory experiments and projects.

Course Deletion: (Sept. 29 memo)

ECE 3910 Probability and Random Variables in Electrical and Computer Engineering Lec. 3, Cr. 3

Course Changes: (Sept. 29 memo)

From:

ECE 1020 - Connections to Electrical and Computer Engineering Rec. 2. Credit 1.

Prerequisite: Freshman standing. Engages the student in academic and non-academic, out-of-classroom activities to facilitate transition into the electrical or computer engineering program. Faculty interaction, peer mentoring, professional student organizations and electronic kit construction.

To:

ECE 1020 - Connections to Electrical and Computer Engineering Rec. 2. Credit 1.

Prerequisite: Freshman standing, and major in Electrical Engineering or Computer Engineering. Engages the student in academic and non-academic, out-of-classroom activities to facilitate transition into the electrical or computer engineering program. Faculty interaction, peer mentoring, professional student organizations and electronic kit construction.

From:

ECE 2001 - Computer Aided Engineering in ECE Lec. 1. Credit 1.

Prerequisite: CSC 2100, ECE 2010, and MATH 2010 (ECE 2010 and/or MATH 2010 may be taken concurrently). Engineering problem formulation for computer calculations. Computer aided engineering software with applications in electrical and computer engineering.

To:

ECE 2001 - Computer Aided Engineering in ECE Lec. 1. Credit 1.

Prerequisite: C or better in CSC 2100, C or better in ECE 2010, and C or better in MATH 2010 (ECE 2010 may be taken concurrently). Engineering problem formulation for computer calculations. Computer aided engineering software with applications in electrical and computer engineering.

From:

ECE 2010 - Electric Circuits I Lec. 3. Credit 3.

Prerequisite: MATH 1920, MATH 2010 and MATH 2120 (MATH 2120 may be taken concurrently). Introduction to electric circuit quantities and components, systematic application of Ohm's and Kirchhoff's laws, superposition, Thevenin and Norton theorems operational amplifiers, RL and RC transients, and circuit simulation with SPICE.

To:

ECE 2010 - Electric Circuits I Lec. 3. Credit 3.

Prerequisite: C or better in MATH 1920, C or better in MATH 2010, and C or better in MATH 2120 (MATH 2120 may be taken concurrently). Introduction to electric circuit quantities and components, systematic application of Ohm's and Kirchhoff's laws, superposition, Thevenin and Norton theorems, operational amplifiers, RL and RC transients, and circuit simulation with SPICE.

From:

ECE 2020 - Electric Circuits II Lec. 3. Credit 3.

Prerequisite: ECE 2001, ECE 2010, ECE 2011, MATH 2010 and MATH 2120 (ECE 2001 and/or ECE 2011 may be taken concurrently). Laplace transform methods for electric circuit analysis. Sinusoidal steady-state and power, mutual inductance, 3-phase circuits, frequency response, Bode plots, resonance, and filters. Circuit simulation with SPICE.

To:

ECE 2020 - Electric Circuits II Lec. 3. Credit 3.

Prerequisite: C or better in ECE 2010, C or better in ECE 2011, C or better in MATH 2010, C or better in MATH 2120, and either C or better in ECE 2001 or C or better in ME 3001 (ECE 2001, ECE 2011, and/or ME 3001 may be taken concurrently). Laplace transform methods for electric circuit analysis. Sinusoidal steady-state and power, mutual inductance, 3-phase circuits, frequency response, Bode plots, resonance, and filters. Circuit simulation with SPICE.

From:

ECE 3010 - Signals and Systems Lec. 3. Credit 3.

Prerequisite: ECE 2001, ECE 2020 and MATH 2120 Time-domain and frequency-domain analysis of signals and systems, applications of Fourier series, Fourier transform, and Laplace transform in circuits and systems; Analog filters.

To:

ECE 3010 - Signals and Systems Lec. 3. Credit 3.

Prerequisite: C or better in ECE 2001 and C or better in ECE 2020. Time-domain and frequency-domain analysis of signals and systems, applications of Fourier series, Fourier transform, and Laplace transform in circuits and systems; Analog filters.

From:

ECE 3020 - Discrete-Time Signals and Systems Lec. 3. Credit 3.

Prerequisite: ECE 2001, ECE 2020 and ECE 3010. Signal sampling and reconstruction. Difference equations, Z-transforms, and the discrete Fourier transform. Fundamentals of digital filters.

To:

ECE 3020 - Discrete-Time Signals and Systems Lec. 3. Credit 3.

Prerequisite: C or better in ECE 3010. Signal sampling and reconstruction. Difference equations, Z-transforms, and the discrete Fourier transform. Fundamentals of digital filters.

From:

ECE 3060 - Electrical Engineering Laboratory II Lab. 3. Credit 1.

Prerequisite: ECE 2011, ECE 2020, ECE 3010 and ECE 3300. (ECE 2020, ECE 3010 and/or ECE 3300

may be taken concurrently.) Electrical and electronic circuits and measurement techniques, amplifiers, active and passive filters, switching circuits.

To:

ECE 3060 - Electrical Engineering Laboratory II Lab. 3. Credit 1.

Prerequisite: C or better in ECE 2011, C or better in ECE 3010, and C or better in ECE 3300 (ECE 3010 and/or ECE 3300 may be taken concurrently). Electrical and electronic circuits and measurement techniques, amplifiers, active and passive filters, switching circuits.

From:

ECE 3130 - Microcomputer Systems Lec. 3. Lab. 3. Credit 4.

Prerequisite: ECE 2110, ECE 2011 and CSC 2100. Microcomputer system architecture. Software/hardware analysis. Programming microcomputer system using Assembly and C languages. Design hardware subsystem and integration with microcontroller for engineering application.

To:

ECE 3130 - Microcomputer Systems Lec. 3. Lab. 3. Credit 4.

Prerequisite: C or better in CSC 2100, C or better in ECE 2011, and C or better in ECE 2110.

Microcomputer system architecture. Software/hardware analysis. Programming microcomputer system using Assembly and C languages. Design hardware subsystem and integration with microcontroller for engineering application.

From:

ECE 3160 - Digital Systems Laboratory Lab. 3. Credit 1.

Prerequisite: ECE 2011 and ECE 2110. Hardware considerations and performance of combinational and sequential digital devices including gates, flip-flops, multiplexers, and decoders.

To:

ECE 3160 - Digital Systems Laboratory Lab. 3. Credit 1.

Prerequisite: C or better in ECE 2011 and C or better in ECE 2110. Hardware considerations and performance of combinational and sequential digital devices including gates, flip-flops, multiplexers, and decoders.

From:

ECE 3210 - Control System Analysis Lec. 3. Credit 3.

Prerequisite: ECE 2020, ECE 3010 and PHYS 2110. Modern and classical methods of control system analysis of continuous-time systems. Introduction to design tools.

To:

ECE 3210 - Control System Analysis Lec. 3. Credit 3.

Prerequisite: PHYS 2110 and C or better in ECE 3010. Modern and classical methods of control system analysis of continuous-time systems. Introduction to design tools.

From:

ECE 3260 - Control System Laboratory Lab. 3. Credit 1.

Prerequisite: ECE 3060 and ECE 3210. (ECE 3210 may be taken concurrently). Simulation of dynamic systems. Demonstration of control system analysis and design techniques using hardware experiments.

To:

ECE 3260 - Control System Laboratory Lab. 3. Credit 1.

Prerequisite: C or better in ECE 3060 and C or better in ECE 3210 (ECE 3210 may be taken concurrently). Simulation of dynamic systems. Demonstration of control system analysis and design techniques using hardware experiments.

From:

ECE 3270 - Programmable Logic Controller Laboratory Lab. 3. Credit 1.

Prerequisite: ECE 3060 or ME 3023 or CHE 2011 or CEE 3030 or MET 3200. Introduction to Ladder Logic Programming, Relays, PLC in Automation & Control, Safety, Hardware Troubleshooting, Hands- on laboratory experiments and projects.

To:

ECE 3270 - Programmable Logic Controller Laboratory Lab. 3. Credit 1.

Prerequisite: (C or better in CEE 3030) or (C or better in CHE 2011) or (C or better in ECE 3060) or (C or better in ME 3023) or (C or better in MET 3200). Introduction to Ladder Logic Programming, Relays, PLC in Automation & Control, Safety, Hardware Troubleshooting, Hands-on laboratory experiments and projects.

From:

ECE 3300 - Electronics I Lec. 3. Credit 3.

Prerequisite: ECE 2020 and ECE 2011. Introduction to semiconductor junction devices and their physical operation, mid-band equivalent circuits, single and multi-stage amplifiers, digital electronics, and SPICE simulation.

To:

ECE 3300 - Electronics I Lec. 3. Credit 3.

Prerequisite: C or better in ECE 2011 and C or better in ECE 2020. Introduction to semiconductor junction devices and their physical operation, mid-band equivalent circuits, single and multi-stage amplifiers, digital electronics, and SPICE simulation.

From:

ECE 3310 - Electronics II Lec. 3. Credit 3.

Prerequisite: ECE 3300. Differential amplifiers, frequency response, negative feedback, power output stages, and SPICE simulation.

To:

ECE 3310 - Electronics II Lec. 3. Credit 3.

Prerequisite: C or better in ECE 3300. Differential amplifiers, frequency response, negative feedback, power output stages, and SPICE simulation.

From:

ECE 3360 - Electronics Laboratory Lab. 3. Credit 1.

Prerequisite: ECE 3060 and ECE 3300. Diodes, BJTs, FETs, and amplifier circuits.

To:

ECE 3360 - Electronics Laboratory Lab. 3. Credit 1.

Prerequisite: C or better in ECE 3060 and C or better in ECE 3300. Diodes, BJTs, FETs, and amplifier circuits.

From:

ECE 3510 - Electromagnetic Fields I Lec. 3. Credit 3.

Prerequisite: MATH 2110 and PHYS 2120. Development of Maxwell 's equations for electric and magnetic fields. Electromagnetic properties of materials. Wave equation, plane waves, and Lorentz force law.

To:

ECE 3510 - Electromagnetic Fields I Lec. 3. Credit 3.

Prerequisite: PHYS 2120 and C or better in MATH 2110. Development of Maxwell 's equations for electric and magnetic fields. Electromagnetic properties of materials. Wave equation, plane waves, and Lorentz force law.

From:

ECE 3560 - EM Simulation Laboratory Lab. 3. Credit 1.

Prerequisite: ECE 3060 and ECE 3510. Simulation and design of phenomena and devices with EM fields and waves.

To:

ECE 3560 - EM Simulation Laboratory Lab. 3. Credit 1.

Prerequisite: C or better in ECE 3060 and C or better in ECE 3510. Simulation and design of phenomena and devices with EM fields and waves.

From:

ECE 3610 - Introduction to Power Systems Lec. 3. Credit 3.

Prerequisite: ECE 2020 and PHYS 2120. Overview of electric power systems, magnetic circuits and transformers, electromechanical energy conversion, rotating machines, power system operation and control, and current issues in power systems.

To:

ECE 3610 - Introduction to Power Systems Lec. 3. Credit 3.

Prerequisite: PHYS 2120 and C or better in ECE 2020. Overview of electric power systems, magnetic circuits and transformers, electromechanical energy conversion, rotating machines, power system operation and control, and current issues in power systems.

From:

ECE 3660 - Electric Power Laboratory Lab. 3. Credit 1.

Prerequisite: ECE 3060 and ECE 3610. Operation of various power system components, design tests of transformers, speed control characteristics of various types of motors and generators, and computer simulation of power system operation.

To:

ECE 3660 - Electric Power Laboratory Lab. 3. Credit 1.

Prerequisite: C or better in ECE 3060 and C or better in ECE 3610. Operation of various power system components, design tests of transformers, speed control characteristics of various types of motors and generators, and computer simulation of power system operation.

From:

ECE 3710 - Introduction to Telecommunications Lec. 3. Credit 3.

Prerequisite: ECE 2020, ECE 3010 and either ECE 3910 or MATH 3470 (ECE 3910 or MATH 3470 may be taken concurrently). ~~Introduction to Digital Telecommunications, including coding, communication networks, spectral analysis, and digital modulation and demodulation.~~

To:

ECE 3710 - Introduction to Telecommunications Lec. 3. Credit 3.

Prerequisite: C or better in ECE 3010 and C or better in MATH 3470 (MATH 3470 may be taken concurrently). Introduction to analog and digital communication systems: modulation and demodulation, signal spectra, coding for data compression and error correction.

From:

ECE 3760 - Telecommunications Laboratory Lab. 3. Credit 1.

Prerequisite: ECE 3060 and ECE 3710. Telecommunication system measurements.

To:

ECE 3760 - Telecommunications Laboratory Lab. 3. Credit 1.

Prerequisite: C or better in ECE 3060 and C or better in ECE 3710. Telecommunication system measurements.

From:

ECE 3810 - Fundamentals of Electrical Engineering Lec. 3. Credit 3.

Prerequisite: MATH 1920. An introduction to fundamental principles of electrical circuits, DC and AC circuit analysis techniques, electric power systems, electric motors, diodes and rectifiers, operational amplifiers, frequency response and filters. Will not count for credit for electrical engineering or computer engineering majors.

To:

ECE 3810 - Fundamentals of Electrical Engineering Lec. 3. Credit 3.

Prerequisite: C or better in MATH 1920. An introduction to fundamental principles of electrical circuits, DC and AC circuit analysis techniques, electric power systems, electric motors, diodes and rectifiers, operational amplifiers, frequency response and filters. Will not count for credit for electrical engineering or computer engineering majors.

From:

ECE 3860 - Fundamentals of Electrical Engineering Laboratory Lab. 3. Credit 1.

Prerequisite: ECE 3810. Basic instrumentation and component laboratory. Use of instruments in DC and AC measurements. Demonstration of circuit concepts. Characteristics of diodes, operational amplifiers and AC filters. Simple digital logic circuits. Will not count for credit for electrical engineering or computer engineering majors. ECE 3810 can be taken concurrently.

To:

ECE 3860 - Fundamentals of Electrical Engineering Laboratory Lab. 3. Credit 1.

Prerequisite: C or better in ECE 3810 (ECE 3810 may be taken concurrently). Basic instrumentation and component laboratory. Use of instruments in DC and AC measurements. Demonstration of circuit concepts. Characteristics of diodes, operational amplifiers and AC filters. Simple digital logic circuits. Will not count for credit for electrical engineering or computer engineering majors.

From:

ECE 4020 (5020) - Digital Signal Processing Lec. 3. Credit 3.

Prerequisite: ECE 3020 and ECE 3130. (ECE 3130 may be taken concurrently.) Introduction to the theory and practice of discrete-time signals and systems, A/D and D/A conversion, filter design, DSP Architecture and implementation, programming, DSP applications.

To:

ECE 4020 (5020) - Digital Signal Processing Lec. 3. Credit 3

Prerequisite: C or better in ECE 3020 and C or better in ECE 3130 (ECE 3130 may be taken concurrently). Introduction to the theory and practice of discrete-time signals and systems, A/D and D/A conversion, filter design, DSP Architecture and implementation, programming, DSP applications.

From:

ECE 4110 (5110) - Digital System Design Lec. 3. Credit 3.

Prerequisite: ECE 2110 and ECE 3160. Computer aided combinational and sequential digital logic analysis, design, and applications, utilizing both standard digital components and programmable logic devices.

To:

ECE 4110 (5110) - Digital System Design Lec. 3. Credit 3.

Prerequisite: C or better in ECE 2110 and C or better in ECE 3160. Computer aided combinational and sequential digital logic analysis, design, and applications, utilizing both standard digital components and programmable logic devices.

From:

ECE 4120 (5120) - Fundamentals of Computer Design Lec. 3. Credit 3.

Prerequisite: ECE 3130 and ECE 4110 (5110). Continuation of digital system design concepts and applications with emphasis on computer hardware design: CPU sequencers, arithmetic/logic units, fixed and floating point arithmetic implementations, and computer peripheral interfacing, utilizing programmable logic.

To:

ECE 4120 (5120) - Fundamentals of Computer Design Lec. 3. Credit 3.

Prerequisite: C or better in ECE 3130 and C or better in ECE 4110 (5110). Continuation of digital system design concepts and applications with emphasis on computer hardware design: CPU sequencers, arithmetic/logic units, fixed and floating point arithmetic implementations, and computer peripheral interfacing, utilizing programmable logic.

From:

ECE 4130 (5130) - Introduction to Digital VLSI Lec. 3. Credit 3.

Prerequisite: ECE 2110 and ECE 3300. Analysis, design and layout of complex digital integrated circuits in MOS technology. The course emphasizes design through projects and requires extensive use of simulation and layout VLSI CAD tools.

To:

ECE 4130 (5130) - Introduction to Digital VLSI Lec. 3. Credit 3.

Prerequisite: C or better in ECE 2110 and C or better in ECE 3300. Analysis, design and layout of complex digital integrated circuits in MOS technology. The course emphasizes design through projects and requires extensive use of simulation and layout VLSI CAD tools.

From:

ECE 4140 - Embedded System Design Lec. 2. Lab. 3, Credit 3.

Prerequisite: ECE 3130, and ECE 3160. Basic hardware and software concepts in the analysis and design of embedded systems, peripheral interfaces and performance analysis with hands-on design project.

To:

ECE 4140 - Embedded System Design Lec. 2. Lab. 3, Credit 3.

Prerequisite: C or better in ECE 3130 and C or better in ECE 3160. Basic hardware and software concepts in the analysis and design of embedded systems, peripheral interfaces and performance analysis with hands-on design project.

From:

ECE 4210 (5210) - Control System Design Lec. 3. Credit 3.

Prerequisite: (ECE 3210 and ECE 3260) or (ME 3050 and ME 3060). Design of compensators using frequency domain techniques; Design projects with hardware implementation.

To:

ECE 4210 (5210) - Control System Design Lec. 3. Credit.

Prerequisite: (C or better in ECE 3210 and C or better in ECE 3260) or (C or better in ME 3050 and C or better in ME 3060). Design of compensators using frequency domain techniques; Design projects with hardware implementation.

From:

ECE 4240 (5240) - Computer-Based Control Systems Lec. 3. Credit 3.

Prerequisite: ECE 3020 and ECE 4210 (5210). Z-transform; Sampling Theory, Stability of Discrete Time Systems, Analog to Digital Conversion, Digital to Analog Conversion, Implementation of Analog Control System in Discrete-time on a Microcomputer.

To:

ECE 4240 (5240) - Control-Based Control Systems Lec. 3. Credit 3.

Prerequisite: C or better in in ECE 3020 and C or better in ECE 4210 (5210). Z-transform; Sampling Theory, Stability of Discrete Time Systems, Analog to Digital Conversion, Digital to Analog Conversion, Implementation of Analog Control System in Discrete-time on a Microcomputer.

From:

ECE 4370 (5370) - Mechatronics and Intelligent Machines Engineering Lec. 2. Lab. 2. Credit 3.

Cross-listing: ME 4370 (5370)

Prerequisite: ECE 3130 and ECE 3160. Mechatronics; number systems; microcontroller technology and architecture of 8-bit microcontrollers (e.g. Motorola MC68HC 110); assembly language programming; A/D and D/A conversion; parallel I/O; programmable timer operation; interfacing sensors and actuators; applications; and team project on design and implementation of a mechatronic system.

To:

ECE 4370 (5370) - Mechatronics and Intelligent Machines Engineering Lec. 2. Lab. 2. Credit 3.

Cross-listing: ME 4370 (5370)

Prerequisite: C or better in ECE 3130 and C or better in ECE 3160. Mechatronics; number systems; microcontroller technology and architecture of 8-bit microcontrollers (e.g. Motorola MC68HC 110); assembly language programming; A/D and D/A conversion; parallel I/O; programmable timer operation; interfacing sensors and actuators; applications; and team project on design and implementation of a mechatronic system.

From:

ECE 4510 (5510) - Electromagnetic Fields II Lec. 3. Credit 3.

Prerequisite: ECE 3510. Polarization, Poynting's vector, transmission lines, waveguides, and radiation.

To:

ECE 4510 (5510) - Electromagnetic Fields II Lec. 3. Credit 3.

Prerequisite: C or better in ECE 3510. Polarization, Poynting's vector, transmission lines, waveguides, and radiation.

From:

ECE 4520 (5520) - Optoelectronic Engineering Lec. 3. Credit 3.

Prerequisite: ECE 3540. Device theory for optical communication and instrumentation systems.

To:

ECE 4520 (5520) - Optoelectronic Engineering Lec. 3. Credit 3.

Prerequisite: C or better in ECE 3540. Device theory for optical communication and instrumentation systems.

From:

ECE 4610 (5610) - Power System Analysis Lec. 3. Credit 3.

Prerequisite: ECE 3610. Power system components modeling in steady state, per unit calculations, transmission line steady state operation, power flow analysis, applications of commercial software.

To:

ECE 4610 (5610) - Power System Analysis Lec. 3. Credit 3.

Prerequisite: C or better in ECE 3610. Power system components modeling in steady state, per unit calculations, transmission line steady state operation, power flow analysis, applications of commercial software.

From:

ECE 4620 (5620) - Power System Operation and Control Lec. 3. Credit 3.

Prerequisite: ECE 4610 (5610). Symmetrical components, fault analysis, system protection, transient stability, power system controls including: automatic generation control, voltage regulation, and economic dispatch.

To:

ECE 4620 (5620) - Power System Operation and Control Lec. 3. Credit 3.

Prerequisite: C or better in ECE 4610 (5610). Symmetrical components, fault analysis, system protection, transient stability, power system controls including: automatic generation control, voltage regulation, and economic dispatch.

From:

ECE 4630 (5630) - Power Electronics Lec. 3. Credit 3.

Prerequisite: ECE 3300 and ECE 3610. Uncontrolled and controlled rectifiers, voltage controllers, chopper, de motor control, pulse-width modulation inverters, induction motor control, and power supplies.

To:

ECE 4630 (5630) - Power Electronics Lec. 3. Credit 3.

Prerequisite: C or better in ECE 3300 and C or better in ECE 3610. Uncontrolled and controlled rectifiers, voltage controllers, chopper, de motor control, pulse-width modulation inverters, induction motor control, and power supplies.

From:

ECE 4710 (5710) - Principles of Telecommunications Lec. 3. Credit 3.

Prerequisite: ECE 3710 and either ECE 3910 or MATH 3470. Performance of analog and digital communication systems in the presence of noise.

To:

ECE 4710 (5710) - Principles of Telecommunications Lec. 3. Credit 3.

Prerequisite: C or better in ECE 3710 and C or better in MATH 3470. Performance of analog and digital communication systems in the presence of noise.

From:

ECE 4720 (5720) - Telecommunication Systems Design Lec. 3. Credit 3.

Prerequisite: ECE 4710 (5710). Link budget, synchronization, frequency synthesis, receiver architecture, noise and distortion, error correction codes, spread-spectrum systems.

To:

ECE 4720 (5720) - Telecommunication Systems Design Lec. 3. Credit 3.

Prerequisite: C or better in ECE 4710 (5710). Link budget, synchronization, frequency synthesis, receiver architecture, noise and distortion, error correction codes, spread-spectrum systems.

From:

ECE 4910 - Professional Issues in Electrical and Computer Engineering Lec. 1. Rec. 1. Credit 1.

Prerequisite: SPCH 2410 or PC 2500 and Junior or Senior Standing. Professional topics in engineering, verbal technical communications.

To:

ECE 4910 - Professional Issues in Electrical and Computer Engineering Lec. 1. Rec. 1. Credit 1.

Prerequisite: Junior standing and either C or better in PC 2500 or C or better in SPCH 2410. Professional topics in engineering, verbal technical communications.

From:

ECE 4961 - Capstone Design I Lec. 2. Lab. 4. Credit 3.

Prerequisite: ECE 3020, ECE 3060, ECE 3130, ECE 3300, and ECE 4910. (ECE 3020 and/or ECE 4910 may be taken concurrently). The first in a sequence of two capstone design project courses.

Student teams will complete an industry client-driven system design project. Teamwork, leadership, project planning and management, specification, budgeting, design review, subsystem development, testing, weekly reporting, documentation, and oral presentation.

To:

ECE 4961 - Capstone Design I Lec. 2. Lab. 4. Credit 3.

Prerequisite: C or better in ECE 3020, C or better in ECE 3060, C or better in ECE 3130, C or better in ECE 3300, and C or better in ECE 4910 (ECE 3020 and/or ECE 4910 may be taken concurrently). The first in a sequence of two capstone design project courses. Student teams will complete an industry client-driven system design project. Teamwork, leadership, project planning and management, specification, budgeting, design review, subsystem development, testing, weekly reporting, documentation, and oral presentation.

Motion. Dr. Charles Carnal, representing Dr. Johnson, moved to approve the September 29 and October 8 memos, effective Fall 2016. The motion was seconded by Dr. Hoy and carried.

12. Approval of Course Additions and New Concentrations from the Department of Computer Science

In a memorandum dated October 8, 2015, approval was requested for the following:

Course Additions:

CSC 3220. Fundamentals of Data Science. Lec. 3. Credit 3.

Prerequisites: Math 2010, Math 3070 or Math 3470, and 'C' or better in CSC 2400. Co-requisites: none.

Introduction to the tools and techniques for developing data science applications and to the basics of data science including programming for data management, data manipulation, data analytics, and data visualization. Students will be introduced to various machine learning algorithms, and learn to formulate context-relevant questions and hypothesis to drive scientific research and understand statistical inference. Students will be introduced to Python and R, and will be expected to create tools using these programming languages. The foundation is laid for big data applications ranging from fraud detection to healthcare informatics.

CSC 3230. Healthcare Data Analytics. Lec. 3. Credit 3.

Prerequisites: Math 3070 or Math 3470, and 'C' or better in CSC 2400. Co-requisites: none. Introduction to healthcare data analytics. High level topics include healthcare data and data sources (including both electronic health records and genomic data), techniques for healthcare data analytics, applications of healthcare analytics, integration of analytics applications into clinical workflow, evaluation of analytics applications, and legal and ethical issues in healthcare data analytics.

CSC 4220. Data Mining and Machine Learning. Lec. 3. Credit 3.

Prerequisites: 'C' or better in CSC 3220. Co-requisites: none. Introduction to a solid grounding in machine learning concepts as well as practical advice on applying machine learning tools and techniques in real-world data mining situations, including preparing inputs, interpreting outputs, evaluating results, and the algorithmic methods at the heart of successful data mining. Students will also be introduced to latest advances in the field, including data transformations, ensemble learning, massive data sets, multi-instance learning, with an application towards the leading edge of contemporary research.

CSC 4770. Distributed and Cloud Computing. Lec. 3. Credit 3.

Prerequisites: 'C' or better in CSC 4760. Co-requisites: none. This course will cover the concepts in distributed systems including distributed computing,, networking, operating systems, cloud, and programming languages. Furthermore, it will examine current applied topics in distributed systems.

Course Changes:

Change the prerequisites for CSC 4100.

From:

CSC 4100 (5100) – Operating Systems Lec. 3. Credit 3.

Prerequisite: C or better in CSC 2110, CSC 2111 and either C or better in CSC 3410 or ECE 3120. A historical perspective of operating systems; overview of modern systems; processor, storage, and process management; virtual memory; deadlocks; concurrent processing and programming; protection; and case studies.

To:

CSC 4100 (5100) – Operating Systems Lec. 3. Credit 3.

Prerequisite: C or better in CSC 2110, CSC 2111 and either C or better in CSC 3410 or ECE 3120 3130. A historical perspective of operating systems; overview of modern systems; processor, storage, and process management; virtual memory; deadlocks; concurrent processing and programming; protection; and case studies.

Effective Date: Spring 2016

Motion. Dr. Wiant moved to approve the course changes. The motion was seconded and carried.

Curriculum Changes:

1. Changes to CSSC concentration (Updated curriculum is attached.)
 - a. Make Math 3070 an alternative to Math 3470.
 - b. Modify the science requirement from two lab sequences to one lab sequence and one additional 4-hour lab science.
 - c. Add four hours of electives to replace the removed science.

Motion. Dr. Wiant moved to approve the curriculum changes effective Fall 2016. The motion was seconded by Dr. Stein and carried.

New Concentrations:

Data Science Concentration

Parallel, Distributed, and High-Performance Computing Concentration

Data Science Concentration

FRESHMAN YEAR

- ENGR 1020 - Connections to Engineering and Technology¹ Credit: 1.
- CSC 1200 - Principles of Computing Credit: 3.
- CSC 1610 - Discrete Structures for Computer Science Credit: 3.
- CSC 2100 - Introduction to Problem Solving and Computer Programming Credit: 3.
- CSC 2101 - Problem Solving and Computer Programming Lab Credit: 1.
- CSC 2110 - Data Structures and Algorithms Credit: 3.
- CSC 2111 - Data Structures and Algorithms Lab Credit: 1.
- MATH 1910 - Calculus I Credit: 4.
- MATH 1920 - Calculus II Credit: 4.
- Social/Behavioral Science Elective² Credit 3. (ECON 2010 or ECON 2020 recommended)
- ENGL 1010 - Writing I Credit: 3.
- ENGL 1020 - Writing II Credit: 3.

TOTAL: 32

SOPHOMORE YEAR

- CSC 2120 - Object-Oriented Programming and Design Credit: 3.
- CSC 2121 - Object-Oriented Programming and Design Lab Credit: 1.
- CSC 2400 - Design of Algorithms Credit: 3.
- CSC 2500 - Unix Laboratory Credit: 1.
- CSC 2710 - Foundations of Computer Science Credit: 3.
- SPCH 2410 or PC 2500 Credit: 3.
- MATH 2010 - Matrix Algebra Credit: 3.
- MATH 3070 - Statistical Methods I Credit: 3.
- Science Sequence Credit³ 8.
- Social/Behavioral Science Elective² Credit 3. (ECON 2010 or ECON 2020 recommended)

TOTAL: 31

JUNIOR YEAR

- CSC 3040 - Professionalism, Communication and Research in Computing Credit: 3.
- CSC 3220 – Fundamentals of Data Science Credit 3.
- CSC 3300 - Database Management Systems Credit: 3.
- CSC 3410 - Computer Organization and Assembly Language Programming Credit: 3.
- Data Science Application Elective⁴ Credit 3.
- ENGL 2130 or ENGL 2230 or ENGL 2330 Credit: 3.
- HIST 2010 - American History I Credit: 3.
- HIST 2020 - American History II Credit: 3.
- Humanities/Fine Arts Elective Credit² 3
- Lab Science Credit 4.

TOTAL: 31

SENIOR YEAR

- CSC 4100 - Operating Systems Credit: 3.
- CSC 4200 - Computer Networks Credit: 3.
- CSC 4220 – Data Mining and Machine Learning Credit 3.
- CSC 4320 - Computer Architecture Credit: 3.
- CSC 4610 - Software Engineering I Credit: 3.
- CSC 4620 - Software Engineering II Credit: 3.
- Data Science Technical Elective⁵ Credit 3.
- CSC 4040 – Undergraduate Research or CSC 4990 Internship (Data Science only) Credit: 3.
- Humanities/Fine Arts Elective Credit² 3.

TOTAL: 27

¹Not required for transfer students with more than 12 hours and not included in the 120-hour degree requirement.

²See TBR General Education Core Requirements.

³The sequence must be one of the following:

BIOL 1105 -BIOL 1114, BIOL 1105-BIOL 2110, CHEM 1110-CHEM 1120, GEOL 1040-GEOL 1045 or PHYS 2110-PHYS 2120. The other lab science must be from a different discipline than the sequence.

⁴Select from one of the following: CSC 3220, GEOG 4510, MET 4650, MKT 3400, and BIOL 3810.

⁵Select from one of the following: CSC 4240 and CSC 4760.

Parallel, Distributed, and High-Performance Computing Concentration

FRESHMAN YEAR

- ENGR 1020 - Connections to Engineering and Technology1 Credit: 1.
- CSC 1200 - Principles of Computing Credit: 3.
- CSC 1610 - Discrete Structures for Computer Science Credit: 3.
- CSC 2100 - Introduction to Problem Solving and Computer Programming Credit: 3.
- CSC 2101 - Problem Solving and Computer Programming Lab Credit: 1.
- CSC 2110 - Data Structures and Algorithms Credit: 3.
- CSC 2111 - Data Structures and Algorithms Lab Credit: 1.
- MATH 1910 - Calculus I Credit: 4.
- MATH 1920 - Calculus II Credit: 4.
- Humanities/Fine Arts Elective Credit2 3.
- ENGL 1010 - Writing I Credit: 3.
- ENGL 1020 - Writing II Credit: 3.

TOTAL: 32

SOPHOMORE YEAR

- CSC 2120 - Object-Oriented Programming and Design Credit: 3.
- CSC 2121 - Object-Oriented Programming and Design Lab Credit: 1.
- CSC 2400 - Design of Algorithms Credit: 3.
- CSC 2500 - Unix Laboratory Credit: 1.
- CSC 2710 - Foundations of Computer Science Credit: 3.
- SPCH 2410 or PC 2500 Credit: 3.
- ENGL 2130 or ENGL 2230 or ENGL 2330 Credit: 3.
- MATH 2010 - Matrix Algebra Credit: 3.
- Science Sequence Credit3 8.
- Social/Behavioral Science Elective2 Credit 3.

TOTAL: 31

JUNIOR YEAR

- CSC 3040 - Professionalism, Communication and Research in Computing Credit: 3.
- CSC 3220 – Fundamentals of Data Science Credit 3.
- CSC 3300 - Database Management Systems Credit: 3.
- CSC 3410 - Computer Organization and Assembly Language Programming Credit: 3.
- PDH Technical Elective4 Credit 3.
- MATH 3470 - Introductory Probability and Statistics Credit: 3.
- HIST 2010 - American History I Credit: 3.
- HIST 2020 - American History II Credit: 3.
- Humanities/Fine Arts Elective Credit2 3.
- Lab Science Credit 4.

TOTAL: 31

SENIOR YEAR

- CSC 4100 - Operating Systems Credit: 3.
- CSC 4200 - Computer Networks Credit: 3.
- CSC 4320 - Computer Architecture Credit: 3.
- CSC 4610 - Software Engineering I Credit: 3.
- CSC 4620 - Software Engineering II Credit: 3.
- CSC 4760 - Parallel Programming Credit 3.
- CSC 4770 - Distributed and Cloud Computing Credit 3.
- Electives Credit 3.
- Social/Behavioral Science Elective2 Credit 3.

TOTAL: 27

Motion. Dr. Wiant moved to approve the course additions and the two new concentrations effective Fall 2016. The motion was seconded by Dr. Baker and carried.

NOTE: The TBR 30 Day Review Process forms are on file in the Associate Provost office.

13. Approval of Discipline Prefix from the Department of Communication

In a memorandum dated August 27, 2015, approval was requested for the following:

Addition of Discipline Prefix:

Add: COMM

Motion. Dr. Wilson moved to approve the new prefix, effective Fall 2016. The motion was seconded and carried.

14. Approval of Course Additions, Changes and Curriculum Changes from the Department of Communication

In a memorandum dated August 27, 2015, approval was requested for the following:

Course Additions: (Communication)

COMM 3100 Communication Theory (3 hours)

Prerequisite: SPCH 2410, SPCH 2430, JOUR 2200, Junior Status, or consent of instructor.

Examination and application of the major theories of communication processes, including mass communication, intrapersonal, interpersonal, intercultural, rhetorical, organizational, and other approaches to the study of communication.

Effective Date: Fall 2016

COMM 3200 Research Methods in Communication (3 hours)

Prerequisite: SPCH 2410, SPCH 2430, JOUR 2200, COMM 3100 or consent of instructor.

An introduction to the diverse methods of research employed in the study of communication and how they connect to major theories in communication. This course focuses on quantitative and qualitative methods of research in communication, including content analysis, survey research, discourse analysis, rhetorical analyses, observational research, and interviewing.

Motion. Dr. Wilson moved to approve the course additions effective Fall 2016. The motion was seconded by Ms. Galloway and carried.

Course Change:

FROM: JOUR 3400 Introduction to Broadcast Journalism Lec. 3. Credit 3.

Prerequisite: JOUR 2200 or JOUR 2220. Electronic media with emphasis on news writing for radio and television. May include experience on the campus radio.

TO: JOUR 3400 Introduction to Broadcast Journalism Lec. 3. Credit 3.

Prerequisite: JOUR 2200 or and JOUR 2220. Electronic media with emphasis on news writing for radio and television. May include experience on the campus radio.

Motion. Dr. Wilson moved to approve the course change effective Spring 2016. The motion was seconded by Dr. Stein and carried.

Curriculum Changes:

a. Journalism/News Editorial Option:

Junior Year:

Add COMM 3100 (3 hrs) and COMM 3200 (3 hrs)

Delete JOUR 4360 (3 hrs) and JOUR 4820 (3 hrs)

Senior Year:

Add JOUR 4360 (3 hrs) and JOUR 4820 (3 hrs)

Delete SOC Elective Hours (6 hrs)

Footnotes on Curriculum Page:

A. Environmental Communications:

Change From: CHEM 3710

To: ESS 3710 to reflect updates in Chemistry curriculum

E: Writing – Fiction and Non-Fiction:

Change From: JOUR 4853, JOUR 4856, JOUR 4859

To: JOUR4843, JOUR 4846, JOUR 4849 to correct typographical error

F: Literature:

Change From: ENGL 4910, ENGL 4920, ENGL 4930

To: ENGL 4911, ENGL 4921, ENGL 4931 to reflect updates in English curriculum

b. Journalism/Public Relations Option:

Junior Year:

Add COMM 3100 (3 hrs), COMM 3200 (3 hrs), and JOUR 3470 (3 hrs)

Delete JOUR 4360 (3 hrs), JOUR 4820 (3 hrs), and Elective (3 hrs)

Senior Year:

Add JOUR 4360 (3 hrs) and JOUR 4820 (3 hrs)

Delete SOC Elective Hours (3 hrs)

Change Elective (6 hrs) to Elective (3 hrs)

Footnotes on Curriculum Page:

A. Environmental Communications :

Change From: CHEM 3710

To: ESS 3710 to reflect updates in Chemistry curriculum

E: Writing – Fiction and Non-Fiction:

Change From: JOUR 4853, JOUR 4856, JOUR 4859

To: JOUR4843, JOUR 4846, JOUR 4849 to correct typographical error

F: Literature:

Change From: ENGL 4910, ENGL 4920, ENGL 4930

To: ENGL 4911, ENGL 4921, ENGL 4931 to reflect updates in English curriculum

Motion. Dr. Wilson moved to approve the curriculum changes effective Fall 2016. The motion was seconded and carried.

15. Approval of Course Additions, Changes and Curriculum Changes from the Department of Communication

In a memorandum dated August 27, 2015, approval was requested for the following:

Course Additions: (Speech)

SPCH 1020 Foundations of Communication Lec. 3. Credit 3.

Role of communication in society and education. Overview of topics germane to understanding effective communication.

SPCH 3400 Nonverbal Communication Lec. 3. Credit 3.

Prerequisite: Currently enrolled in or completed SPCH2410.

This course will examine the theory, research, and application of nonverbal communication as it is used in personal and professional contexts. The usage, effects, and application of nonverbal communication in interpersonal relationships, the workplace, the classroom, the courtroom, and intercultural relationships will be examined.

Effective Date: Fall 2016

Course Deletions:

SPCH 3610 Foundations of Speech Lec. 3. Credit 3.

Role of speech in society and education. Overview of topics germane to understanding effective speech.

Course Changes:

From: SPCH 2000 Communication Practices in Organizations Lec. 3. Credit 3.

This course introduces students to the theories and practices of communication within the work place. It covers various communication settings including interviewing, presentations, group work, meetings, and email.

To: SPCH 2000 **Introduction to Organizational Communication** Lec. 3. Credit 3.

This course introduces students to the theories and practices of communication within the work place. It covers various communication settings including interviewing, presentations, group work, meetings, and email.

From: SPCH 4410 Organizational Communication Lec 3. Credit 3.

Prerequisite: Upper-division status in communication or by permission of the instructor.

Approaches to the understanding of communicative cultures in modern organizations and their operant principles.

To: SPCH 4410 **Advanced** Organizational Communication Lec 3. Credit 3.

Prerequisite: Upper-division status in communication or by permission of the instructor.

Approaches to the understanding of communicative cultures in modern organizations and their operant principles.

Speech Curriculum Changes:

Freshman Year:

Add SPCH 1020 (3 hrs)

Delete SOC 1010 (3 hrs)

Sophomore Year:

From: ENGL 2130 (3 hrs)

To: ENGL 2130, 2230, or 2330 (3 hrs)

Delete SPCH 2800 (3 hrs), JOUR 3460 (3 hrs)

Add Directed Electives Credit (6 hrs)

Junior Year:

Add: COMM 3100 (3 hrs), COMM 3200 (3 hrs), JOUR 3770 (3 hrs), Communication Theory Elective (6 hrs), Communication Application Elective (3 hrs), Mass Communication Application Elective (3 hrs), Directed Elective (3 hrs)

Delete: JOUR 3400 (3 hrs), JOUR 3750 (3 hrs), SPCH 3000 (3 hrs), SPCH 3120 or LING 4440 (3 hrs), SPCH 3130 (3 hrs), SPCH 3610 (3 hrs), Elective (6 hrs)

Senior Year:

Add: Communication Theory Elective (6 hrs), Communication Application Elective (6 hrs)

Delete: ENGL 4551 or ENGL 4421 (3 hrs), SPCH 4410 (3 hrs), SPCH 4430 (3 hrs), SPCH 4540 (3 hrs), SPCH 4550 (3 hrs)

Change from Electives (9 hrs) to Directed Electives (12 hrs)

Footnotes on Curriculum Page:

Remove UNIV 1020 from footnote notation

Add footnotes 1-4

¹Students may choose from the following: JOUR 3400, JOUR 3460, JOUR 3750.

²Elective course to be selected in consultation with academic advisor.

³Students may choose from the following: LING 4440, SPCH 3000, SPCH 3120, SPCH 4410, SPCH 4430, SPCH 4603, SPCH 4900.

⁴Students may choose from the following: SPCH 2000, SPCH 2800, SPCH 3130, SPCH 3400, SPCH 4540, SPCH 4550, SPCH 4603, SPCH 4850, SPCH 4900.

Motion. Dr. Wilson moved to approve the additions and changes effective Fall 2016. The motion was seconded by Dr. Engelhardt and carried.

16. Approval of TBR 30 Day Review Process Form for Substantive Changes from the Department of Communication

Motion. Due to curriculum modifications involving 18 or more credit hours within the Department of Communication, Dr. Wilson moved approval of the TBR 30 Day Review Process Form. The motion was seconded by Dr. Wendt and carried.

NOTE: TBR 30 Day Review Process form on file in the Associate Provost Office

17. Approval of Course Addition from the Department of Economics, Finance, and Marketing

In a memorandum dated October 6, 2015, approval was requested for the following:

Course Addition:

MKT 3200/ENTR 3200 Entrepreneurial mindset 3 Credit Hours

This introductory course provides a framework of entrepreneurial thinking and acting. Specifically, this course aims to help students become more customer-oriented and opportunity-driven in acting on innovative ideas, serve as change agent, and learn leveraging resources while mitigating and managing risks. It further provides a basic infrastructure in business, so students can accomplish the eventual transition of successfully managing, financing and marketing the business venture and products/services in increasingly competitive global market places/spaces.

Motion. Dr. Isbell moved to approve the addition effective Fall 2016. The motion was seconded by Ms. Galloway and carried.

18. Approval of Course Addition from the School of Interdisciplinary Studies

In a memorandum dated October 21, 2015, approval was requested for the following:

Course Addition:

LIST ~~1100~~ 1000 Lec. 1

LIST 1000 is created for the FLS Core Courses offered in nine levels of proficiency. In the core course students learn the skills of speaking, listening, reading and writing in an integrated manner. LIST 1000 is reserved for participants in the Intensive English Language Program and is not intended for degree seeking students. Credits may not be applied to a degree program. May be repeated up to 6 times.

Motion. Dr. Joe Roberts moved to approve the addition, with the edit to change the course number from 1100 to 1000, to be effective Spring 2016. The motion was seconded by Dr. Groundland and carried.

19. Informational Only – TBR Letter of Application for Bachelor of Science in Vehicle Engineering

Dr. Hoy informed the committee of the TBR Letter of Application going forward for the creation of a new Bachelor of Science degree in Vehicle Engineering from the College of Engineering, which will be housed within the Department of Mechanical Engineering. Dr. Hoy gave a brief overview of the programs goals and objectives.

NOTE: TBR Letter of Application on file in the Associate Provost office

20. Approval of Course Addition from the School of Nursing

In a memorandum dated October 6, 2015, approval was requested for the following:

Course Addition:

NURS 4240 Clinical Immersion at Disciplinary Interfaces Independent Study 3, Cr. 3

This course focuses on team-based identification of unmet medical needs and development of robust solutions. Select disease conditions will be discussed and technologies used to address those conditions will be examined. Students will participate in simulation lab and clinical immersion for experiential learning in hospitals, urgent care facilities, assisted living facilities, senior citizen centers, and/or other healthcare settings.

Motion. Dr. Tzeng moved to approve the addition effective Spring 2016. The motion was seconded by Dr. Killman and carried.

21. Informational Only – Progress on Accelerated BSN Curriculum for Second Degree Students from the School of Nursing

Dr. Jared presented the progress on the accelerated BSN pilot curriculum that was offered the Summer of 2014 to 19 students with a prior Bachelor’s degree.

The following new proposed curriculum was submitted for informational purposes. Should the School gain the additional personnel resources needed to expand this pilot curriculum, the School will return to the University Curriculum Committee for a formal program modification and new BSN degree option for second degree students.

Proposed Plan of Study for Accelerated BSN for Second Degree Students

Pre-Requisites:

Bachelor’s Degree from accredited university

Within the last 10 years:

BIOL 2010: Anatomy & Physiology I

BIOL 2020 Anatomy & Physiology II

BIOL 3230 Microbiology

MATH 1130 College Algebra or higher math

FALL 2016		
1 st Mini-Term	2 nd Mini-Term	Full Term
NURS 3260- Assessment (2)	NURS 3250 – Med/Surg I (4)	NURS 3240 – Pharm I (3)
NURS 3261- Assessment Lab (1)	NURS 3280 – Med/Surg I Lab (3)	
NURS 3270- Fundamentals (2)	NURS 3290 – Patho I (2)	
NURS 3271- Fundamentals Lab (1)		
6 hours	9 hours	3 hours

	Total Semester Hours: 18
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SPRING 2017	
1st Mini-Term	2nd Mini-Term
NURS 3370 - Mental Health (3)	NURS 3350- Med/Surg II (4)
NURS 3371 – Mental Health Lab (2)	NURS3361- Med/Surg II: Lab (3)
NURS 4300 – Research (3) *	NURS 3390– Patho II (2)
NURS 4800 – Geriatrics (2) *	
8- 10* hours	9 hours
	Total Semester Hours: 14 to 19*

MAY-INTENSIVE
NURS 4300-Research (3) *
NURS 4800 – Geriatrics (2) *

SUMMER 2017		
1st Mini-Term	2nd Mini-Term	Full Term
NURS 4000- OB (3)	NURS 4100-PEDS (3)	NURS – Pharm 2 (2)
NURS 4001- OB Lab (2)	NURS 4101- PEDS Lab (2)	NURS 4300 – Research (3)*
5 hours	5 hours	2 to 3 hours
		Total Semester Hours: 12 to 15*

FALL 2017		
1st Mini-Term	2nd Mini-Term	Full Term
NURS 4430- Community Health (3)	NURS 4450- Leadership/Management (3)	NURS 3380: Licensure Prep (1)
NURS 4431- Community Health : Lab (3)	NURS 4451- Leadership/Management (4)	
6 hours	7 hours	1 hour
		Total Semester hours: 14

* Optional course – recommend research class be population focused based on other specialty course being taken in the same term

Reviewed, revised, and approved by Curriculum Committee 10/6/2015

Approved by SON Faculty Organization 10/6/2015

Dr. Huo suggested the School of Nursing submit a proposal to the committee for official approval. The proposal will also need to include a financial statement.

Dr. Jared stated these students need to be admitted to the University on scholar web by December 15.

As this is the last meeting of the semester, it was suggested the proposal be sent out for a vote via email.

22. Approval of TTU Innovation and Entrepreneurship Certificate

Dr. Stephen Canfield presented the TBR 30 Day Review Process form for the creating of the TTU Innovation and Entrepreneurship Certificate. The Certificate is an interdisciplinary program of study designed to provide students with the tools necessary to incorporate entrepreneurship and innovation in every field of study.

Motion. Dr. Joe Roberts moved to approve the Certificate program effective Spring 2016. The motion was seconded by Dr. Wiant.

A question was asked how evidence of earning the certificate would be shown.

Ms. Burgess stated that upon approval by TBR, it can be listed on a student's transcript, but it will not be on the diploma.

In addition to appearing on the student's transcript, a certificate will be awarded. It is to be determined what area will issue the certificate.

Dr. Eisen stated a minor cannot include courses which are already in their major and questioned if a certificate would run into the same issue.

Dr. Hodum stated that it would be ideal if we could build in as many credentials as we can in the most efficient way. If you can build a minor into a program of study – that would be preferred.

A vote was taken and the motion carried.

Dr. Payne extended a thank you to all who worked on the creation of the certificate.

23. Other Such Matters

Catalog Term – Ms. Winningham

As we have been testing Banner's online graduation application, we realized that it did not have a field for the student to provide which catalog year the student had followed for graduation purposes. In

testing we also realized that we had information in the catalog that did not match our process for admitting students and changing majors. By default, when a student is admitted to the University the catalog term created for the student is the term of entry regardless of the student type. Below is item number eleven from *Undergraduate Degree Requirements* and with the next edition of the Undergraduate Catalog I plan to strikethrough the text below and insert the information in red text.

Catalog to follow: To graduate, a student meets the requirements of the catalog effective at the time he or she entered the curriculum, provided graduation is within seven years from that entrance date, or the catalog in effect at the time of graduation. ~~If a student is out of the university at least one full year, the student must meet with the department chairperson upon re-entering into the program to determine which catalog to follow.~~ "Catalog" refers specifically to degree requirements in this section. Degree requirements for all students, regardless of date of enrollment in their curricula, may be subject to change prior to the publication of a new catalog when the implementation of curricular changes is necessary to maintain quality programs. The designated catalog for graduation must be approved by the departmental chairperson if different from the one in effect when a student entered the curriculum or the catalog in effect at the time of graduation. Students entering a curriculum in the summer **term will** ~~are expected to~~ follow the catalog for the next academic year. A Tennessee public community college student may select the Tennessee Tech Catalog effective at the time he or she enters the community college if that student enrolls at Tennessee Tech within six years and continues in the major chosen while in community college.

Dr. Hodum stated that in addition to the changes presented above, he would like to further refine and make clearer when a student entered a curriculum, as to what catalog to follow. In trying to account for the many exceptions they will try in every way to make this good for the students.

MINORS

Dr. Hodum stated that minors are now appearing on transcripts and uncovering some things that have not been thought of before. One being, that a substitution of a course in a minor should be determined, if appropriate, by the department in which the minor is housed. He stated they have gotten several requests where this has not been done. He requested if substitutions in minors are being requested that prior approval from that unit which controls the minor has been obtained.

Dr. Hodum stated with the current practice, courses in the major cannot be used toward a minor. He feels a student should be able to use as many credentials as possible in the most efficient way. Building a minor into a program of study is an excellent way to recruit students. He stated we do not have anything in policy on this issue, it has just been common practice not to double count course credits. He would like to know the wishes of the committee on this and then follow up to put an official policy in place.

Dr. Mills took a straw poll which showed strong support for allowing credits to be double-counted.

It was agreed that Dr. Mills would appoint a subcommittee to work with Dr. Hodum, who will serve as chair, to develop a policy.

The meeting adjourned.

