Wilkes University Curriculum Committee
PROPOSAL SUBMITTAL FORM

Directions:

• Use this set of forms for all proposals sent to the Curriculum Committee.
• Pages 1-3 of this document are required. Any unnecessary forms should be deleted from the packet before submissions. If multiple forms are needed (course addition, course deletion, etc), simply copy and paste additional forms into this packet.
• Note that all new programs (majors and minors), program eliminations, significant program revisions and all general education core revisions must be reviewed and approved by the Provost and Academic Planning Committee (APC) prior to submission to the Curriculum Committee. The Provost will make the decision if a program revision requires APC review.
• Completed and signed forms are due no later than the second Tuesday of every month. Submit one signed original hard copy and a scanned electronic copy with all signatures to the Chair of the Curriculum Committee.

1. Originators: Dr. Thy Srinivasan, Dr. John Gilmer, Dr. Abas Sabouni, Dr. Amjad Nazzal, Dr. Wei Du, Dr. Shi Sha, Dr. Gregory Harms, Dr. Del Lucent, Prof. Robert Taylor
Department of Electrical Engineering & Physics

2. Proposal Title: Addition of new courses EE 216, EE 217, and EE 285 to replace EGR 200, EE 211, and EE 283 in the EE curriculum

3. Check only one type of proposal: (double click on the appropriate check box and change default value to “checked”). Each different type of proposal must be submitted on a separate form.
   - New Program. (Major or Minor Degree Programs). This requires prior review and approval by the Provost and APC. Major = minimum of 30 credits, minor = minimum of 18 credits.
   - New Concentration, Track, or Certificate. The Provost determines if review and approval by APC is necessary. Concentration – minimum of 12 credits, certification, endorsement and track are discipline specific.
   - Elimination of Program. (Major or Minor Degree Programs). This requires prior review and approval by the Provost and APC.
   - Elimination of Concentration, Track, or Certificate. The Provost determines if review and approval by APC is necessary.
   - Program Revision. Significant revisions to a program require review and approval by the Provost. The Provost determines if review and approval by APC is necessary.
   - General Education Revision. Submissions only accepted from the General Education Committee (GEC). Must be reviewed and approved by the Provost.
   - Creation of new departments, elimination of existing department. This requires prior review and approval by the Provost and APC.
   - Course additions or deletions not affecting programs (such as elective courses, transition of “topics” courses to permanent courses).
   - Change in course credit or classroom hours.
   - Incidental Changes. Includes changes in course/program title, course descriptions, and course prerequisites. (Although these changes do require approval by the Curriculum Committee, they do not go before the full faculty for approval).
   - Other (Specify)

Indicate the number of course modification forms that apply to this proposal:

   ___3___ Course Addition Form (Attach Syllabi: refer to Faculty Handbook for requirements)
   _______ Course Deletion Form

Revised 4/30/2018
4. Executive Summary of Proposal.

Briefly summarize this proposal. The breadth and depth of this executive summary should reflect the complexity and significance of the proposal. Include an overview of the proposal, background and reasoning behind the proposal and a description of how the proposal relates to the mission and strategic long-range plan of the unit and/or university. For incidental changes a one or two sentence explanation is adequate.

EE 211 *Electrical Circuits and Devices* is currently a core course for both EE and non-EE majors. The course covers circuit analysis and electrical devices. Assessments of subsequent EE courses (EE 251, EE 252, EE 314, EE 325) reveal that EE majors need significantly more exposure to circuit analysis in EE 211. However, any attempt to increase the coverage of circuit analysis in EE 211 will reduce the coverage of electrical devices needed for non-EE majors and expose them to higher level of circuit analysis that they don’t really need. Also, EGR 200 *Introduction to Materials Engineering* (3 credits) is a core course for EE majors and is meant to satisfy the science requirements mandated by the accreditation body for engineers (ABET). ABET reviewers identified this course as an engineering course rather than a science course. The EE curriculum has been revised to satisfy the science requirements of ABET and EGR 200 no longer satisfies that need. So, the proposal removes the requirement of EGR 200 as a core course for EE majors.

In the case of ME majors planning to have double major in ME and EE, EE 211 and EE 283 will still be accepted and they need to take EE 217.

In summary, (a) the proposal changes the course description and the course objectives of EE 211 and the related lab course EE 283 to suit the needs of non-EE majors and

(b) it replaces EE 211 (3 credits), EE 283 (1 credit), and EGR 200 (3 credits) with EE 216 *Circuit Analysis I* (3 credits), EE 217 *Circuit Analysis II* (3 credits), and EE 285 (*Electrical Circuits Lab*) (1 credit) in the EE curriculum.

Necessary prerequisite changes for other courses are also included in the proposal.

5. Other specific information. (Not applicable for incidental changes.)

What other programs, if any, will be affected by this proposal? Describe what resources are available for this proposal. Are they adequate? What would be the effect on the curriculum of all potentially affected programs if this proposal were adopted? Include any potential effects to the curriculum of current programs, departments and courses.

Mechanical Engineering and Engineering Management programs are the main programs that will be affected by the proposal as EE 211 and EE 283 are core courses for those majors. However, the proposal only modifies the contents and objectives of these courses in such a way to better prepare them for future courses like EGR 222 Mechatronics, ME 314 Robotics, and senior projects while minimizing the analytical rigor needed to solve complex circuits that they may not need in their curriculum.
6. Program Outline. (Not applicable for incidental changes).
A semester-by-semester program outline as it would appear in the bulletin for a new program or any modified program with all changes clearly indicated.

Electrical Engineering Major - Required Courses and Recommended Course Sequence
First Semester
- MTH-111 Calculus I (4 credits)
- CHM-117 Introductory Chemistry Lab for Engineers (1 credit)
- CHM-118 Chemistry for Engineers (3 credits)
- ME-180 CADD Lab (1 credit)
- ENG-101 Composition (4 credits)
- FYF-101 First-Year Foundations (3 credits)
  Total: 16 credits

Second Semester
- MTH-112 Calculus II (4 credits)
- PHY-201 General Physics I (3 credits)
- PHY-204 General Physics I Laboratory (1 credit)
- EE 140 Scientific Programming (3 credits)
- EGR-200 Introduction to Materials Science (3 credits)
- EE 216 Circuit Analysis I (3 credits)
- Distribution Requirement (3 credits)
  Total: 17 credits

Third Semester
- MTH-211 Intro. to Differential Equations (4 credits)
- PHY-202 General Physics II (3 credits)
- PHY-202 General Physics II Laboratory (1 credit)
- EE 211 Electrical Circuits and Devices (3 credits)
- EE 283 Electrical Measurements Lab (1 credit)
- EE 217 Circuit Analysis II (3 credits)
- EE 285 Electrical Circuits Lab (1 credit)
- ME-231 Statics (3 credits)
  Total: 15 credits

Fourth Semester
- MTH-212 Multivariable Calculus (4 credits)
- EE-251 Electronics I (3 credits)
- EGR-222 Mechatronics (3 credits)
- EE-241 Digital Design (4 credits)
- Distribution Requirement (3 credits)
  Total: 17 credits

Fifth Semester
- EE-252 Electronics II (4 credits)
- EE-271 Semiconductor Devices (4 credits)
- EE-381 Microfabrication Lab (3 credits)
- PHY-214 Applied Physics (3 credits)
- Distribution Requirement (3 credits)

Revised 4/17/2018
Total: 17 credits

Sixth Semester
- EGR-399 Cooperative Education**
- or Technical Electives (6 credits)
- EGR-201 Professionalism and Ethics (1 credit)
- Distribution Requirements (3 credits)
- EGM-320 Engineering Project Management & Analysis (3 credits)
- PHY 203 Modern Physics (3 credits)
- PHY 206 Modern Physics Laboratory (1 credit)
  Total: 17 credits

Seventh Semester
- EE-314 Control Systems (3 credits)
- EE-337 Engineering Electromagnetics I (3 credits)
- EE-391 Senior Projects I (1 credit)
- EE-325 Energy Conversion Devices (3 credits)
- Distribution Requirement (6 credits)
  Total: 16 credits

Eighth Semester
- EE-339 Engineering Electromagnetics II (4 credits)
- EE-382 Modern Communication Systems (4 credits)
- EE-392 Senior Projects II (2 credits)
- Technical Elective (3 credits)
- Free Elective (3 credits)
  Total: 16 credits

*Technical electives may be chosen from any advisor-approved math, science, or engineering course numbered 200 or above.
**Students must consult with the Cooperative Education Coordinator to determine availability and proper scheduling of the Cooperative Education experience.

7. New Program Assessments: (For new programs ONLY)

All new major programs reviewed through the Curriculum Committee must complete this section. Please consult the following page for guidance in developing an assessment plan: https://wilkes.edu/about-wilkes/university-committees/assessment/assessment-planning.aspx

a. Please list program-level student learning outcomes (SLOs) that all program majors should be able to demonstrate upon graduation from the program. SLOs should be worded such that student performance can be measured directly.

Insert Text Here…

b. Please briefly describe current plans for how student performance on each program-level SLO will be assessed. Be sure to answer where (which courses), when (frequency), and how (assessment method) for each SLO.

Insert Text Here…
c. Please identify by name any external accreditation agency or agencies that will influence assessment planning. Include standards or requirements from that accreditor that must be followed when developing the program’s assessment plan. *You are encouraged to share specific, current web links to relevant content when standards or requirements related to assessment are substantial.*

Insert Text Here…

8. Signatures and Recommendations. (please date)
   - Signatures of involved Department chair(s) and Dean(s) indicate agreement with the proposal and that adequate resources (library, faculty, technology) are available to support proposal.
   - If a potential signatory disagrees with a proposal he/she should write “I disagree with this proposal” and a signed statement should be attached to this submission.

<table>
<thead>
<tr>
<th>Name</th>
<th>Signature</th>
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<tbody>
<tr>
<td>Robert Taylor</td>
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<tr>
<td>Chair, Dept. of Electrical Engineering &amp; Physics</td>
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<td>Henry Castejon</td>
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<td>Chair, Dept. of Mechanical Engineering &amp; Engineering and Management</td>
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<td>Prahlad Murthy</td>
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<td>Dean, College of Science and Engineering</td>
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<td>Susan Hritzak</td>
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<td>Registrar</td>
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<td>Anne Skleder</td>
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<tr>
<td>Provost (For new programs, significant revisions and revisions to the General Education Program revisions only). Provost should check here  ____ if this proposal is a program revision AND the significance of the revision requires review and approval by APC prior to Curriculum Committee.</td>
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<tr>
<td>Print Name</td>
<td>Signature</td>
<td>Date</td>
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<tr>
<td>Chair, Academic Planning Committee. For new programs, program revisions sent via the provost. Signature indicates that the proposal has been reviewed and approved by APC.</td>
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Revised 4/17/2018
Wilkes University Curriculum Committee
COURSE ADDITION FORM

1. Course Title: Circuit Analysis I

2. Course Number: EE 216
   Coordinate with Registrar to insure course number is available

3. Course Credits: 3
   Classroom Hours 2 Lab Hours 2 Other ______

4. Course Pre-requisites: MTH 111 or Concurrent

5. Course Co-requisites:

6. Effective Date of Addition (semester/year) Spring 2020

7. Course Description (as proposed for the Bulletin):
   Course descriptions provide an overview of the topics covered. If the course is offered on a scheduled basis, i.e. every other year, or only during a set semester, note this in the description. Course descriptions should be no more than two to three sentences in length.

   Analysis of dc and sinusoidal ac circuits and power calculations. Network theorems. 2-hour lecture and 2-hour lab per week

8. Required Documentation:
   Proposed Syllabus Attach proposed syllabi immediately after this document. In some situations the official syllabus may contain information which is beyond the review needs of the Curriculum Committee (such as extensive rubrics, etc). It is permissible to attach an abbreviated syllabus. In general, syllabi (whether full or abbreviated) should contain the following information: Course Title, Course Number, Credit hours, Faculty Information (name contact information, office hours), Course Description, Course Outcomes or Objectives, Assessment (grading) information, required texts (or other things such as tools, software, etc), pertinent policies and a proposed schedule of topics.

Revised 4/17/2018
EE 216  Circuit Analysis I

A. GENERAL INFORMATION:
(Required Course for Electrical Engineering majors).
Instructor: Dr. Thyagarajan Srinivasan, Professor of Electrical Engineering
Email: thyagaranj.srinivasan@wilkes.edu
Office: SLC-221  Phone: 570-408-4811


B. CATALOG DESCRIPTION:
EE 216 – Circuit Analysis I– Three Credits
Analysis of dc and sinusoidal ac circuits and power calculations. Network theorems. 2-hour lecture and 2-hour lab per week
Pre-requisites: MTH 111 or Concurrent

C. LEARNING OBJECTIVES:
1. Analyze DC circuits in steady-state
2. Analyze steady-state, sinusoidal, AC circuits

D. TOPICS COVERED:
1. Node and loop analysis of DC circuits
2. Network theorems
3. Inductance and capacitance
4. Sinusoidal analysis of ac circuits and complex power calculations
5. Computer simulation of DC and AC circuits
6. Use of a mathematical software to solve circuit problems

E. PREREQUISITES BY TOPIC:
Knowledge of trigonometry, differential and integral calculus.

F. LEARNING OUTCOMES:
The Accreditation Board for Engineering and Technology (ABET) Criteria 2000 define the following program outcomes that all graduates of ABET accredited engineering programs must have:
1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgements, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives

Revised 4/17/2018
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgement to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Course Outcomes:
1. Ability to analyze DC circuits in steady-state (ABET outcome 1)
2. Ability to analyze sinusoidal AC circuits in steady-state (ABET outcome 1)
3. Ability to simulate AC or DC circuits (ABET outcome 1)
4. Ability to use mathematical software to analyze AC/DC circuits (ABET outcome 1)

G. REQUIREMENTS/REGULATIONS: HOMEWORK, EXAM:
1. Attendance at lectures is essential for successful completion of this course. According to student handbook: "After five consecutive instructional hours of unexcused absences from a class, students may be readmitted to the class only by action of the Office of Student Affairs and the department chairperson concerned." Students must satisfy each evaluation component in the course to receive a final grade.
2. It is the responsibility of each student to contact the instructor in a timely manner if he or she is uncertain about his or her standing in the course and about his or her potential for receiving a failing grade.
3. No programmable devices or systems (such as calculators, PDAs, iPods, iPads, cell phones, wireless communication or data storage devices) are allowed in examinations unless approved by the course instructor.
4. Individual student performance is measured against learning objective criteria using examinations, graded homework assignments and quizzes. Unethical behavior like cheating in exam or homework, plagiarism will cost a grade of "zero" in the course.
5. CALCULATOR: Scientific calculator capable of solving complex number problems and simultaneous equations (including complex numbers) is essential. Graphics capability is not essential. Only one calculator meeting the above requirement will be allowed in the exams. Homework problems can be solved using either such calculator or programs like MATLAB.

Assignments/ Homework:
- Assignments are to be written in engineering paper and handed in as hard copies with your name and section; staple firmly and submit at the beginning of the class on the due dates
- Late assignments will not be accepted unless proof of legitimate reason is provided.
- Students may collaborate on assignments but must hand in solution independently. Try the work on your own first -- learning how to START a problem is a key part of doing well in engineering. Then, discuss the problem in your group, and learn from those who can help you or teach others what you know that helped you on this problem. Once you've learned from someone else how to do the problem, do it on your own WITHOUT copying from them. If you do not contribute to the group, then don't copy their work. Any obvious copying between people will be considered plagiarism and implicated parties will receive a grade of 0 on the relevant question. Moreover, the university will be notified of this act and a note will be entered into the student’s record.

Exam:
- All the mid-term exam dates and times will be announced soon,
- All the exams will be closed book and closed notes unless otherwise announced.
- Students who have to leave the room during the exam for any reason will NOT be allowed back.
- Make up exams will NOT be given if a student misses the scheduled exam(s); however, if a student provides a legitimate reason to miss an exam and the instructor approves it, either the weightage for the final examination of the student will be increased to include the mid-term weighting or a make-up will be given.

Revised 4/17/2018
H. EVALUATION: (Exam dates, time and location will be announced later)

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<td>Midterm 1</td>
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<td>Final Exam</td>
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The earned final grade will be assigned by the accumulated percentage during the semester and categorized according to the following scheme:

- **4.0** 91% and above;
- **3.5** 86 to 90%;
- **3.0** 81 to 85%;
- **2.5** 76 to 80%;
- **2.0** 71 to 75%;
- **1.5** 61 to 70%;
- **1.0** 55 to 60%;
- **0.0** 54% and below

All final accumulated percentages will be rounded to the next highest integer.

Academic Integrity

Academic Integrity Students are expected to conduct themselves in accordance with the highest ethical standards of the Profession of Engineering and evince academic integrity in all their pursuits and activities at the university. As such, in accordance with the Intellectual Responsibility and Plagiarism in the Wilkes University Student Handbook, students are reminded that plagiarism or any other form of cheating in examinations, term tests, assignments, projects, or laboratory reports is subject to serious academic penalty (e.g. suspension or expulsion from university). A student found guilty of contributing to cheating by another student is also subject to serious academic penalty.

Course Schedule

<table>
<thead>
<tr>
<th></th>
<th>Topics covered (Tentative)</th>
<th>Section(s) from the textbook</th>
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<tbody>
<tr>
<td>Week 1, 2</td>
<td>Basic circuit concepts, KVL, KCL, Ohm’s laws, simple dc circuits; MATLAB fundamentals</td>
<td>Chapter 1, all sections</td>
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<td>Chapter 2: 2.1 – 2.5</td>
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<tr>
<td>Week 3-4</td>
<td>Simple dc circuits, Nodal analysis; Plotting 2D and 3D graphs</td>
<td>Chapter 3.3 – 2.5, 3: 3.1</td>
</tr>
<tr>
<td>Week 5-6</td>
<td>Loop analysis and Theorems; Symbolic math using MATLAB</td>
<td>Chapter 3: 3.2, CH 5</td>
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<tr>
<td>Week 7</td>
<td>Inductor and capacitor; Pspice basics</td>
<td>Chapter 6: 6.1, 6.2, 6.3</td>
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<tr>
<td>Week 8-9</td>
<td>AC Steady-state analysis; Pspice for DC circuits</td>
<td>Chapter 8: 8.1 - 8.7</td>
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<tr>
<td>Week 10-11</td>
<td>AC power calculations; Pspice for AC circuits</td>
<td>Chapter 8: 8.8, CH 9: 9.1</td>
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<tr>
<td>Week 12-14</td>
<td>Review of circuit analysis; experimental and simulational verification of analysis</td>
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</tbody>
</table>
Wilkes University Curriculum Committee
COURSE ADDITION FORM

1. Course Title: Circuit Analysis II

2. Course Number: ___EE 217_____________________
   Coordinate with Registrar to insure course number is available

3. Course Credits: __3___
   Classroom Hours___3___  Lab Hours__0____  Other______

4. Course Pre-requisites: MTH 112 or concurrent and EE 216

5. Course Co-requisites:

6. Effective Date of Addition (semester/year) __Fall 2020________

7. Course Description (as proposed for the Bulletin): Course descriptions provide an overview of the topics covered. If the course is offered on a scheduled basis, i.e. every other year, or only during a set semester, note this in the description. Course descriptions should be no more than two to three sentences in length.

   Three-phase circuits, mutually coupled circuits, filter circuits, transient circuits, two-port parameters. Introduction to electronic circuits

8. Required Documentation:
   Proposed Syllabus Attach proposed syllabi immediately after this document. In some situations the official syllabus may contain information which is beyond the review needs of the Curriculum Committee (such as extensive rubrics, etc). It is permissible to attach an abbreviated syllabus. In general, syllabi (whether full or abbreviated) should contain the following information: Course Title, Course Number, Credit hours, Faculty Information (name contact information, office hours), Course Description, Course Outcomes or Objectives, Assessment (grading) informations, required texts (or other things such as tools, software, etc), pertinent policies and a proposed schedule of topics.

Revised 4/17/2018
I. GENERAL INFORMATION:
(Required Course for Electrical Engineering majors).

Instructor: Dr. Thyagarajan Srinivasan, Professor of Electrical Engineering
Email: thyagaraj.srinivasan@wilkes.edu
Office: SLC-221 Phone: 570-408-4811


J. CATALOG DESCRIPTION:
EE 217 – Circuit Analysis II– Three Credits
Three-phase circuits, mutually coupled circuits, filter circuits, transient circuits, two-port parameters. Introduction to electronic circuits
Pre-requisites: MTH 112 or concurrent and EE 216

K. LEARNING OBJECTIVES:
1. Analyze three-phase circuits
2. Analyze mutually coupled circuits
3. Analyze filter circuits
4. Analyze transient circuits
5. Analyze power electronic circuits

L. TOPICS COVERED:
1. Three-phase circuits
2. Mutually coupled circuits
4. Op-amps
5. Bode plots
6. Active and passive filter circuits
7. Transient circuits; sequential switching circuits
8. Two-port parameters
9. Power electronic circuits

M. PREREQUISITES BY TOPIC:
Node and loop analysis of circuits and network theorems.

N. LEARNING OUTCOMES:
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Revised 4/17/2018
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgements, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
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7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Course Outcomes:
1. Ability to analyze three-phase circuits (ABET outcome 1)
2. Ability to analyze mutually coupled circuits (ABET outcome 1)
3. Ability to analyze op-amp circuits and simple electronic circuits (ABET outcome 1)
4. Ability to analyze active and passive filter circuits (ABET outcome 1)
5. Ability to analyze transient circuits (ABET outcome 1)

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<tbody>
<tr>
<td>Week 1, 2</td>
<td>Three-phase circuits</td>
<td>Chapter 10</td>
</tr>
<tr>
<td>Week 3</td>
<td>Mutually coupled circuits</td>
<td>Chapter 11</td>
</tr>
<tr>
<td>Week 4</td>
<td>Op-amp circuits</td>
<td>Chapter 4</td>
</tr>
<tr>
<td>Week 5</td>
<td>Bode plots</td>
<td>Chapter 12</td>
</tr>
<tr>
<td>Week 6-7</td>
<td>Active and passive filter circuits</td>
<td>Chapter 12</td>
</tr>
<tr>
<td>Week 8-10</td>
<td>Transient circuits</td>
<td>Chapter 7 and 13</td>
</tr>
<tr>
<td>Week 11-14</td>
<td>Basic Power electronic circuits</td>
<td>Notes</td>
</tr>
</tbody>
</table>
Wilkes University Curriculum Committee
COURSE ADDITION FORM

1. Course Title: Electrical Circuits Lab

2. Course Number: __EE 285______________
   Coordinate with Registrar to insure course number is available

3. Course Credits: __1__
   Classroom Hours__0__  Lab Hours__2__  Other____

4. Course Pre-requisites: EE 217 or Concurrent

5. Course Co-requisites:

6. Effective Date of Addition (semester/year) _Fall 2019________

7. Course Description (as proposed for the Bulletin): Course descriptions provide an overview of the topics covered. If the course is offered on a scheduled basis, i.e. every other year, or only during a set semester, note this in the description. Course descriptions should be no more than two to three sentences in length.

   Exercises on DC and AC circuits, three-phase circuits, operational amplifiers, resonant and filter circuits, and basic electronic circuits. One two-hour lab per week.

8. Required Documentation:
   Proposed Syllabus Attach proposed syllabi immediately after this document. In some situations the official syllabus may contain information which is beyond the review needs of the Curriculum Committee (such as extensive rubrics, etc). It is permissible to attach an abbreviated syllabus. In general, syllabi (whether full or abbreviated) should contain the following information: Course Title, Course Number, Credit hours, Faculty Information (name contact information, office hours), Course Description, Course Outcomes or Objectives, Assessment (grading) informations, required texts (or other things such as tools, software, etc), pertinent policies and a proposed schedule of topics.

Revised 4/17/2018
Department of Electrical Engineering & Physics

EE 285  Electrical Circuits Lab

Q. GENERAL INFORMATION:
(Required Course for Electrical Engineering majors).

Instructor: Dr. John Gilmer, Dr. Abas Sabouni, Dr Thyagarajan Srinivasan, Dr. Shi Sha, Dr. Wei Du

Text Book: Lab Manual

R. CATALOG DESCRIPTION:
EE 285 – Electrical Circuits Lab– One Credit
Exercises with DC and AC circuits, three-phase circuits, operational amplifiers, resonant and filter circuits, and basic electronic circuits. One two-hour lab per week.
Concurrent or after EE 217

S. LEARNING OBJECTIVES:
Conduct exercises with the following type of circuits and compare the experimental results with calculated values as well as simulated values:
   a. DC and AC circuits
   b. Three-phase circuits
   c. Op-amps and filters
   d. Electronic circuits

T. TOPICS COVERED:
Proposed Exercises:
1. DC circuits and network theorems
2. AC circuits and theorems
3. Three-phase circuits
4. Op-amps
5. Resonant circuits and filters
6. Electronic circuits

U. PREREQUISITES BY TOPIC:
Knowledge of circuit analysis

V. LEARNING OUTCOMES:
The Accreditation Board for Engineering and Technology (ABET) Criteria 2000 define the following program outcomes that all graduates of ABET accredited engineering programs must have:
1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences

Revised 4/17/2018
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgements, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgement to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Course Outcomes:
1. Ability to conduct experiments, collect, analyze and interpret data with DC and AC circuits (ABET outcomes 1, 5, and 6)
2. Ability to conduct experiments, collect, analyze and interpret data with three-phase circuits (ABET outcomes 1, 5, and 6)
3. Ability to conduct experiments, collect, analyze and interpret data with op-amp circuits (ABET outcomes 1, 5, and 6)
4. Ability to conduct experiments, collect, analyze and interpret data with active and passive filter circuits (ABET outcomes 1, 5, and 6)
5. Ability to conduct experiments, collect, analyze and interpret data with power electronic circuits (ABET outcomes 1, 5, and 6)

W. REQUIREMENTS/REGULATIONS: Lab Reports, EXAM:
11. Attendance at labs is essential for successful completion of this course. According to student handbook: “After five consecutive instructional hours of unexcused absences from a class, students may be readmitted to the class only by action of the Office of Student Affairs and the department chairperson concerned. Students must satisfy each evaluation component in the course to receive a final grade.
12. It is the responsibility of each student to contact the instructor in a timely manner if he or she is uncertain about his or her standing in the course and about his or her potential for receiving a failing grade.
13. No programmable devices or systems (such as calculators, PDAs, iPods, iPads, cell phones, wireless communication or data storage devices) are allowed in examinations unless approved by the course instructor.
14. Individual student performance is measured against learning objective criteria using examinations, graded lab reports. Unethical behavior like cheating in exam or homework, plagiarism will cost a grade of "zero" in the course.
15. CALCULATOR: Scientific calculator capable of solving complex number problems and simultaneous equations (including complex numbers) is essential. Graphics capability is not essential. Only one calculator meeting the above requirement will be allowed in the exams. Homework problems can be solved using either such calculator or programs like MATLAB.

Lab Reports:
- Lab reports are to be written neatly and handed in as hard copies with your name and section; staple firmly and submit at the beginning of the class on the due dates
- Late assignments will not be accepted unless proof of legitimate reason is provided.

Exam:
- All the exams will be closed book and closed notes unless otherwise announced.
- Students who have to leave the room during the exam for any reason will NOT be allowed back.

Revised 4/17/2018
- Make up exams will **NOT** be given if a student misses the scheduled exam(s); however, if a student provides a legitimate reason to miss an exam and the instructor approves it, either the weightage for the final examination of the student will be increased to include the mid-term weighting or a make-up will be given.

X. EVALUATION: (Exam dates, time and location will be announced later)

Lab reports = 60%
Mid-term exam = 15%
Final Exam – 35%

The earned final grade will be assigned by the accumulated percentage during the semester and categorized according to the following scheme:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.0</td>
<td>91% and above</td>
<td></td>
</tr>
<tr>
<td>3.5</td>
<td>86 to 90%</td>
<td></td>
</tr>
<tr>
<td>3.0</td>
<td>81 to 85%</td>
<td></td>
</tr>
<tr>
<td>2.5</td>
<td>76 to 80%</td>
<td></td>
</tr>
<tr>
<td>2.0</td>
<td>71 to 75%</td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td>61 to 70%</td>
<td></td>
</tr>
<tr>
<td>1.0</td>
<td>55 to 60%</td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>54% and below</td>
<td></td>
</tr>
</tbody>
</table>

All final accumulated percentages will be rounded to the next highest integer.

**Academic Integrity**

Academic Integrity: Students are expected to conduct themselves in accordance with the highest ethical standards of the Profession of Engineering and evince academic integrity in all their pursuits and activities at the university. As such, in accordance with the Intellectual Responsibility and Plagiarism in the Wilkes University Student Handbook, students are reminded that plagiarism or any other form of cheating in examinations, term tests, assignments, projects, or laboratory reports is subject to serious academic penalty (e.g. suspension or expulsion from university). A student found guilty of contributing to cheating by another student is also subject to serious academic penalty.

**Course Schedule**

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 3</td>
<td>Exercises with DC circuits, theorems</td>
</tr>
<tr>
<td>4-5</td>
<td>Exercises with AC circuits, theorems</td>
</tr>
<tr>
<td>6</td>
<td>Exercises with three-phase circuits</td>
</tr>
<tr>
<td>7-9</td>
<td>Exercises with op-amp circuits, active and passive filters, and resonance</td>
</tr>
<tr>
<td>10</td>
<td>Exercises with transient circuits</td>
</tr>
<tr>
<td>11-14</td>
<td>Exercises with power electronic circuits</td>
</tr>
</tbody>
</table>
Wilkes University Curriculum Committee
COURSE CHANGE FORM

Directions: Use this form to change information relating to an existing course. Please note, changes to course number require separate course addition/deletion forms (not this form!). Only indicate changes that are proposed (existing and proposed), other fields should be left blank.

Course Number: ____EE 211______
Course Title: ____Electrical Circuits and Devices__________

Effective Date of Course Change (semester/year) ____Fall 2020_______

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Existing</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Credit hours. (Indicate classroom, lab or “other” hours.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course Prerequisites</td>
<td>Co-requisite MTH 112</td>
<td>MTH 112 or Concurrent</td>
</tr>
</tbody>
</table>

¹ Course descriptions provide an overview of the topics covered. If the course is offered on a scheduled basis, i.e. every other year, or only during a set semester, note this in the description. Course descriptions should be no more than two to three sentences in length.
Wilkes University Curriculum Committee
COURSE CHANGE FORM

Directions: Use this form to change information relating to an existing course. Please note, changes to course number require separate course addition/deletion forms (not this form!). Only indicate changes that are proposed (existing and proposed), other fields should be left blank.

Course Number: __EE 283________________
Course Title: Electrical Engineering Lab
Effective Date of Course Change (semester/year) __Fall 2020________________

<table>
<thead>
<tr>
<th>Existing</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Title</td>
<td>Electrical Measurements Lab</td>
</tr>
<tr>
<td>Course Credit hours. (Indicate classroom, lab or “other” hours.)</td>
<td></td>
</tr>
<tr>
<td>Course Prerequisites</td>
<td>Co-requisite: EE-211</td>
</tr>
<tr>
<td>Course Description (as proposed for Bulletin)¹</td>
<td>A laboratory for the development of measurement techniques and use of electrical instruments for the measurement of various electrical quantities. One two-hour lab per week.</td>
</tr>
</tbody>
</table>

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Wilkes University Curriculum Committee  
COURSE CHANGE FORM

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Course Number: _____ EE 241 ____________  
Course Title: _____ Digital Design __________

Effective Date of Course Change (semester/year) ___Spring 2021____________

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Existing</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Credit hours.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Indicate classroom, lab or “other” hours.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course Prerequisites</td>
<td></td>
<td>EE 283 or EE 285</td>
</tr>
<tr>
<td>Course Description (as proposed for Bulletin)¹</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Wilkes University Curriculum Committee
COURSE CHANGE FORM

**Directions**: Use this form to change information relating to an existing course. Please note, changes to course number require separate course addition/deletion forms (not this form!). Only indicate changes that are proposed (existing and proposed), other fields should be left blank.

**Course Number**: __ EE 251 __________
**Course Title**: __________ Electronics I __________

**Effective Date of Course Change (semester/year)**  Spring 2021 __________

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Existing</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Credit hours.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Indicate classroom, lab or “other” hours.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course Prerequisites</td>
<td>EE 211</td>
<td>EE 211 or EE 216</td>
</tr>
<tr>
<td>Course Description</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(as proposed for Bulletin)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Course descriptions provide an overview of the topics covered. If the course is offered on a scheduled basis, i.e. every other year, or only during a set semester, note this in the description. Course descriptions should be no more than two to three sentences in length.
Wilkes University Curriculum Committee  
COURSE CHANGE FORM

**Directions:** Use this form to change information relating to an existing course. Please note, changes to course number require separate course addition/deletion forms (not this form!). Only indicate changes that are proposed (existing and proposed), other fields should be left blank.

- **Course Number:** _____ EE 252 ________
- **Course Title:** __Electronics II________________

**Effective Date of Course Change (semester/year)** _Fall 2021_____________

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Existing</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Credit hours. (Indicate classroom, lab or “other” hours.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course Prerequisites</td>
<td>EE251, EE 283, MTH 112, and PHY 202</td>
<td>EE 251, MTH 112, PHY 202, and either EE283 OR EE285</td>
</tr>
<tr>
<td>Course Description (as proposed for Bulletin)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Course descriptions provide an overview of the topics covered. If the course is offered on a scheduled basis, i.e. every other year, or only during a set semester, note this in the description. Course descriptions should be no more than two to three sentences in length.
Wilkes University Curriculum Committee  
COURSE CHANGE FORM

**Directions**: Use this form to change information relating to an existing course. Please note, changes to course number require separate course addition/deletion forms (not this form!). Only indicate changes that are proposed (existing and proposed), other fields should be left blank.

**Course Number**: PHY 214
**Course Title**: Applied Physics

**Effective Date of Course Change (semester/year)**: Spring 2021

<table>
<thead>
<tr>
<th><strong>Existing</strong></th>
<th><strong>Proposed</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Course Title</strong></td>
<td>Applied Physics</td>
</tr>
<tr>
<td><strong>Course Credit hours.</strong> (Indicate classroom, lab or “other” hours.)</td>
<td></td>
</tr>
<tr>
<td><strong>Course Prerequisites</strong></td>
<td>MTH 211, EGR 140 or CS 125</td>
</tr>
<tr>
<td><strong>Course Description</strong> (as proposed for Bulletin)</td>
<td>Modeling of physical systems. Engineering applications of Laplace transforms, Fourier series, matrices, statistics and probability, and related topics to solve problems in electromagnetics, heat and mass transfer, control systems, fluid mechanics, robotics, engineering management, and communication systems. Emphasis on the use of simulation packages. Two hours lecture and one 2-hour lab per week.</td>
</tr>
</tbody>
</table>

---

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Wilkes University Curriculum Committee
COURSE CHANGE FORM

Directions: Use this form to change information relating to an existing course. Please note, changes to course number require separate course addition/deletion forms (not this form!). Only indicate changes that are proposed (existing and proposed), other fields should be left blank.

Course Number: ___EE 314______________
Course Title: ___Control Systems______________

Effective Date of Course Change (semester/year) _Fall 2021____________

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Existing</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Credit hours.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Indicate classroom,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>lab or “other” hours.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course Prerequisites</td>
<td>EE 211 and EGR 214 or (PHY214)</td>
<td>PHY 214, EE 217 (or EE 211)</td>
</tr>
<tr>
<td>Course Description</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(as proposed for</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulletin)¹</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹ Course descriptions provide an overview of the topics covered. If the course is offered on a scheduled basis, i.e. every other year, or only during a set semester, note this in the description. Course descriptions should be no more than two to three sentences in length.
Wilkes University Curriculum Committee  
COURSE CHANGE FORM  

**Directions**: Use this form to change information relating to an existing course. Please note, changes to course number require separate course addition/deletion forms (not this form!). Only indicate changes that are proposed (existing and proposed), other fields should be left blank.

**Course Number**: _____ EE 325 ____________  
**Course Title**: _____ Energy Conversion Devices ____________

**Effective Date of Course Change ( semester/year)**  
Fall 2021 ________________

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Existing</th>
<th>Proposed</th>
</tr>
</thead>
</table>
| Course Credit hours.  
(Indicate classroom,  
lab or “other” hours.) | | |
| Course Prerequisites | EE 251 | EE 251 and EE 217 |
| Course Description  
(as proposed for  
Bulletin)$^1$ | | |

$^1$ Course descriptions provide an overview of the topics covered. If the course is offered on a scheduled basis, i.e. every other year, or only during a set semester, note this in the description. Course descriptions should be no more than two to three sentences in length.