Chair: Tracy Christofero | **GC#6: Course Addition**

Request for Graduate Course Addition

1. Prepare one paper copy with all signatures and supporting material and forward to the Graduate Council Chair.
2. E-mail one identical PDF copy to the Graduate Council Chair. If attachments included, please merge into a single file.
3. ***The Graduate Council cannot process this application until it has received both the PDF copy and the signed hard copy.***

College: CITE | Dept/Division: Engineering | Alpha Designator/Number: EE 606 | (•) Graded ( ) CR/NC

Contact Person: Salam Hajjar | Phone: 304-696-5657

NEW COURSE DATA:

New Course Title: Electrical engineering analysis

Alpha Designator/Number: E E 6 0 6

Title Abbreviation: e l e c t r i c a l a n a l y s i s

(Limit of 25 characters and spaces)

Course Catalog Description: (Limit of 30 words)
This course covers Laplace transform for boundary-value problem, applications to control theory, frequency response of ordinary differential equations, linear algebra techniques; eigenvalue analysis of linear systems and in multivariate optimization.

Co-requisite(s): N/A | First Term to be Offered: fall 2017

Prerequisite(s): N/A | Credit Hours: 3

Course(s) being deleted in place of this addition (*must submit course deletion form*): N/A

Signatures: if disapproved at any level, do not sign. Return to previous signer with recommendation attached.

Dept. Chair/Division Head [signature]	Date 10/4/16
Registrar [signature] 141001	Date 10/4/16
College Curriculum Chair [signature]	Date 10/17/16
Graduate Council Chair	Date

Form updated 10/2011

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College: CITE | Department/Division: Engineering | Alpha Designator/Number: EE 606

Provide complete information regarding the new course addition for each topic listed below. Before routing this form, a complete syllabus also must be attached addressing the items listed on the first page of this form.

1. FACULTY: Identify by name the faculty in your department/division who may teach this course.

Salam Hajjar

2. DUPLICATION: If a question of possible duplication occurs, attach a copy of the correspondence sent to the appropriate department(s) describing the proposal. Enter "***Not Applicable***" if not applicable.

N/A

3. REQUIRED COURSE: If this course will be required by another deparment(s), identify it/them by name. Enter "***Not Applicable***" if not applicable.

N/A

4. AGREEMENTS: If there are any agreements required to provide clinical experiences, attach the details and the signed agreement. Enter "***Not Applicable***" if not applicable.

N/A

5. ADDITIONAL RESOURCE REQUIREMENTS: If your department requires additional faculty, equipment, or specialized materials to teach this course, attach an estimate of the time and money required to secure these items. (Note: Approval of this form does not imply approval for additional resources.) Enter "***Not Applicable***" if not applicable.

N/A

6. COURSE OBJECTIVES: (May be submitted as a separate document)

1. Review of linear and nonlinear ordinary differential equations and Laplace transforms
2. Extend Laplace transform methods to boundary-value problems
3. Discuss applications to control theory
4. Stress problem solving efficiency
5. Discuss the frequency response of ordinary differential equations
6. Examine applications of linear algebra including the use of eigenvalue analysis in the solution of linear systems and in multivariate optimization.

7. COURSE OUTLINE (May be submitted as a separate document)

Linear and nonlinear ordinary differential equations and Laplace transforms
Laplace transform methods to boundary-value problems, singularity functions, the inverse transform
Applications to control theory
Problem solving efficiency
Frequency response of ordinary differential equations
Applications of linear algebra, matrices, determinants, eigenvalue analysis in the solution of linear systems and in multivariate optimization.
Fourier analysis techniques

8. SAMPLE TEXT(S) WITH AUTHOR(S) AND PUBLICATION DATES (May be submitted as a separate document)

Kreyszig's Engineering Mathematics-2 ISBN 13 : 9788126521371. Kreyszig Erwin. 2011
Electrical Engineer's Reference Book: Edition 14, ISBN: 9781483102634. M.A. Laughton. 2003
ELECTRICAL POWER SYSTEMS: Concept, Theory and Practice, Edition 2, ISBN 9788120349513. Subir Ray. 2014

9. EXAMPLE OF INSTRUCTIONAL METHODS (Lecture, lab, internship)

Lectures

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10. EXAMPLE EVALUATION METHODS (CHAPTER, MIDTERM, FINAL, PROJECTS, ETC.)

Tests, quizzes, homeworks

11. ADDITIONAL GRADUATE REQUIREMENTS IF LISTED AS AN UNDERGRADUATE/GRADUATE COURSE

N/A

12. PROVIDE COMPLETE BIBLIOGRAPHY (May be submitted as a separate document)

Kreyszig's Engineering Mathematics-2 ISBN 13 : 9788126521371. Kreyszig Erwin. 2011
Electrical Engineer's Reference Book: Edition 14, ISBN: 9781483102634. M.A. Laughton. 2003
ELECTRICAL POWER SYSTEMS: Concept, Theory and Practice, Edition 2, ISBN 9788120349513. Subir Ray. 2014

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Please insert in the text box below your course summary information for the Graduate Council agenda. Please enter the information exactly in this way (including headings):

Department:
Course Number and Title:
Catalog Description:
Prerequisites:
First Term Offered:
Credit Hours:

Department: Electrical engineering
Course Number and Title: MSEE 606 - Electrical engineering analysis
Catalog Description: This course covers Laplace transform for boundary-value problem, applications to control theory, frequency response of ordinary differential equations, linear algebra techniques; eigenvalue analysis of linear systems and in multivariate optimization.
Prerequisites: N/A
First Term Offered: Fall 2016
Credit Hours: 3

EE – 606 Electrical engineering analysis
College of Information Technology & Engineering
Weisberg Division of Engineering and Computer Science

Course Title/Number	EE Electrical engineering analysis
Semester/Year	Fall/2017
Days/Time	
Location	
Instructor	
Office	
Phone	
E-Mail	
Office/Hours	
University Policies	By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy be going to www.marshall.edu/academic-affairs and clicking on "Marshall University Policies." Or, you can access the policies directly by going to http://www.marshall.edu/academic-affairs/?page_id=802 Academic Dishonesty/ Excused Absence Policy for Undergraduates/ Computing Services Acceptable Use/ Inclement Weather/ Dead Week/ Students with Disabilities/ Academic Forgiveness/ Academic Probation and Suspension/ Academic Rights and Responsibilities of Students/ Affirmative Action/ Sexual Harassment

Course Description: From Catalog

This course covers Laplace transform for boundary-value problem, applications to control theory, frequency response of ordinary differential equations, linear algebra techniques; eigenvalue analysis of linear systems and in multivariate optimization.

Required Text: Additional Reading and Other Materials

Kreyszig's Engineering Mathematics-2 ISBN 13 : 9788126521371

References

- Electrical Engineer's Reference Book: Edition 14, ISBN: 9781483102634
- ELECTRICAL POWER SYSTEMS: Concept, Theory and Practice, Edition 2, ISBN 9788120349513

Course Objectives:

1. Review of linear and nonlinear ordinary differential equations and Laplace transforms
2. Extend Laplace transform methods to boundary-value problems
3. Discuss applications to control theory
4. Stress problem solving efficiency
5. Discuss the frequency response of ordinary differential equations

6. Examine applications of linear algebra including the use of eigenvalue analysis in the solution of linear systems and in multivariate optimization.
7. Provide an introduction to Fourier analysis.

Student Learning Outcomes (SO):

1. Student Learning Outcome: practice linear and nonlinear ordinary differential equations and Laplace transforms
2. Student Learning Outcome: use Laplace transform methods to boundary-value problems
3. Student Learning Outcome: apply the control theory
4. Student Learning Outcome: analyze systems using the frequency response of ordinary differential equations
5. Student Learning Outcome: apply linear algebra techniques to solve problems of linear systems and in multivariate optimization.
6. Student Learning Outcome: use Fourier analysis

Course Schedule

No of Weeks	Topic
2	Linear and nonlinear ordinary differential equations and Laplace transforms
2	Laplace transform methods to boundary-value problems, singularity functions, the inverse transform
2	Applications to control theory
2	Problem solving efficiency
3	Frequency response of ordinary differential equations
2	Applications of linear algebra, matrices, determinants, eigenvalue analysis in the solution of linear systems and in multivariate optimization.
2	Fourier analysis techniques

Grading:

Grading Basis:

Mid-term I:	20%	A:	90-100%
Mid-term II	20%	B:	80-90%
Mid-term III	20%	C:	70-80%
Assignments:	10%	D:	60-70%
Quizzes	10%	F:	0-60%
Final Exam:	20%		

Learning Outcomes:

Course Student Learning Outcomes	How students will practice each outcome in this Course	How student achievement of each outcome will be assessed in this Course
practice linear and nonlinear ordinary differential equations and Laplace transforms	Homework assignment	Homework, Quiz, Tests
use Laplace transform methods to boundary-value problems	Homework assignment	Homework, Quiz, Tests

apply the control theory	Homework assignment	Homework, Quiz, Tests
analyze systems using the frequency response of ordinary differential equations	Homework assignment	Homework, Quiz, Tests
apply linear algebra techniques to solve problems of linear systems and in multivariate optimization.	Homework assignment	Homework, Quiz, Tests
use Fourier analysis	Homework assignment	Homework, Quiz, Tests

Homework and Academic Dishonesty Policy:

Students are expected to adhere to the Marshall University academic dishonesty policy, found in the undergraduate catalog. Academic dishonesty will not be tolerated, and infractions of the university academic dishonesty requirements will lead to sanctions and reporting to the Office of Academic Affairs. Students are particularly encouraged to be careful to avoid cheating, plagiarism, and complicity as related to homework assignments.

Copying homework is not allowed:

Acceptable Behavior	Unacceptable Behavior
☺ Discuss homework problems with others.	☹ Show someone every step of a problem.
☺ Check answers with other students.	☹ Hand your assignment to someone else.
☺ Help other students learn & find mistakes.	☹ Group working problems simultaneously*

* Since everyone works at a different speed, "group work" can degenerate into a slower student copying a faster one, without really understanding what is going on. Quizzes and exams are taken individually, so it is important for students to learn how to solve problems on their own. Incoming homework assignments will be screened for inappropriate collaboration.

Additional Academic Policies:

Marshall University policies pertaining to Academic Dishonesty, Excused Absences, University Computing Services Acceptable Use, Inclement Weather, Dead Week, Students with Disabilities, Academic Dismissal, Academic Forgiveness, Academic Probation and Suspension, Academic Rights and Responsibilities of Students, Affirmative Action, and Sexual Harassment can be found at:
http://www.marshall.edu/academic-affairs/?page_id=802