Ira A. Fulton Schools of Engineering
Arizona State University

READING AND CONFERENCE- REQUEST
Electrical Engineering MSE, MS, and PHD students

Students: This form acts as the syllabus for this course. The official catalog description of the course is "*Independent study in which a student meets regularly with a faculty member to discuss assignments*." Please fill out the information below. Standard policies regarding communicating with your instructor, academic integrity, and other policies you find in your course syllabi also apply to this course. If there are issues with this form, it will not be approved and you will need to re do it. Your academic advisor will let you know if changes are needed. At the end of the course, you need to submit the evaluation form (found on our website). That form requires a copy of this form for reference (so be sure to save it), a copy of the work that you completed, and a grade from your faculty.

Faculty: Note that this form might not be approved by the academic advising office and the student might need to re-do it. We will send the students corrections if needed. The grading scale is listed below and applies to all students. A+ grades are not allowed, but you are able to use the +/- system otherwise if you determine it to be appropriate.

Student information

Last name	Anderson
First name	Jacob Anderson
Email address	jrande39@asu.edu
ID number	1219219144
Program	Electrical Engineering PHD
GPA	4.0
Reading and conference class	EEE 590
Semester for the class	2025 Spring

Course information

Topic of study	Self-Resonance of Inductive Components
Purpose of study	The purpose of this study is to determine the state-of-the-art analytical models for determining impedance characteristics of inductive components up to their first self-resonance frequency. The focus will be on those inductive components relevant in high frequency power electronics applications (e.g., power magnetics). At present, there are no widely accepted closed form solutions to determine these characteristics although there have been a significant number of propositions in the literature. This study will analyze all propositions and review their physical basis, assumptions, applicability, and overall predictive capability.

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Outline of topics that will be included	The topics to be included can broadly be grouped into two categories: (1) windings in air or dielectric materials and (2) windings with magnetic core material. In each of these categories, further classifications can be made based on their geometry, e.g., helical, spiral, loop, etc. Each of these categories of inductive components will be included and as was already mentioned the explicit analysis will be focused on physical basis, assumptions, applicability, and overall predictive capability. Further, a study of the integrated reactive component will also be included.
When will you be meeting with the instructor	Weekly

Grading scale (this applies to all students in the course. A+ grades will not be allowed. Faculty may use the +/- system otherwise if appropriate).

Grade	Rubric
A	Report contains outstanding technical content that conveys a thorough understanding of the technical concepts. The writing includes exceptional in-depth analysis and critical thinking skills applied to each of the subtopics and includes original insight. The references to the literature are comprehensive and relevant. The report is well organized with a clear information flow. Grammar is excellent and ASU and ECEE thesis formatting requirements are followed exactly.
B	Report contains above average technical content that conveys a thorough understanding of the technical concepts. The writing includes some evidence of in-depth analysis and critical thinking skills applied to many of the subtopics. The references to the literature are nearly complete and generally relevant. The report is well organized with a clear information flow. Grammar and English mistakes are minor, and ASU and ECEE thesis formatting requirements are followed closely.
C	Report contains average technical content that conveys a moderate level of technical understanding. The writing includes some evidence of deep analysis critical thinking skills applied to a few of the subtopics. The references to the literature have gaps but are generally relevant. The report is somewhat disorganized but readable. Grammar and English mistakes are present. ASU and ECEE thesis formatting requirements are followed loosely.
D	Report contains below average technical content that conveys a lack of technical understanding. The writing includes little to no evidence of deep analysis and critical thinking. The references to the literature have significant gaps and often are irrelevant. The report is disorganized and difficult to follow. Grammar and English mistakes are distracting. ASU and ECEE thesis formatting requirements are not followed.

Approvals

Student signature	Jacob Anderson Jacob Anderson (Dec 1, 2024 21:05 MST)
Faculty signature Mike Ranjram	Mike Ranjram Mike Ranjram (Dec 2, 2024 08:39 MST)
Advising signature	James VanderPloeg

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