

ME 495- Directed Research / BSc Research Thesis

Academic Year 2016-2017

Catalog Data

ME495 Directed Research / BSc Research Thesis (3-0-3) A well monitored and structured BSC Thesis/Directed Research Course for Active Research Projects-which could be taken only as a one-time Elective Special Topic. It is only open to students having a GPA of 3 or above and consent of instructor is mandatory. Faculty conducting the course must submit a formal well written program of research work and deliverables and grading policy in semester prior to enrollment for approval from department. Students can start working on the topics a head of time prior to formal enrollment as a course after its approval.

Textbook

Priya S, Inman DJ, editors. Energy harvesting technologies. New York: Springer; 2009.

Instructor

Dr. Hassen M. Ouakad, Associate Professor of Mechanical Engineering, KFUPM.

Goals

This course is intended to give the student in-depth knowledge of the nonlinear dynamics and vibrations as applied to energy harvesting applications.

Outcomes and Research Work

The student is expected to learn how to model and analyze the nonlinear behavior of energy harvesting structures. It will be also an opportunity to teach the student analytical as well as computational techniques to analyze the nonlinear multi-physics response of nonlinear single-degree of freedom systems. The student is supposed to perform research and conduct a comprehensive literature survey and report a critical literature review in the above subject. He will also formulate the problem, get preliminary results, and hopefully publish all of his research outcomes.

General ME495 Outcomes

- (a) **Imparting Research Skills and Tools**-Course must impart necessary research skills, tools and methodology ,and computational and or experimental skills to prepare and orient the student in doing independent or team oriented research work in his career or and for his graduate studies.

- (b) **Imparting Skills to Professionally Document the Research Findings** -The student must be prepared to document his research finding ultimately in form of a formal research paper

Evaluation

The student will meet with the course Instructor on a weekly basis and submit two progress reports and one final report to the Instructor. The final report will be prepared in form of formal research paper ready for submission. He will also make a presentation at the end of the semester.

The final report and the presentation will be evaluated by the Instructor and a panel of Mechanical Engineering faculty members. The panel of faculty including the course instructor) will evaluate the report and the presentation. The proposed panel will consist of the following ME faculty members:

Grading

Weekly meetings	30%
Two Progress Reports	30% (15% each)
Final Report	(in Research Paper Form Ready for Submission)
	30%
Oral presentation	10% (panel)