

Graduate Studies Program:
Academic Year 2014 - 15

**"Renewable Energy Systems: Design,
Development and Optimization"**

Associate Professor Athanassios Katsanevakis

Subject:

Development of a tool for the calculation of the main wind turbine blade parameters

Introduction & Motivation:

The purpose of this thesis is, to develop a calculation tool, based on spreadsheets that will be suitable to calculate the main aerodynamic parameters related to the design of wind turbine blades. Given the airfoil data, the tool should be able to perform all the necessary calculations for the parameters related to the shape and the main stresses applied to the turbine blades. The tool would be the basis for the development of novel rotor approaches to be used in wind turbine design.

Implementation & Means:

To be implemented using the software tools available in the Department of Mechanical Engineering of the Technological Education Institute of Central Macedonia, at Serres, Greece.

References:

[1] Wind Energy Explained: Theory, Design and Application, 2nd Edition [James F. Manwell](#), [Jon G. McGowan](#), [Anthony L. Rogers](#), Wiley, 2009.

[2] Wind Energy Explained, Manwell, McGowan, Rogers, Wiley, 2001.

Requirements: Good working knowledge of spreadsheet applications, good understanding of blade aerodynamics & knowledge of Visual Basic might improve thesis quality.