

MFE/MTE 521 : Fundamentals of Axiomatic Design of Manufacturing Processes

The course starts with an in-depth study of axiomatic design. Applications of axiomatic design are considered primarily, although not exclusively, for the design of manufacturing processes and tools. Axiomatic design is a design methodology based on the premise that there are two axioms that apply to all good designs. These axioms facilitate the teaching and practice of engineering design as a scientific discipline. Manufacturing process analysis is considered from the perspective of supporting design. Methods of analysis of manufacturing processes with broad applicability are sought. Special attention is given to examples in machining (traditional, nontraditional and grinding), additive manufacturing, and to the production of surfaces. The ability to find commonalities across applications and generalize is emphasized to facilitate further development of principles with broad applicability. The content is delivered in video lectures and in readings from the technical literature. Homework and quizzes are given and delivered online. There is a project to design a manufacturing process. The topics can be from work or dissertations that can be interpreted as manufacturing processes and tools. Credit cannot be given for this course and any of the similar, in-class versions for 3 credits, MFE 520, MTE 520 and ME 543

Department

Manufacturing Engineering

Materials Science and Engineering

Credits 2.0