

EML 6154 - CONDUCTION HEAT TRANSFER  
Common Course Syllabus

Catalog Description: 3 CREDITS. Prerequisites: Graduate standing. Steady state and transient conduction heat transfer in one and multi-dimensional geometries. It emphasizes analytical methods, exact and approximate. Numerical techniques are also included.

Goals: This course is designed to illustrate the phenomenon related to conduction of heat within a solid in a two or three dimensional region. Both steady and unsteady flow heat conduction will be examined. Due to linearity of the governing partial differential equation, various techniques of mathematical manipulation will be demonstrated.

Topics:

1. Fourier law's of conduction, conductivity of isotropic and non-isotropic materials
2. Basic governing equation of conduction of heat in steady or transient flow within one, two, or three-dimensional bodies.
3. Fourier series and integrals.
4. Unsteady and periodic flow of heat.
5. Duhamel's theorem.
6. Internal heat generation.
7. Phase change.
8. Numerical methods.

Course Outcomes:

1. The students will understand the phenomenon related to heat conduction in solid.
2. The students will be able to continue their study toward more advanced knowledge in this and other related areas.

Prepared by: W. Chow - 6/01, modified 6/02