

## APPLIED MATHEMATICS 613 "PARTIAL DIFFERENTIAL EQUATIONS II"

**Calendar Description:** H(3-0)

Fundamental solutions, integral equations, eigenvalue problems, non-linear problems.

**Prerequisite:** Consent of the Division.

### *Syllabus*

<u>Topics</u>	<u>Time</u>
Conservation laws, convection equation, diffusion equations, heat equation, wave equation.	5
Separation of variables, use of eigenvalue problems to solve boundary value problems in rectangular domains, and in a disc via Bessel's equation. Study of Bessel functions.	6
Energy approach to eigenvalue problems. Min-max principle.	3
Green's functions for Sturm - Liouville problems.	5
Green's functions for PDE's.	4
Fundamental solutions and Green's function of linear partial differential equations from the distributional point of view.	5
Fourier transforms, Schwartz space, tempered distributions. Definition of Green's function using distributions.	6
<b>Total hours</b>	34

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