FIRST COURSE HANDOUT, MODULAR COURSES (MSO 203B)

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Course Webpage link: `https://sites.google.com/view/mso-203-b-2022/home`

1. Pre-requisites

MTH 101 and M102 are pre-requisites.

2. Course Objectives

Calculus, in particular partial differential equations, are one of the fundamental tools used to mathematically model the phenomenons taking place around us. In this course we will try to understand some of these important phenomenons, among many others, like Heat flow (through heat equation), propagation of sound waves (through Wave equations), chemical concentration (via Laplace equation). Getting explicit solutions for such equations turns out to be very important, which is one of the main objectives of this course. While achieving the above mentioned objective, as a part of the process, the course would require to develop techniques like Fourier series.

Knowledge gained from MSO 203B will turn out helpful in future courses like MTH424, MTH 421, MTH656, MTH 403, EE 340, CE 351 among many others.

3. Course contents and References

- Fourier Series and its applications.
- Strum-Liouville problem and Strum-Liouville eigenvalue problem.
- Classification of PDE's. Classification for second order linear PDEs.
- Reduction to canonical form for second order linear PDEs.
- Method of Characteristics for first order PDEs.
- Wave Equation.
- Laplace Equation.
- Heat equations

4. References:

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- *Erwin Kreyszig: Advanced Engineering Mathematics (Main reference).*
- *Yehuda Pinchover: An Introduction to Partial Differential Equations*

5. Examination Policy

Quiz and an End semester examination

Component Name	Weightage
Quiz	30 percent
End semester	70 percent

• There will be no make up examination for the quiz. Re examination for the end semester examination will be as per criterion set by DOAA office.

• Any dishonest practice during quiz or final exam will be reported to DOAA and appropriate action would be taken to penalize such action.

6. Assignments

Assignments will be uploaded on Tuesdays weekly.