Course Title: Magnetism in Materials

Course Instructor: Z. Hossain

Course No. : PHY 624

This is a PG level elective course for M.Sc/PhD students of Physics Departments.

Course outline:
Introduction

Isolated magnetic moments

Diamagnetism and Paramagnetism

Adiabatic demagnetization

Crystal fields

Magnetic Resonance Techniques

Interactions: Magnetic dipolar and exchange interaction

Magnetic order and magnetic structure: Ferromagnetism, Antiferromagnetism,

Ferrimagnetism, Helical order, Neutron Scattering

Order and Broken symmetry

Magnetism in metals

Competing interactions and low dimensionality

Interplay of magnetism and suprerconductivity

Quantum Phase Transition,

Colossal magnetoresistance

Spintronics

Evaluation (out of 200 marks):

Attendance: 20

Quiz: 30

Mid Sem Exam:60

End Sem: 90

Ref:
Magnetism in Condensed Matter by Stephen Blundell (Oxford University Press).
Reference to other journal articles/book will be provided during the lecture.