Course Type	Course Code	Name of Course		Т	Р	Credit
DE	NCYD520	Advanced Fluorescence Spectroscopy		0	0	3

Course Objective

• This course will give an introduction to modern spectroscopic techniques including time-resolved laser methods and dynamic properties of materials.

Learning Outcomes

• Understanding the fundamentals as well to have an insight of the many photo-physical processes and every possible deactivation pathways of the excited systems including organic, inorganic and nanoscales materials.

Unit No.	Topics to be Covered	Lecture Hours	Learning Outcome				
1	Jablonski diagram, Fluorescence quantum yields and lifetimes, radiative and non-radiative rates, steady state and time-resolved fluorescence, quenching of fluorescence, Fluorescence anisotropy, Resonance energy transfer, Solvatochromism, TRES.	20L	Students will learn about various photochemical processes, present ubiquitously, and the effect of ambience on them.				
2	Light sources, LASER, monochromator, optical filters, PMT, polarizers, corrected emission spectra, TCSPC, Fluorescence upconversion, transient recording, data analysis. Different examples correlating data recording and data analysis and information found.	22L	Students will have in depth knowledge of different instruments used in fluorescence spectroscopy and will be able to record and analyze data.				
TOTAL		42					

Text Books:

1. Molecular spectroscopy by Jeanne L. McHale, CRC Press, 2017.

Reference Books:

- 1. Principles of fluorescence spectroscopy by J.R.Lakowicz, 3rd ed., Springer, 2006
- 2. Fundamentals of Photochemistry, K. K. Rohatgi-Mukherjee, John Wiley & Sons, 1978.