Syllabus
M.Sc. (Chemistry) Programme
(SEMESTER – III)

Photo Chemistry and Allied Chemistry
Programme Code- (MSCCH -21)
Course Code – (MSCCH -604)

Unit 1 Basics of photochemistry:

Absorption, excitation, photochemical laws, electronically excited states-life times, measurements of the times. Flash photolysis, Stopped flow techniques. Energy dissipation by radiative and non-radiative processes, absorption spectra, Franck-Condon principle, Photochemical stages- primary and secondary processes.

Unit 2 Photo-physical reactions:

Jablonskii diagram, photosensitization, 4.Quantum yield and its determination, reactions of high and low quantum yields with suitable examples, fluorescence, phosphorescence and chemiluminiscence with suitable examples.

Unit 3 Photochemistry of organic compounds

Photochemistry of alkenes; cis-trans isomerization, non-vertical energy transfer; photochemical additions; reactions of 1,3- and 1,4-dienes; dimerisation.

Unit 4 Photochemistry of carbonyl compounds:

Norrish type I & II reactions (cyclic and acyclic); α,β unsaturated ketones; β,γ-unsaturated ketones; cyclohexenones (conjugated); cyclohexadienons (cross-conjugated & conjugated); Paterno-Buchi reactions; photoreductions

.

Unit 5 Photochemistry of aromatic compounds:

Isomerisation, skeletal isomerisations, Dewar and prismanes in isomerisations. Singlet oxygens reactions; Photo Fries rearrangement of ethers and anilides; Barton reaction, Hoffmann-Loeflller-Freytag reaction.

Unit 6 Green Chemistry:

Basic principles of Green chemistry. Designing a green reagents: green catalyst phase transfer catalysis for green synthesis, choice of starting materials, Organic synthesis in solid phase reagents, and Versatile ionic liquids as Scherrer method.