Fourth year of Five Years integrated M.Sc (Physics)
M.Sc. – IV, Semester – VIII

		L	T	P	C
MP 454 :	**Introduction to Space Weather**	**3**	**0**	**0**	**3**

- **OVERVIEW OF SPACE WEATHER SYSTEMS** **(04 Hours)**
  Sun, Heliosphere, Magnetosphere, Ionosphere

- **ELEMENTS OF SOLAR PHYSICS** **(14 Hours)**
  Structure and composition of the Sun, Sun as a source of radiation, Solar atmosphere, solar magnetism solar activity and measurements, Sun spots,Solar flare, Coronal Mass Ejections, solar activity measurements Solar wind structure and dynamics,Solar wind formation and acceleration, Heliospheric structure

- **EARTH'S IONOSPHERE** **(06 Hours)**
  Introduction to ionosphere, photochemical processes, Chapman's theory and production of ionospheric layers, loss mechanisms and chemistry of ionosphere, morphology of ionosphere

- **MAGNETIC FIELD OF EARTH** **(06 Hours)**
  Models of generation of Geomagnetic field, Secular variations of geomagnetic field, International Geomagnetic Reference Field, Local elements of geomagnetic field Determination of geomagnetic coordinates of station, Geomagnetic field measurements variometers, proton precession magnetmeters, fluxgate magnetometers. Diurnal variation of geomagnetic field and its causes, magnetometry for seismic and other geophysical monitoring.
- **SPACE WEATHER** **(06 Hours)**
  Geomagnetic storms, sub storms, magnetospheric formation, magnnetospheric current systems, coronal mass ejections, modification of magnetosphere during magnetic disturbances. Interplanetary magnetic field and its role in magnetic storms, magnetospheric whistlers and magnetic micropulsations, Interplanetary medium signatures of magnetic storms and solar transients,
- **SPACE WEATHER EFFECTS ON TECHNOLOGICAL SYSTEMS** **(06 Hours)**
  Effect of magnetic disturbances on space technology systems and at high, mid and low latitudes, Solar activity effect on terrestrial and extra terrestrial systems.

(Total Contact Time (Theory) : 42 Hours)

BOOKS RECOMMENDED :

1.	**Kievelson, M. J. ,**	*Introduction to Space Physics*	Cambridge University Press.	1995
2.	**Lang, K. R.**	*Sun, Earth and Sky*	Springer	2006
3.	**Hargreaves, J. K.,**	*The Solar Terrestrial Environment,*	Cambridge University Press	1995
4.	**Kallenrode M. B.**	*Space Physics: An Introduction to Plasma and Particles…*	Springer	2004
5.	**Meyer R.**	*Elements of Space Technology*	Academic Press	1999