

BS (4 Years) for Affiliated Colleges



Code	Subject Title	Cr. Hrs	Semester
PHY-437	METEOROLOGY AND CLIMATOLOGY-III	3	VIII
Year	Discipline		
4	Physics		

Course Outlines:

Dynamic Meteorology: Circulation & vorticity, Stokes theorem, Vorticity equation, Rossby waves.

Meteorological Instruments: Meteorological instruments used in thermometry, barometry, hygrometry, rainfall & snowfall measurement, wind measurement, cloud measurement, evaporation measurement, visibility measurement, sunshine measurement. introduction to weather radar systems, introduction to radiosonde equipment.

Climatology: Climatic elements; principles of climate classification; world climate classification; climates of Asia; climates of the sub-continent; the climate of Pakistan.

Climate change: Meteorological factors affecting climate; greenhouse gases; El-Nino, La-Nina.

Tropical Meteorology: Tropical Launch Internet Explorer Browser. In general circulation, Diurnal variations of meteorological elements in the tropics, a survey of low-latitude weather disturbances; easterly waves; intertropical convergence zone. Monsoons, Tropical cyclones, structure and formation of cyclones. Aviation Meteorology: meteorological aspects of flight planning, Aviation hazards and their association with synoptic patterns, aircraft icing, turbulence, fog, thunderstorms, dust storms, low-level vertical wind shear, Jetstream formation & structure.

Books Recommended:

1. *Hand Book Of Applied Meteorology* by Houghton (Publisher: Wiley), 1st Edition, 1985.
2. *Atmospheric Chemistry & Global Change* by Guy. P. Brasseur (Publisher: Oxford), 1st Edition, 1999.
3. *Statistical Analysis In Climate Research* by Hans Vonstorch (Publisher: Cambridge), 1st Edition, 2001.
4. *Meteorology* by Moran Morgan (Publisher: MacMillan), 3rd Edition, 1991.
5. *Climatology* by Olixer Hidore (Publisher: Merrill), 1st Edition, 1984.
6. *Dynamical & Physical Meteorology* by Haltiner & Martin (Publisher: McGraw Hill), 1st Edition, 1957.
7. *Tropical Meteorology* by Carlson (Publisher: The Pennsylvania State University), 1st Edition, 1981.
8. *The Atmosphere* by Frederick K. Lutgens (Publisher: Prentice Hall), International Edition, 1998.
9. *The Status of Climate Variation In Pakistan & Its Impact* by SMRC. No.10 SAARC Met. Research Centre, 1st Edition, 2004.
10. *Atmospheric Physics* by J.V. Irinarné (Publisher: D.Reidel Pub. Co.), 1st Edition, 1980.
11. *Applied Climatology* by Russell D. Thompson (Publisher: Routledge), 1st Edition, 1997.
12. *Essentials of Meteorology* by C. Donald Ahrens (Publisher: Brooks/Calc), 3rd Edition, 2001.
13. *Atmospheric Science* by John M. Wallace (Publisher: Academic Press), 1st Edition, 1997.