

Prerequisite status: -	Unit Type: Theoretical	The number of units: 2	Name of the lesson: Synoptic analysis of climatic hazards
Type of additional practical training: Has it <input checked="" type="checkbox"/> does not have <input type="checkbox"/> science travel <input type="checkbox"/> Laboratory <input type="checkbox"/> Workshop <input type="checkbox"/> , Seminar <input type="checkbox"/>		The number of hours: 32	Expert professor to teach: Ph.D. in climate
Goals: Acquaintance of students with the synoptic analysis of climatic hazards			
Headlines 1- Types and classification of climatic hazards 2- Synoptic analysis of cold and freezing waves and heat waves 3- The synoptic characteristics of dust storms and the study of dust in the global system 4- The role of synoptic factors in the occurrence of temperature inversions and pollution in metropolises 5- Synoptic analysis of heavy rains and floods 6- Hail synoptic analysis 7- Synoptic analysis of strong winds and storms 8- Changes in atmospheric circulation patterns during drought and wet years and the synoptic reasons for the phenomenon of drought 9- Synoptic and dynamic analysis of large-scale atmospheric hazards (Global warming from a synoptic and dynamic point of view, Investigating the status of large-scale and synoptic-scale phenomena such as (Resolutions of Exotropical Cyclones and the route of their movement, subtropical jet stream, sub-tropical high pressure, Arctic Amplification, Tropical Cyclone ...In imaging the future climate of the earth, Enso and climatic anomalies and the phenomena of Extremes caused by it, ozone hole (The causes and manner of the appearance of the role of large-scale circulation of the atmosphere), Blocking system and atmospheric anomalies 10- Synoptic and dynamic analysis of atmospheric hazards on a regional scale, Dust phenomenon, heat waves, cold waves, droughts, Pervasive glaciers, heavy rains in the Middle East and Iran) 11- Synoptic and dynamic analysis of medium and local scale atmospheric hazards (Urban air pollution, investigating the types of temperature inversion based on the analysis of the thermodynamic structure of the atmosphere) 12- Wind and forest fires in northern Iran 13- In the practical part, students have to carry out a practical project related to the synoptic analysis of climate risk using station data and upper atmosphere data of the European medium-term forecasting center.			
Reference 1- Farajzadeh, Manouchehr, 2013, Iran's Climate Hazards, Samt Publications			

- 2- Omidvar, Kamal, 2011, Natural Hazards, Yazd University Publications
- 3- Mohammadi, Hossein, Atmospheric Hazards, Tehran University Press.
- 4- Hejazizadeh, Zahra, Ismail, Najafi, Hassan, Hosseini Amini, Crisis Management of Natural Hazards, Publications of the Geographical Society of Iran
- 5- Shroder, John F., Paron, Paolo, and Giuliano Di Baldassarre, 2015, Hydro-Meteorological Hazards, Risks and Disasters, Elsevier, Boston
- 6- Ahrens, C. Donald, and Samson, Perry, 2010, Extreme Weather and Climate, 1st Edition, Cengage Learning, 524p.
- 7- Bosart Lance and Howard B. Bluestein, 2008, Synoptic- dynamic meteorology and weather analysis and forecasting, Elsevier publisher.