

Prerequisite status: -	Unit Type: Theoretical	The number of units: 2	Name of the lesson: Medium-scale climate modeling
Type of additional practical training: Has it <input type="checkbox"/> does not have <input type="checkbox"/> science travel <input type="checkbox"/> Laboratory <input type="checkbox"/> Workshop <input checked="" type="checkbox"/> , Seminar <input type="checkbox"/>		The number of hours: 32	Expert professor to teach: climatology
Goals: Acquaintance of students with medium-scale and regional climate models			
Headlines 1- Concepts and definitions 2- Synoptic and average atmospheric scale patterns 3- The structure of climate models 4- The boundaries of climate modeling 5- Physical models (Energy balance models and radiation-convection models) 6- Simulation and prediction models 7- Planetary climate models (GCM) 8- Types of climate change scenarios 9- Medium scale and regional models (RegCM, WRF) 10- Statistical-dynamic micro-rotating models (SDSM, Lars-WG, Magic-Sengen, Parcis,...) 11- Dynamic rotating models (RegCM, WRF, TAPM, ...) 12- Validation evaluation of climate models			
Reference 1- Shamsipour, Ali Akbar, 2014, Climate Modeling, Tehran University Press 2- Mohammadi, Hossein and colleagues, 2016, climate change and climate models, Tehran University Press. 3- Hejazizadeh, Zahra and Maisham Tulabinejad, 2016, climate simulation: with an emphasis on the regional climate model RegCM 4, publications of the Iranian Geographical Society. 4- McGffie, K. and A Henderson-Sellers, 2004, Climate Modeling Primer, John Wiley and sons. 5- Kiehl H. D. Ramanathan, 2006, frontiers of climate modeling, Cambridge University Press. 6- Jacobson M., 2005, Fundamental of atmospheric modeling, Cambridge University Press. 7- Rossby T., 2002, Mesoscale metrological Modeling, Academic Press.			