

As of 20 July 2020

COLLEGE OF SCIENCE
INSTITUTE OF ENVIRONMENTAL SCIENCE & METEOROLOGY
LIST OF COURSES

ENVIRONMENTAL SCIENCE (Env Sci)

General Education Course (MST)

1. **Env. Sci.1 Environment and Society.** Introduction to principles and concepts in the study of the natural environment within a societal framework. 3 u.

Graduate

2. **Env. Sci 201 Fundamentals of Environmental Science I.** The earth's environment in terms of the properties, structures and processes interrelationships of the atmosphere, lithosphere, hydrosphere and the biosphere. Prereq: COI. 3 u.
3. **Env. Sci 202 Fundamentals of environmental Science II.** Tropical ecosystems such as marine, estuarine, lakes and rivers, forest, island and urban ecosystems. Prereq: COI. 3 u.
4. **Env. Sci 211 Computational Methods in Environmental Science.** Mathematical, statistical and computer methods in environmental science. Prereq: COI. 3 u.
5. **Env. Sci 212 Environmental Problems and Issues.** Current and prospective environmental problems and issues of critical concern in the context of sustainable development and other management development strategies. Prereq: COI. 3 u.
6. **Env. Sci. 221 Environmental Biology.** Biological aspects of environmental science. Prereq: COI. 3 u.
7. **Env. Sci. 225.1 Terrestrial Ecology Sampling Techniques.** Prereq: COI. 1 u.
8. **Env. Sci. 226.1 Aquatic Ecology Sampling Techniques.** Prereq: COI. 1 u.
9. **Env. Sci 227 Quantitative Ecology.** Biological modeling at the population, community and ecosystem levels; quantitative analysis of ecological patterns in time and space. Prereq: Env Sci 201/COI. 3 u.

10. **Env. Sci 228 Environmental Biotechnology.** The applications of biotechnology in environmental monitoring, assessment and management. Prereq: COI. 3 u.
11. **Env. Sci. 232.1 Water Quality Sampling techniques.** Prereq: COI. 1 u.
12. **Env. Sci. 233 Environmental Toxicology.** Xenobiotics in the environment; their sources, pharmacodynamics, mode of action and detoxification. Prereq: COI. 3 u.
13. **Env. Sci. 241 Geological Hazards.** Study of common geological hazards and their environmental effects. Prereq: COI. 3 u.
14. **Env. Sci. 262 Water Quality Modeling.** Principles and techniques of modeling water quality in aquatic systems. Prereq: Env Sci 201/COI. 5 h. (2 lec, 3 lab) 3 u.
15. **Env. Sci. 263.1 Air Quality Sampling Techniques.** Prereq: COI. 1 u.
16. **Env. Sci. 265 Applications of Remote Sensing to Environmental Science.** Applications of remote sensing techniques to environmental monitoring, assessment and planning. Prereq: COI. 3 u.
17. **Env. Sci. 265.1 Remote Sensing Techniques.** Prereq: COI. 1 u.
18. **Env. Sci. 271 Principles of Photonic Techniques for Environmental Monitoring.** Light as a probe for nondestructive analysis; optical signal processing and image analysis. Prereq: COI. 3 u.
19. **Env. Sci. 271.1 Photonic Techniques.** Prereq: COI. 1 u.
20. **Env Sci. 282 Environmental Planning, Risk and Impact Assessment.** Framework and techniques of environmental planning, risk and impact assessment; the Philippine Environmental Impact Statement (EIS) system.
21. **Env. Sci. 296 Seminar.** Prereq: COI. 1 u. May be taken more than once provided that the topics presented are not the same but related to student's dissertation
22. **Env. Sci. 297 Special Topics.** Prereq: COI. 1-3 u.*
23. **Env. Sci. 299 Independent Masteral Study.** Prereq: COI. 3 u.
24. **Env. Sci. 300 Masteral Thesis.** Prereq: Consent of Program Adviser. 6 u.

25. **Env. Sci. 395 Advanced Studies in Environmental Science.** Conduct of directed, specific research on a problem in the field of Environmental Science. Prereq: None. 12 h (lab). 4 u. To be taken three times provided that the research topic is not the same.
26. **Env. Sci. 399 Independent Doctoral Study.** Prereq: COI. 3 u.
27. **Env. Sci. 400 Doctoral Dissertation.** Prereq: Consent of Program Adviser. 12 u. May be taken in parts containing 3-6 u or as follow: (a) 4 times 3 units, (b) 2 times 6 units, or (c) once 12 units.

METEOROLOGY (Meteo)

Undergraduate

1. **Meteo 101 General Meteorology.** The atmosphere and its circulation; radiation and heat exchanges; weather disturbances; elementary climatology. Prereq: Physics 72/COI. 3 u.

Graduate

2. **Meteo 201 Synoptic Meteorology.** Mesoscale to planetary scale weather systems of the general circulation with emphasis on synoptic scale systems. Prereq: COI. (3 u [3h lec], 1 u [3h lab]). 4 u.
3. **Meteo 202 Synoptic Meteorology Practicum.** Summer practical work at the Weather Forecasting Office. Prereq: Meteo 201. 9 h. (lab) 3 u.
4. **Meteo 203 Methods of Analytical Meteorology and Oceanography.** Mathematical and numerical methods in meteorology and oceanography; principles of statistical analysis; computer programming. Prereq: Math 55/equiv/COI. (2 u [2h lec], 1 u [3h lab]). 3 u.
5. **Meteo 204 Tropical Meteorology.** Low latitude dynamics; survey of tropical disturbances; development, structure and movement of tropical cyclones. Prereq: Meteo 201, 232. 3 u.
6. **Meteo 205 Atmospheric Science for Teachers.** A qualitative course in meteorology designed for science teachers. Prereq: COI. 3 u.
7. **Meteo 206 Hydrometeorology.** Integration of hydrology and meteorology focusing on precipitation, surface flow, and groundwater flow, and their observation, analysis, modeling, and forecasting. Prereq: Meteo 201. (2u [2h lec], 1 u [3h lab]). 3 u.

8. **Meteo 211 Climatology.** Climate and climate systems including integration of dynamic, physical, biogeochemical, and anthropogenic bases of climate and climate systems. Prereq: COI. 3 u.
9. **Meteo 212 Climate Monitoring and Prediction.** Analysis of climate data, its application and utility in global climate models; climate monitoring principles; statistical and dynamical techniques; climate modeling and parameterization; coupling and interactions. Prereq: Meteo 211. (2 u [2h lec], 1 u [3h lab]). 3 u.
10. **Meteo 213 Agrometeorology.** Implications of meteorological processes to agriculture including soil and heat balance, hydrological cycle, small-scale climate, agrometeorological management at microscale and topscale, and operational agrometeorology. Prereq: Meteo 211. (2 u [2h lec], 1 u [3h lab]). 3 u.
11. **Meteo 221 Physical Meteorology.** Fundamentals of physical atmospheric processes with emphasis on the thermodynamics of the atmosphere and principles of radiative transfer. Prereq: COI. (3 u [3h lec], 1 u [3h lab]). 4 u.
12. **Meteo 222 Satellite Meteorology.** Principles and applications of remote sensing technology to meteorology; nature of radiation, absorption, emission, reflection and scattering, radiative transfer equation, surface temperature, and cloud detection; satellite observations; data acquisition, handling, and processing; interpretation of satellite data. Prereq: Meteo 221 (for MS Meteorology majors). (2 u [2h lec], 1 u [3h lab]). 3 u.
13. **Meteo 223 Radar Meteorology.** Principles and applications of radar to meteorology; radar systems; radar data acquisition, handling and processing; integration of radar principles to synoptic and dynamic processes in the atmosphere. Prereq: Meteo 201 (for MS Meteorology majors). (2 u [2h lec], 1 u [3h lab]). 3 u.
14. **Meteo 224 Air Pollution Meteorology.** Interrelationship between meteorology and air pollution; role of contaminants in climate change and stratospheric ozone depletion; dispersion modeling; legislations and mitigations. Prereq: COI. (2 u [2h lec], 1 u [3h lab]). 3 u.
15. **Meteo 225 Cloud and Precipitation Physics.** Dynamics and microphysical processes of cloud and rain formation, modeling and parameterization, and cloud modification. Prereq: Meteo 221. 5 h. (2 lec, 3 lab) 3 u.
16. **Meteo 231 Dynamic Meteorology.** Fundamentals of fluid dynamics, physical laws of conservations of mass, momentum, and energy applied to various horizontal and vertical

scale motions; circulation and vorticity. Prereq: Meteor 221. 3 u (3h lec), 1 u (3h lab). 4 u.

17. **Meteo 232 Advanced Dynamic Meteorology.** Fluid dynamics applied to atmospheric flows over synoptic scale motions, mesoscale and general circulations, and tropical and middle atmospheric dynamics. Prereq: Meteor 232. 3 u.
18. **Meteo 233 Geophysical Fluid Dynamics.** Kinematics of fluid flow on a rotating sphere such as fundamental dynamics, barotropic and vortex dynamics, rotating shallow-water and wave dynamics, baroclinic and jet dynamics, and boundary-layer and wind-gyre dynamics. Prereq: COI. 3 u.
19. **Meteo 234 Numerical Weather Prediction.** Examination, evaluation and application of numerical models for weather diagnosis and forecasting. Prereq: Meteo 221, 231. (3u [2h lab], 1 u [3h lab]). 3 u.
20. **Meteo 296 Graduate Seminar.** Prereq: Completion of all core courses. 1 u.
21. **Meteo 297 Special Topics.** Prereq: COI. 3 u.
22. **Meteo 300 M.S. Thesis.** Prereq: Completion of all course requirements. 6 u.
23. **Meteo 321 Research Problems in Weather.** Advanced applications of weather research. Prereq: Completion of 6 u of Weather Track electives. 6 h (lab). 2 u.
24. **Meteo 331 Research Problems Climate.** Advanced applications of climate research. Prereq: Completion of 6 u of Climate Track electives. 6 h (lab). 2 u.
25. **Meteo 341 Research Problems in Environmental Meteorology.** Advanced applications of environmental meteorology research. Prereq: Completion of 6 u of Climate Track electives. 6 h (lab). 2 u.
26. **Meteo 395 Advanced Studies in Meteorology.** Conduct of directed, specific research on a problem in the field of meteorology. Prereq: None. 12 h (lab). 4 u. To be taken three times provided that research topic is not the same.
27. **Meteo 396 Research Seminar.** Prereq: Completion of all core courses. 1 u.
28. **Meteo 397 Special Topics.** Prereq: Meteo 201, Meteo, 211, Meteo 221, Meteo 231 or COI fro non PhD (Meteorology) majors). 3 u. Can be taken thrice provided that the topics are different; topic(s) to be specified for record purposes.

29. **Meteo 399 Independent Doctoral Research in Meteorology.** Comprehensive literature review, conceptualization and conduct of research and preparation of scientific manuscript on an advanced meteorological research problem. Prereq: Completion of at least 18 u of course work. 6 h (lab). 2 u.

30. **Meteo 400 Phd Dissertation.** Prereq: Passing of candidacy examination and completion of all course requirements. 12 u. May be taken in parts containing 3-6 u or as follow: (a) 4 times 3 units, (b) 2 times 6 units, or (c) once 12 units.

*undergoing curricular revision on stipulation