CLIMATE SCIENCE (CLIM)

CLIM 201, +*CLIMATE SCIENCE, 4 Credits

Examines physical laws that govern Earth's climate and interactions with chemical and biological processes on land, in the atmosphere, oceans, and cryosphere. Analyzes past, present, and potential future climate changes due to natural and human causes using observations, paleoclimate data, models, and laboratory exercises. Explores impacts of climate change on natural and human systems, economics, ethics, and solutions.

Attributes: CFSI — Core Ed - Scientific Inquiry & Analysis; CPPS — Bacc Core, Perspectives, Physical Science

Equivalent to: ATS 201

Available via Ecampus

CLIM 217, +INTRODUCTION TO METEOROLOGY, 4 Credits

Introduces the physical laws and equations governing the atmosphere, with a focus on understanding why common types of weather occur. Explores weather forecasting, with an emphasis on using weather service data and analysis. Builds knowledge of weather phenomena through the practice of weather forecasting.

Attributes: CFSI — Core Ed - Scientific Inquiry & Analysis

CLIM 295, OBSERVING CLIMATE, 3 Credits

Explores various climate-related variables in the environment, emphasizing hands-on experiences and team-based observations. Deploys relevant instruments in collaborative teams. Documents procedures and assesses sources of uncertainty in measurement processes. Integrates qualitative and quantitative scientific observations, synthesizing them with theoretical concepts. Aims to decolonialize concepts of climate observations and foster inclusion across disciplines and cultures.

Prerequisite: ATS 201 with C- or better or ATS 310 with C- or better or CLIM 201 with C- or better or CLIM 217 with C- or better

Equivalent to: ATS 295

CLIM 301, CLIMATE DATA ANALYSIS, 4 Credits

Quantitative methods to characterize the physical climate system and detect change. Interpret data based on source timescale, and statistics; communicate conclusions and uncertainties regarding past climate and future changes.

Prerequisite: (ATS 201 with C- or better or CLIM 201 with C- or better) and ST 351 [C-]

Equivalent to: ATS 301

CLIM 323, ^CLIMATOLOGY, 4 Credits

Systematic analysis of global and regional climates. Physical principles of climate, climate classifications, and distribution and characteristics of climate regimes.

Attributes: CSWC — Core Ed - Writing Intensive Curriculum (WIC); CWIC — Bacc Core, Skills, Writing Intensive Curriculum (WIC)

Prerequisite: GEOG 102 with D- or better or GEO 202 with D- or better or GEO 202H with D- or better or GEO 221 with D- or better or GEO 221H with D- or better or ENSC 210 with D- or better or ATS 201 with D- or better or CLIM 201 with D- or better or OC 201 with C- or better or OC 201H with C- or better

Equivalent to: GEOG 323

CLIM 341, +*SNOW, SMOKE, AND STORMS: CLIMATE CHANGE IMPACTS IN THE PACIFIC NORTHWEST, 3 Credits

Examines the impacts of physical climate changes in the Pacific Northwest. Emphasizes the effects of increasing temperatures and changing precipitation patterns on extreme weather and climate events. Analyzes the impacts on the region's natural resource economy; heritage and quality of life; infrastructure; and health and social systems. Explores solutions by evaluating case studies of current problems to highlight the close interrelationships between the climate, the natural and built environment, and the health and well-being of the Pacific Northwest's residents.

Attributes: CSSS — Core Ed - Seeking Solutions; CSST — Bacc Core, Synthesis, Science/Technology/Society

Equivalent to: ATS 341

CLIM 342, +*FROZEN: OUR ICY PLANET IN CLIMATE AND SOCIETAL CONTEXT, 4 Credits

Explores the geophysics and societal implications of Earth's changing cryosphere, the ice, a critical component of the Earth system that is found on the planet's surface, oceans and in the atmosphere. Builds critical inquiry skills to understand environmental change, formulating responses to this. Incorporates rich and varied media exploring far off and unique places.

Attributes: CSGI — Bacc Core, Synthesis, Contemporary Global Issues; CSSS — Core Ed - Seeking Solutions

Equivalent to: ATS 342

CLIM 420, CLIMATE PHYSICS, 4 Credits

Physics-based analyses of climate past, present, and future. Detailed explorations of the energy balance and radiative transfer at the top of the atmosphere, within the atmosphere, and at the Earth's surface. Hydrologic cycle. Ice and climate. Radiative-convective equilibrium. General circulation of the atmosphere and ocean. History and evolution of Earth's climate. Climate sensitivity and feedbacks. Climate variability. Natural and anthropogenic climate change.

Prerequisite: (MTH 252Z with C- or better or MTH 252HZ with C- or better or MTH 252 with C- or better or MTH 252H with C- or better) and (PH 202 [C-] or PH 212 [C-] or PH 212H [C-]) and (ATS 301 [C-] or CLIM 301 [C-] or (PH 365 [C-] and PH 366 [C-])) and (ATS 310 [C-] or CLIM 217 [C-] or PH 315 [C-])

Equivalent to: ATS 420

CLIM 421, CLIMATE MODELING, 4 Credits

Numerical models of the physics, chemistry, biology, and geology of the climate system. A range of climate models from a simple, single equation to complex state-of-the-science systems used for future projections. Theoretical concepts will be linked to practical applications through hands-on programming exercises and data analysis.

Prerequisite: (ATS 420 with C- or better or CLIM 420 with C- or better) and (ATS 301 [C-] or CLIM 301 [C-] or (PH 365 [C-] and PH 366 [C-])) and (MTH 254 [C-] or MTH 254H [C-] or ATS 302 [C-] or OEAS 302 [C-])

Equivalent to: ATS 421

CLIM 441, ^NORTHWEST CLIMATE AND WEATHER, 4 Credits

A survey of climate and weather phenomena that are consequential in the northwestern United States. The Pacific Ocean, the North Pacific jet and storm track, mountain and coastal meteorology, and topographic features like the region's mountains and Columbia River Gorge all affect the climate and weather of the Northwest, which in turn affect the region's hydrologic characteristics, vegetation, and numerous other natural and human systems. Preexisting content knowledge and analytical skills are used to produce a comprehensive written report and oral presentation for a regional stakeholder.

Attributes: CSWC – Core Ed - Writing Intensive Curriculum (WIC); CWIC – Bacc Core, Skills, Writing Intensive Curriculum (WIC)

Prerequisite: (ATS 301 with C- or better or CLIM 301 with C- or better) and (ATS 420 [C-] or CLIM 420 [C-])

Equivalent to: ATS 441

CLIM 477, GLACIERS IN THE CLIMATE SYSTEM, 3 Credits

Discusses glaciers as an important component of the cryosphere and the climate of Earth. Examines the physics of glacier formation and flow; glacier interactions with atmosphere, ocean, and landscape. Explores the impact of modern glacier change on water resources and sea level rise.

Prerequisite: (MTH 251Z with C or better or MTH 251HZ with C or better or MTH 251 with C or better or MTH 251H with C or better) and (MTH 252Z [C] or MTH 252HZ [C] or MTH 252 [C] or MTH 252H [C]) and (PH 201 [C] or PH 211 [C] or PH 211H [C]) and (PH 202 [C] or PH 212 [C] or PH 212H [C])

Equivalent to: GEO 477