



香港科技大学(广州)
THE HONG KONG
UNIVERSITY OF SCIENCE AND
TECHNOLOGY (GUANGZHOU)

功能枢纽
FUNCTION HUB
地球与海洋大气科学学域
Earth, Ocean and Atmospheric Sciences Thrust



HKUST(GZ)

Earth, Ocean and
Atmospheric
Sciences Thrust

Admission
2024 / 25

OVERVIEW OF HKUST(GZ)

Formally established in June 2022, the Hong Kong University of Science and Technology (Guangzhou)(HKUST(GZ)) is a cooperatively-run higher education institution between the Chinese mainland and the Hong Kong Special Administrative Region. HKUST(GZ) has obtained approval from the Ministry of Education (MoE) and become the first legally-independent educational institution co-established by the Mainland and Hong Kong since the announcement and implementation of the “Outline Development Plan for the Guangdong-Hong Kong-Macao Greater Bay Area” and the “Overall Plan for Deepening Globally Oriented Comprehensive Co-operation amongst Guangdong, Hong Kong and Macao in Nansha of Guangzhou”. Embracing a spirit of innovation, HKUST(GZ) pioneers cross-disciplinary education and explores groundbreaking pedagogies, aiming to serve as a model for mainland-Hong Kong integrated educational development and become a renowned global university that nurtures future-oriented, highly-skilled, and innovative talents.

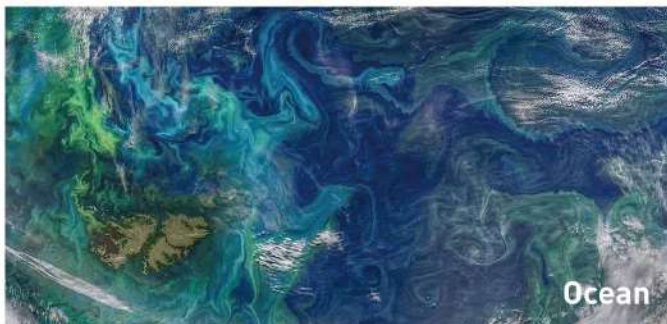
To address the complex challenges posed by a rapidly changing world, HKUST(GZ) has adopted an innovative cross-disciplinary academic structure, featuring "Hub" and "Thrust" instead of the traditional "school" and "department" organization. This revolutionary approach promotes interdisciplinary integration and fosters the growth of emerging and frontier disciplines, setting a new precedent in global higher education.



OVERVIEW OF EOAS

Earth, Ocean, and Atmospheric Sciences (EOAS) Thrust is a department within HKUST(GZ), aiming to become a leading educational and research entity in interdisciplinary studies of ocean-atmosphere-land interactions, with an emphasis on sustainable environmental management, climate risk identification, climate adaptation, and resilience. The EOAS employs a multidisciplinary approach, covering research in ocean physics and biogeochemistry, atmospheric physics and chemistry, watershed hydrology, and earth surface sciences within coupled land-atmosphere, land-ocean, and atmosphere-ocean systems, as well as climate adaptation and resilience. EOAS members are devoted to conducting cutting-edge, innovative research and contributing to the advancement of multi-disciplinary initiatives.

WHAT IS EOAS?



(@Image Credit: NASA Image of the Day, NOAA MESA Project, et al)

WHAT WE DO?



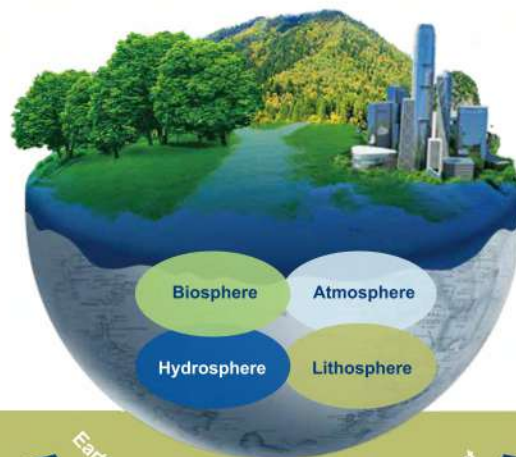
- Atmospheric chemistry
- Air pollution and climate change interactions
- Atmospheric dynamics and climate science

- Cloud and aerosol process modeling
- Aerosol remote sensing
- Aerosol-weather and aerosol-climate interactions

Atmospheric Science

Oceanography

- Physical oceanography
- Biological oceanography
- Chemical oceanography
- Fishery oceanography
- Air-sea and land-sea interactions



Earth Surface Processes

- Surface processes and land-use modeling
- Water quality and management in surface and underground water
- Physical, chemical, and biological processes in the hydrological cycle



Climate Adaptation and Resilience

- Climate risk identification
- Assessment and modeling
- Ecosystem-based adaptation
- Water resources management and adaptation
- Climate-resilient health systems
- Climate-resilient agriculture and food systems
- Urban resilience

Earth and Urban System Science

- Earth and urban system observations and modeling
- Urban informatics
- In-situ and satellite remote sensing
- Human-environment interactions and sustainability

HOW WE DO IT?

Field observation

- ▶ Eddy covariance tower
- ▶ Groundwater monitoring wells
- ▶ Meteorological and oceanographic buoys



Research field investigation

- ▶ Research cruises
- ▶ Watershed survey

Numerical modeling

- ▶ Physical-biogeochemical ocean modeling
- ▶ Atmospheric modeling
- ▶ Watershed biogeochemical modeling
- ▶ Groundwater modeling



EOAS VISIONS

We target on interdisciplinary research topics that have vast open space to be explored

We deliver an interdisciplinary educational and research program that links earth surface science, oceanography, and atmospheric science together. This interdisciplinary knowledge in a holistic view of the earth system is essential to achieving and maintaining a sustainable environment under climate change on regional and global scales.

INTERDISCIPLINARITY

- ▶ Math
- ▶ Physics
- ▶ Chemistry
- ▶ Biology
- ▶ Data science
- ▶ Computer science



EOAS serves the human world by studying the physical world

Climate change – increasing CO₂, global warming, sea level rise, etc.

Extreme weather – heat waves, cold waves, extreme rainfall, flooding, etc.

Ecosystem – pollution, ocean acidification, eutrophication, hypoxia, etc.

Policy – carbon peak and carbon neutrality, environmental pollution regulations, etc.

Many open questions to be explored at EOAS

EOAS COURSE HIGHLIGHTS

01 EOAS 5000 Introduction to Oceanography

An introduction to the fundamentals of physical, chemical, geological, geochemical, and biological oceanography. It unveils the mystery of the oceans including the formation of the continents, oceanic circulation, and formation of precious minerals in the deep oceans; discovers ocean resources from phytoplankton to fish. The course will lay the foundation for sustainable use of the oceans and discuss human threats such as global warming, overfishing, and coastal pollution.

02 EOAS 5001 Introduction to Earth Surface Processes

This course introduces the Earth surface hydrodynamics, biogeochemical cycles, sediment and climate processes focusing on the river basin that links with atmosphere, river-water, soil, vegetation, landscape, impact of humans, submarine groundwater discharge and ocean for the modification of Earth system.

03 EOAS 5002 Atmosphere-Ocean Dynamics

This course introduces the fundamentals of geophysical fluid dynamics and its application to describe the motions of the atmosphere and ocean. Topics to be covered include conservation laws of the momentum, tracers, and energy, effects of Earth's rotation, waves in the atmosphere and ocean, large scale circulation, air-sea interaction, and climate variability.

04 EOAS 5003 Coupled Physical-Biogeochemical Dynamics in the Ocean

Ocean biogeochemical cycle is not only governed by chemical and biological processes but also regulated critically by physical processes at different scales. The course provides quantitative knowledge of ocean physical-biogeochemical interactions at a wide range of spatial and temporal scales. It also provides insight into how ocean physical and biogeochemical processes will affect and respond to global climate and human activities.

05 EOAS 5004 Earth System Modeling

The course covers major processes and interactions of Earth system components and introduces the related numerical modeling concepts and techniques. It provides hands-on modeling projects to explore ideas of designing, constructing, and applying models to test hypotheses and enhance understanding of the Earth system processes and their response and feedback to the climate.

06 EOAS 5005 Introduction to Atmospheric Science

This course introduces the fundamental principles that govern the physical and chemical processes in the atmosphere, including the thermodynamics of dry and moist air, radiative transfer, important trace gases and aerosols, and essential aspects of atmospheric circulation, etc. These fundamental principles form the basis of understanding the role of atmosphere in the global energy, water and carbon cycles, and the interaction between the atmosphere and other components of the Earth system. This course also provides a synthesis of these topics in the context of critical issues that are affecting human society such as extreme weather events, air pollution, and climate change.

07 EOAS 5006 Global Carbon Cycle and Climate Change

This course provides fundamental knowledge of how carbon flows through the land-ocean-atmosphere continuum and how carbon interacts with the cycling of water and other essential biogeochemical elements to regulate the Earth's climate. It provides insight into human activities altering the carbon cycle, the global climate, and ecosystem dynamics. It also explores nature-based solutions or eco-engineering strategies for achieving carbon neutrality and mitigating adverse climate and ecosystem changes.



PROGRAM DETAILS

Research Postgraduate Programs (RPgs)

RPgs involve the completion of coursework and independent research, and successful defense of thesis.

The normative periods of study are as follows:

Doctor of Philosophy(PhD)	
Full-time	3 years if a relevant research master's degree was earned prior to entering the PhD program / 4 years in general
Part-time	6 years

Hong Kong-Guangzhou Cross Campus Study Opportunities

To encourage collaboration between two campuses, students have opportunities for cross campus study for at least one term and access to research facilities on another campus.



ADMISSION REQUIREMENTS

01 General Admission Requirements

Applicants seeking admission to a doctoral degree program should have:

- obtained a bachelor's degree with a proven record of outstanding performance from a recognized institution;
- or presented evidence of satisfactory work at the postgraduate level on a full-time basis for at least one year, or on a part-time basis for at least two years.

02 English Language Admission Requirements

Applicants must fulfill English Language requirements with one of the following proficiency attainments:

TOEFL-iBT	80 *Refers to scores in one single attempt only. Test at home option is not accepted.
TOEFL-pBT	550
TOEFL-Revised paper-delivered test	60 (Total scores for Reading, Listening and Writing sections)
IELTS (Academic Module)	Overall score: 6.5 (and all sub-score: 5.5)

Applicants are not required to present TOEFL or IELTS score if:

- their first language is English;
- or they obtained the bachelor's degree (or equivalent) from an institution where the medium of instruction was English.

03 Application to EOAS

All applicants should submit application via Online Admission System(OAS) before the application deadline.

The applicant is encouraged to contact potential supervisors before application.

 **OAS:** <https://fytgs.hkust-gz.edu.cn/admissions/apply-now>

FEES & SCHOLARSHIP

TUITION FEES



Full-time Research Postgraduate Program (PhD) with PGS

RMB 40,000

Per Academic Year



Full-time Research Postgraduate Program (PhD) with Self-financing

RMB 150,000

Per Academic Year

Postgraduate Studentship (PGS)



Up to 4 Academic Years for Full-time PhD students

RMB 180,000

Per Academic Year

Explore more in <https://hkust-gz.edu.cn/zh-hans/admission/scholarships-and-fees>.

CAREER OPPORTUNITIES

Academia: universities, research institutes, laboratories, etc.

Government agencies: department of environmental protection, bureau of natural resources, water conservancy department, meteorological department, etc.

Industry: marine engineering, technical engineering, energy companies, environmental consulting firms, aquaculture industry, etc.



EXPLORE MORE



WEBSITE



FACULTY PROFILE



PROGRAM



PHD ADMISSION



ENQUIRY

eoas@hkust-gz.edu.cn





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TOGETHER WITH EOAS
EXPLORE AND MAKE A DIFFERENCE



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