Master Degree Program of Mountain Studies

Program Overview

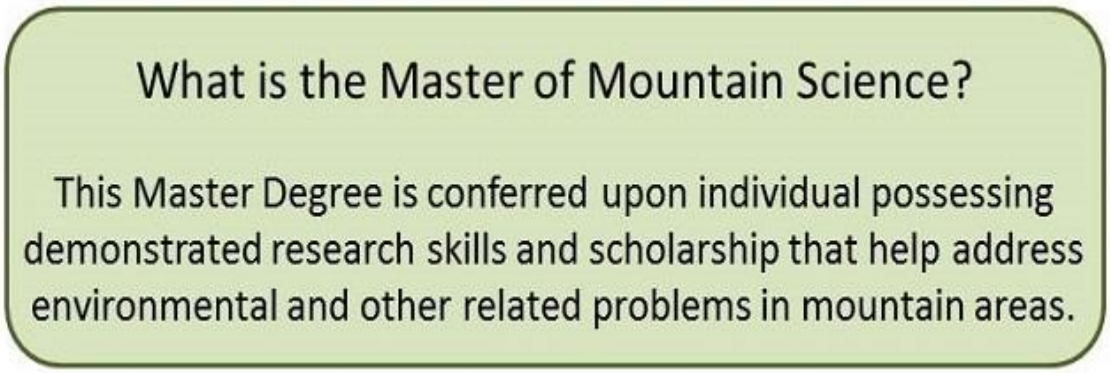
1. Program Aims
2. Admissions Policy
3. Curriculum Policy
4. Master's Thesis Research Guidance Policy
5. Diploma Policy
6. Faculty members of the Program from the University of Tsukuba
7. Curriculum

Announcing the start of Japan's first Science in Mountain Studies-specific master program! (from April 2017).

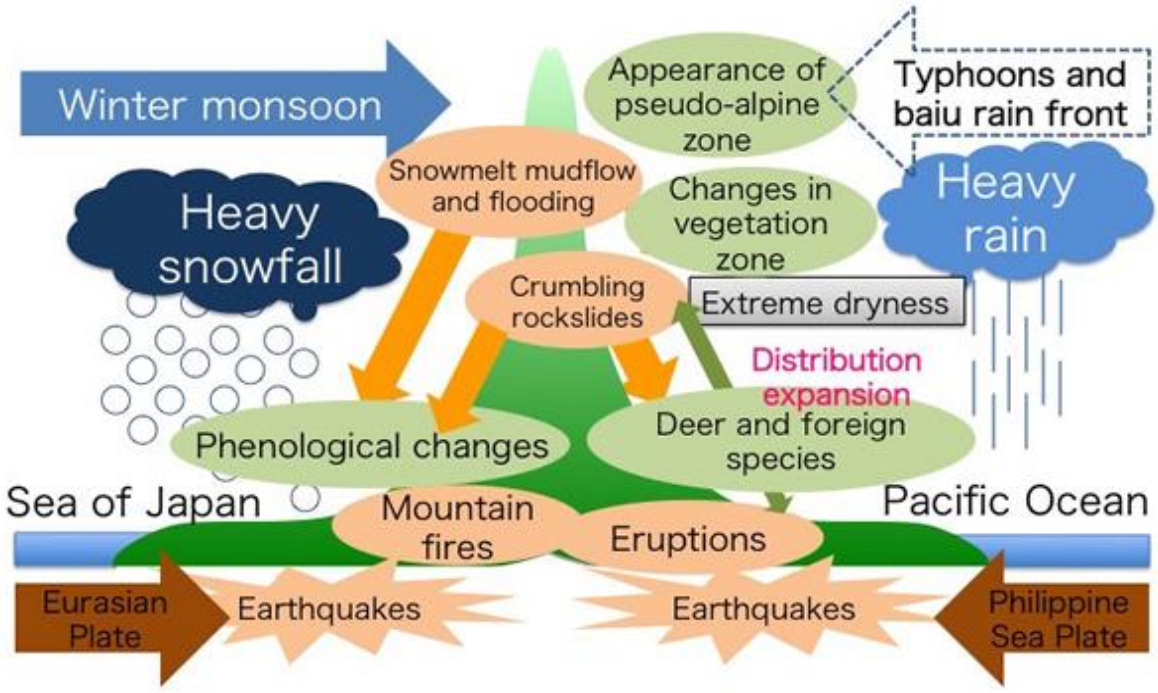
The Master Degree Program of Mountain Studies is a new postgraduate course created and offered through the collaboration of four universities: The University of Tsukuba, Shinshu University, Shizuoka University, and the University of Yamanashi. The aim of this program is to cultivate people capable of addressing the specific needs of mountainous areas, including those related to environmental issues and sustainable ecosystem management. The Master of Mountain Studies degree will be conferred upon the completion of this program.

1. Program Aims

1. Educate and train people who can contribute to finding solutions for problems associated with natural variation and human activity affecting the geosphere/hydrosphere, ecosystem, and natural resources of mountainous areas.
2. Educate and train people who understand the above-mentioned problems specific to mountainous areas and are equipped with the knowledge and skills necessary for developing prosperous and robust local communities in these areas.
3. Educate and train people who possess the discernment and dynamism needed to perform precise and targeted development of response measures based on a both broad perspective and specialized knowledge.

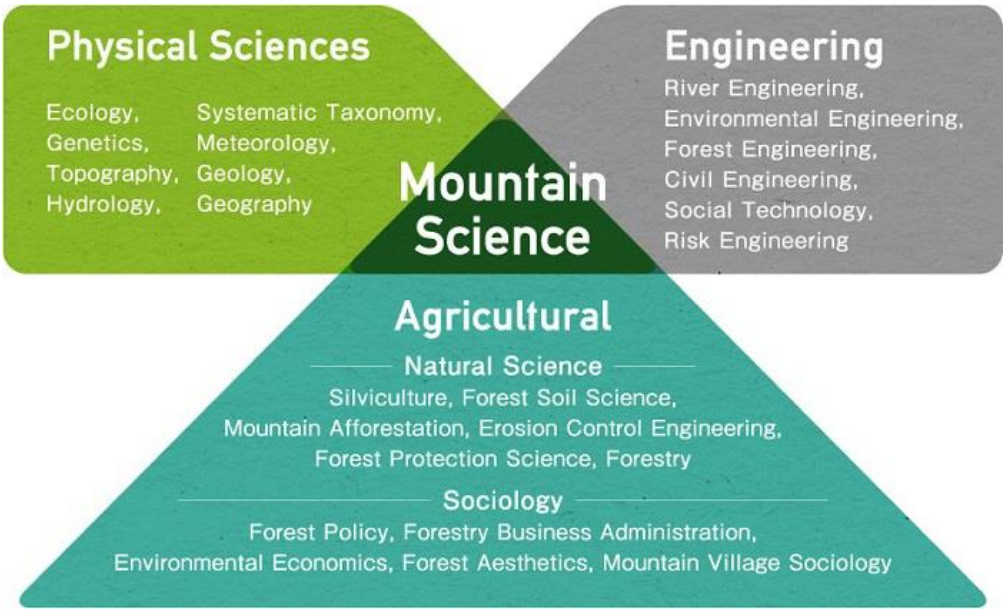


Mountain Area Environmental Issues in Japan



Mountainous areas provide forest, water, tourism, and many other resources that enrich our lives. However, these areas also face a number of challenges, such as the effects of depopulation and forestry and related industry decline on forest utilization and meso-mountainous areas. Recently, mountainous areas are being affected by climate change, natural disasters, loss of biodiversity and many other environmental problems which require us to think about how to ensure a sustainable relationship between human activities and mountain environments.

Science in Mountain Studies-related Fields



This degree program is a collaborative effort among different universities and majors that integrates various mountain science-related fields, such as Shinshu University, Shizuoka University, and the University

of Yamanashi. Hands-on instruction and research activities are performed at a variety of field stations maintained by each university, for example, the Mountain Science Center (University of Tsukuba), Education and Research Center of Alpine Field Science (Shinshu University), and Regional Field Science Education and Research Center (Shizuoka University). Promising Career Paths include many careers which are dealt with issues related to mountainous areas. These include a variety of careers in national and local governments, national research and development institutes, corporations, and at NPOs and NGOs.

2. Admissions Policy

1. We are seeking candidates with a strong interest in the phenomena and issues related to mountainous areas as well as the desire to contribute concretely to addressing them.
2. Candidates should have a basic academic foundation in the natural sciences or social sciences and a desire to acquire both specialized expertise as well as broad-based knowledge and skills across a range of domains related to mountain science.
3. We will accept candidates from a broad array of fields, including those already working in a field or occupation related to mountain science.

3. Curriculum Policy

To provide both the broad scope of education and high degree of expertise required for mountain environment conservation and management, specialized core subjects and specialized subjects are established. The student's thesis will be the final basis for the determination of learning outcomes.

- In Introduction to Mountain Science, students will be led by experts from a variety of fields to undertake a systematic and global examination of issues related to mountain environments, thereby equipping them with a broad-based background and the ability to think holistically.
- In Mountain Fieldwork, the educational research bases maintained by the four universities will be primarily used for fieldwork intended to equip students with the field-study skills essential to the study of mountain science. Situational assessment and data analysis skills will also be developed.
- The Practical Skills subjects will equip students with skills essential in the working world and scientific community, as well as highly versatile and fundamental foreign language communication skills.

Specialized subjects will include subjects from three different domains (geological, biological and anthropological) as well as Science in Mountain Studies seminars and mountain science research common across all domains.

- Specialized subjects within each domain will equip students with highly specialized skills and knowledge for specific fields. At the same time, student must take courses across multiple domains to cultivate interdisciplinary and practical creativity and the ability to identify important issues.
- The Mountain Studies Seminars will employ the seminar format to impart cutting-edge knowledge, as well as develop students' ability to give presentations, ask questions, and discern patterns.

- Research in Mountain science will be used to facilitate the preparation, research, and writing of each students' master thesis, all under the supervision of an instructor. Through this process, students will hone their conceptual, planning, execution, and verification skills, as well as their ability to write logically and scientifically.

4. Master Thesis Research Guidance Policy

1. Master thesis research guidance shall be carried out by one primary advisor and two or more secondary advisors, with at least one of the secondary advisors belonging to a different than the primary advisor's university.
2. Interim evaluations (first-year students) shall be carried out by the primary advisor, secondary advisors, and an instructor from a different specialized domain than primary advisors.
3. Final evaluations (second year students) shall be carried out by a thesis examination committee composed of teaching faculty from the relevant university.
4. Interim and final evaluations shall be carried out at a combined annual reporting session, or other similar occasions, run by the relevant university.

5. Diploma Policy

1. Does the thesis theme demonstrate an appropriate scientific understanding of the issues facing mountainous areas, and does it contribute to concrete solutions?
2. Was there sufficient review of the existing research and sociological background, including relevant measures and government policies, and is the originality and importance of the thesis theme clearly demonstrated?
3. Were the results based on verifiable data and primary sources: were they presented, analyzed, and considered in a sufficiently logical manner: and was the feasibility for resolving the issue demonstrated?

6.Faculty Members of the Program, University of Tsukuba

Research Supervision	Course Instructor	Name	Title	Specialization	Division of Graduate School of Life and Environmental Studies
○		Yoshihiko TSUMURA	Professor	Forest Genetics	Agro-Bioresources Science and Technology （Biosphere Resource Science and Technology）
○		Norikazu MATSUOKA	Professor	Geomorphology	Geoscience（Geo-environmental Sciences）
○		Kenta TANAKA	Associate professor	Population Biology, Plant Reproductive Ecology	Biological Sciences
○		Yoshiaki TSUDA	Associate professor	Molecular Ecology, Population Genetics	Biological Sciences
○		Yousuke DEGAWA	Associate Professor	Mycology, Plant Systematic Taxonomy	Biological Sciences
○		Tatsuyuki SEINO	Associate professor	Forest Ecology	Agro-Bioresources Science and Technology （Biosphere Resource Science and Technology）
○		Yosuke YAMAKAWA	Assistant Professor	Erosion Control Engineering, Forest Hydrology	Agro-Bioresources Science and Technology （Appropriate Tech.& Sciences for Sustainable Development.）
	○	Yukie SATO	Assistant Professor	Behavioral Ecology, Evolutionary Ecology	Biological Sciences

	○	Seishi KADOWAKI	Assistant Professor	Animal Ecology	Agro-Bioresources Science and Technology （Biosphere Resource Science and Technology）
	○	Minaco ADACHI	Assistant Professor	Forest Ecology	Environmental Sciences
	○	Hikaru Ohsawa	Assistant Professor	Landslide Science, Slope Hydrology, Glaciology	Agro-Bioresources Science and Technology （Appropriate Tech.& Sciences for Sustainable Development）
○		Masaaki KUREHA	Professor	Tourism Geography	Geoscience（Geo-environmental Sciences）
○		Keisuke MATSUI	Professor	Human Geography	Geoscience（Geo-environmental Sciences）
○		Atsushi IKEDA	Associate professor	Geomorphology	Geoscience（Geo-environmental Sciences）
○		Kenichi UENO	Associate professor	Atmospheric Science	Geoscience（Geo-environmental Sciences）
○		Tsutomu YAMANAKA	Associate professor	Hydrologic Science	Geoscience（Geo-environmental Sciences）
○		Tsuyoshi HATTANIJI	Associate Professor	Geomorphology	Geoscience（Geo-environmental Sciences）
○		Ken-ichiro HISADA	Professor	Stratigraphy	Geoscience（Earth Evolution Sciences）

○		Yuji YAGI	Professor	Seismology	Geoscience（Earth Evolution Sciences）
○		Yoshihito KAMATA	Associate Professor	Stratigraphy	Geoscience（Earth Evolution Sciences）
	○	Ryo OKUWAKI	Assistant Professor	Seismology	Geoscience（Earth Evolution Sciences）
○		Ken-ichiro ISHIDA	Professor	Biological Science	Biological Sciences
○		Yukihiko TOQUENAGA	Associate professor	Theoretical Ecology	Biological Sciences
○		Kazuharu OHASHI	Assistant Professor	Plant Evolutionary Ecology	Biological Sciences
○		Takeshi NAKAYAMA	Associate professor	Plant Systematic Taxonomy	Integrative Environment and Biomass Sciences
○		Kenji TAMURA	Professor	Soil Science	Agro-Bioresources Science and Technology（Biosphere Resource Science and Technology）
○		Takashi KAMIJO	Professor	Forest Ecology	Agro-Bioresources Science and Technology（Biosphere Resource Science and Technology）
○		Kiyokazu KAWADA	Assistant Professor	Plant Ecology	Agro-Bioresources Science and Technology（Biosphere Resource Science and Tec.

○		Toshiharu ENOMAE	Professor	Environmental Materials Science	Agro-Bioresources Science and Technology （Appropriate Tech.& Sciences for Sustainable Development.）
○		Satoshi TACHIBANA	Associate professor	Forest Resource Economics	Agro-Bioresources Science and Technology （Appropriate Tech.& Sciences for Sustainable Development）
○		Katsuhisa KOHROKI	Associate professor	Forest Resource Sociology	Agro-Bioresources Science and Technology （Appropriate Tech.& Sciences for Sustainable Development）
○		Eiichi OBATAYA	Associate professor	Wood Materials Engineering	Agro-Bioresources Science and Technology （Appropriate Tech.& Sciences for Sustainable Development）
○		Akiko NAKAGAWA	Associate professor	Wood Science	Agro-Bioresources Science and Technology （Appropriate Tech.& Sciences for Sustainable Development）
○		Maki TSUJIMURA	Professor	Aquatic Environmental Science	Environmental Sciences

○		Mitsuru HIROTA	Associate professor	Ecosystem Ecology	Environmental Sciences
○		Kenichi MATSUI	Associate professor	Human Geography	Environmental Sciences
○		Tomoyuki YOKOI	Assistant Professor	Insect Ecology, Behavioral Ecology, Conservation Ecology	Environmental Sciences
	○	Thomas PARKNER	Assistant Professor	Geomorphology	Geoscience（Geo-environmental Sciences）
	○	Yoji ARAKAWA	Professor	Petrology	Geoscience（Earth Evolution Sciences）
○		Kensuke YAHATA	Assistant Professor	Animal Systematic Taxonomy	Biological Sciences
	○	Maki ASANO	Assistant Professor	Soil Science	Agro-Bioresources Science and Technology（Biosphere Resource Science and Technology）
	○	Yuichi ONDA	Professor	Hydro-geomorphology, Geomorphic development	Environmental Sciences
	○	Kenlo NASAHARA	Associate professor	Remote Sensing	Environmental Sciences
	○	Keiko YAMAJI	professor	Environmental Eco-chemistry	Environmental Sciences
○		Tetsuya MATSUI	Professor	Vegetation science, impact of climate change	Forest Research and Management Organization
○		Takashi MASAKI	Professor	Forest Ecology	Forest Research and Management Organization
○		Shigeharu MORIYA	Associate Professor		RIKEN

○		Naoki TANI	Professor	Tropical forest management, Molecular Ecology	Japan International Research Center for Agricultural Sciences (JIRCAS)
○		Yuichiro HIRANO	Professor	Forest Policy, Natural Resource Management	Forest Research and Management Organization

Please visit the homepage of each major for detailed information about individual faculty.

- Master's Program in Biological Sciences（http://www.mbs.life.tsukuba.ac.jp/）
- Master's Program in Agro-Bioresources Science and Technology（http://www.agbist-tsukuba.jp/Teacher/）
- Master's Program in Environmental Sciences（http://www.agbist-tsukuba.jp/Teacher/）
- Master's Program in Geoscience
  Geo-environmental Sciences（http://www.geoenv.tsukuba.ac.jp/e_faculty.html）
  Earth Evolution Sciences（http://www.geol.tsukuba.ac.jp/index-e.html）

7. Curriculum

7-1. Completion Requirements

Subject Category	Subject Group		Subject name (credit)	Credits Awarded
Specialized Core Subjects	Introduction	Required subject	Introduction to Mountain Science A (1) Introduction to Mountain Science B (1)	2
	Field Course	Required subject	Mountain Science Field Course A (1) Mountain Science Field Course B (1)	2
	Practical Skills	Required subject	Field Safty Management (1)	1
		Elective subject	Mountain Environment Internship I (1) Mountain Environment Internship II (2) Advanced Research Experience (Study Tour) (1) Advanced Lecture in Mountain Studies (1)	1 +
Specialized Applied Subjects	All Domains	Required subject	Mountain Studies Seminar IA (2) Mountain Studies Seminar IB (2) Mountain Studies Seminar IIA (2) Mountain Studies Seminar IIB (2) Research in Mountain ScienceI (3) Research in Mountain SciencеII (3) Introduction to Culture and Science of Mountains (1)	15
	Geological Domain	Elective subject		2 +
	Biological Domain	Elective subject		2 +
	Anthropological Domain	Elective subject		2 +
Credits for Completion				30

- With regard to the graduate school common subjects, up to 3 credits can be recognized for satisfying completion requirements (Practical Skills).
- For designated subjects established by partner universities, up to 10 credits can be applied to Practical Skills or Specialized Applied Subjects.
- Students must obtain 30 credits from the completion of subjects, as per the above, and pass a master's thesis examination and final test.

The University of Tsukuba Subject List (draft)

Subject Category	Domain	Course Subject Name	Dura-tion	Credits			Course Format		
				Manda tory	Elect ive	Free	Lec-ture	Semi-nar	Lab/ Fieldwork
Specialized Core Subjects	Introduc-tion	Introduction to Mountain Science A	1 or 2 Spring	1			○		
		Introduction to Mountain Science B	1 or 2 Autumn	1			○		
	Field work	Mountain Science Filed Course A	1 or 2 Spring	1					○
		Mountain Science Filed Course B	1 or 2 Year long	1					○
	Practical Skills	Field Safety Management Science	1 Spring	1			○		○
		Mountain Environment Internship I	1 or 2 Year long		1				○
		Mountain Environment Internship II	1 or 2 Year long		1				○
		Advanced Research Experience (Study Tour)	1 or 2 Autumn		1				○
		Advanced Lecture in Mountain Studies	1 or 2 Autumn		1		○		

Specialized Applied Subjects	All Domains	Mountain Studies Seminar IA	1 Spring	2				○	
		Mountain Studies Seminar IB	1 Autumn	2				○	
		Mountain Studies Seminar IIA	2 Spring	2				○	
		Mountain Studies Seminar IIB	2 Autumn	2				○	
		Research in Mountain Science I	1 Year long	1				○	
		Research in Mountain Science II	2 Year long	1				○	
		Introduction to Culture and Science of Mountains	1 or 2 Autumn	2				○	
	Biological Domain	Vegetation Geography (Japanese)	1 or 2 Year long		2		○		
		Vegetation Science (Japanese)	1 or 2 Autumn		1		○		
		Vegetation Science	1 or 2 Autumn		1		○		
		Soil Genesis and Classification	1 or 2 Year long		2		○		

		Ecosystem Ecology (Japanese)	1 or 2 Spring		1		○		
		Advanced Field Course in Fungal Biodiversity (Japanese)	1 or 2 Spring		1				○
		Laboratory and Field Studies in Arthropod Biology (Japanese)	1 or 2 Spring		1				○
		Environmental Field Work	1 or 2 Year long		1				○
		Advanced Field Course in Mountain Forest Ecology	1 or 2 Summer		1				○
		Advanced Field Course in Mountain Grassland Ecology	1 or 2 Summer		1				○
		Mountain Microbiology	1 or 2 Summer		1		○		
		Mountain Soil Survey Fieldwork	1 or 2 Summer		1				○
		Laboratory and Field Studies in Molecular Ecology	1 or 2 Summer		1				○

	Geological Domain	Mountain Meteorology (Japanese)	1 or 2 Autumn		1		○		
		Lecture on Mountain Geomorphology (Japanese)	1 or 2 Spring		1		○		
		Lecture on Erosional Landforms (Japanese)	1 or 2 Spring		1		○		
		Lecture on Polar Geomorphology (Japanese)	1 or 2 Spring		1		○		
		Hillslope Geomorphology and Hazards	1 or 2 Year long		1		○		
		Overseas Fieldwork in Alpine Geomorphology	1 or 2 Spring		2				○◦
		Basin Area Hydrology (Japanese)	1 or 2 Spring		1		○		
		Environmental Hydrology (Japanese)	1 or 2 Spring		1		○		
		Introduction to Water Environment	1 or 2 Spring		2		○		
		Mountain Geology (Japanese)	1 or 2 Autumn		1		○		

	Anthropological Domain	Bio-resource Management (Japanese)	1 or 2 Autumn		2		○		
		SATOYAMA Management Fieldwork (Japanese)	1 or 2 Spring		1				○◦
		Remote Sensing	1 or 2 Spring		1		○		
		Advanced Conservation of Regional Resources	1 or 2 Year long		2		○		
		Applied Environmental Ethics (Introduction to English Presentation and Debate)	1 or 2 Spring		2		○		
		Mountain Tourism (Japanese)	1 or 2 Spring		1		○		
		Environmental Disaster and Protection Planning (Japanese)	1 or 2 Autumn		1		○		
		Nature Conservation Study	1 or 2 Spring		1		○		
		Natural Heritage Studies	1 or 2 Spring		1		○		

		Nature Conservation Administration	1 or 2 Autumn		1		○		
		International Conventions for Heritage Conservation	1 or 2 Spring		1		○	○	
		Subtotal (35 subjects)		−				−	

Academic Year/ Course Term and

- Academic terms per year：Two terms, Spring term and Autumn term
- Duration of courses per one term: 15 weeks
- Hours of instruction for a regular course: 75 minutes

Partner Universities

- Graduate School of Life and Environmental Sciences, The University of Tsukuba
- Graduate School of Science and Technology, Shinshu University (Japanese)
- Institute of Mountain Science, Shinshu University
- Graduate School of Intergrated Science and Techonology, Shizuoka University
- Faculty of Life and Environmental Sciences, University of Yamanashi