Master's Program in Medical Sciences

■ Master of Science in Medical Sciences

Program Educational Objectives

Frontier medical science is an interdisciplinary area that covers broad areas such as basic medical sciences, clinical medicine, medical physics, translational research and regulatory science. Based on comprehensive fundamental education for medical science, this program shall provide education/research of practical and broad medicine-related areas that correspond to social needs and train the human resources who can play an active role in realization and maintenance of safe and healthy society as researchers/educators in universities or highly specialized professionals.

Graduate Profile	– The desired students shall be able to promote research in the area of medical science in educational research institutions such as universities and contribute to pioneering new area with fundamental knowledge of medical science in general and deep knowledge of area of expertise. – The human sources who engage in research development and medicine-related services in the corporations relating to medical care with fundamental knowledge of medical science and knowledge of expertised area that meets social needs. – The human resources who can contribute to safety of medical care and health promotion in medical institutions with fundamental knowledge of medical science and practical knowledge of expertised area.

Diploma Policy

The degree of Master of Science in Medical Sciences is commenced to those who have fulfilled the requirements for the completion of the Master's programs, as set out in the Graduate School Regulations of the University of Tsukuba and related university regulations, and who are deemed to have the following competences.

	Competences	Evaluation perspectives
Knowledge and Skills	1. Knowledge application competence: Ability to contribute to society with advanced knowledge	①Can you apply knowledge gained through research and other activities in society? ②Can you identify new problems, even in other fields of expertise, based on broad knowledge?
	2. Management competence: Ability to appropriately address challenges from broad standpoints	①Can you take on major tasks with systematic planning? ②Can you understand and solve problems from multiple perspectives?
	3. Communication competence: Ability to accurately and clearly communicate expert knowledge	①Are you capable of efficient communication for research purposes? ②Can you discuss research or research-specific knowledge with experts from your own field and from other fields?
	4. Teamwork competence: Ability to work with a team and actively contribute to the achievement of goals	①Do you have experience cooperatively and actively working on challenges as part of a team? ②Have you helped promote projects and activities other than your own research?
	5. Internationality competence: Willingness to contribute to international society	①Are you aware of making contributions to international society and getting involved in international activities? ②Have you obtained the linguistic skills necessary for international information collection and action?
	6. Ability to make use of basic knowledge: an ability to make use of fundamental knowledge of comprehensive medical science that covers basic medical sciences, clinical medicine and social physics.	If acquired knowledge related to medical science and an ability to make use of such knowledge.
	7. Practical ability: highly specialized knowledge related to medical science and command of such knowledge.	If having acquired highly specialized knowledge related to medical science and command of such knowledge.

	Competences	Evaluation perspectives
Knowledge and Skills	8. Research ability: an ability to conduct advanced research relating to medical science.	① If capable of understanding cutting-edge research method and procedures of different areas and applying such method and procedures to research. ② If capable of independently conduct information collection, system establishment and negotiation necessary to complete research.
	9. Ability to solve issues: an ability to extract and solve the issues in medical science based on deep specialized knowledge.	If capable of finding important issues based on the latest specialized knowledge in medical science and devise creative research.
	10. Ethical view: High level of awareness and ethical view suitable for researchers/highly specialized professionals who engage in medical science.	① If having high level of awareness and motivation for medical science. ② If having ethical view and ethical knowledge suitable for researchers and highly specialized professionals in medicine.
Guidelines for Assessing Learning Outcomes	The evaluation of learning outcomes is conducted in stages based on the "Competence Self-Assessment Form" and the "Achievement Evaluation Form". The stages and methods of achievement evaluation are as follows: – First Stage: After the interim review (in the first year), the Chair of the Academic Affairs Committee and the Program Leader review and evaluate the validity of the submitted Competence Self-Assessment Form. – Final Stage: After the final review (in the second year), the Chair of the Academic Affairs Committee and the Program Leader review and evaluate the validity of the submitted Competence Self-Assessment Form. Subsequently, the final achievement evaluation is conducted by the Steering Committee.	
Evaluation Criteria for Degree Theses/ Dissertations	The master's degree (medical science) shall be awarded to the person whose master's thesis is approved as valid regarding the following evaluation items and judged as a pass in final examination after satisfying the requirements prescribed in School Regulations of Tsukuba University. The evaluation items shall be that: 1. the findings of research are qualitatively and quantitatively eligible for master's thesis. 2. the background of research is referred. 3. the purpose of research is clear. 4. the method of research follows its purpose. 5. the results of research are properly stated. 6. the consideration based on the results of research is appropriately provided. 7. the charts are accurately prepared. 8. the descriptions such as references and abbreviations etc. are accurate. 9. the students sufficiently understand the contents of master's thesis.	

Evaluation Criteria for Degree Theses/ Dissertations	10. the students can accurately respond to questions and answer session. 11. the students have understood the research in the relevant areas. 12. there is no research misconduct such as falsification/fabrication or plagiarism in research data. Research of master's thesis shall be supervised by multiple faculty members as “Dissertation in Medical Sciences” . For the students who pass interim examination which shall be conducted from the latter half of the first year to the first half of the second year, the final examination shall be performed. The final examination shall consist of research presentation examination performed by three members of academic affairs committee in public presentation and individual examination performed by the members of master's thesis examination committee (one chief examiner and two sub chief examiners). Through consideration of results of such examination by the thesis examination committee and steering committee of Master's Program in Medical Science and Graduate School Steering Committee, the degree conferment shall be decided.

Curriculum Policy

Medical science is an interdisciplinary area that covers broad areas such as basic medical sciences, clinical medicine, medical physics, translational research and regulatory science etc. In the curriculum, students can learn comprehensive knowledge from basic to application necessary to correspond to social needs in these broad areas of medical science and develop research and pioneer new areas, and the knowledge necessary to contribute to safety of safety of medical care and health promotion in medical institutions etc.

Curriculum Design Framework	Master's Program in Medical Sciences shall consist of General Foundation Subjects, Foundation Subjects for Major and Major Subjects. Students can learn the fundamental knowledge of medical science by Basic Subjects and Foundation Subjects for Major, and acquire competence in specialized areas according to their desired career path through the Major Subjects. Students shall learn more than 50 % of the General Foundation Subjects, Foundation Subjects for Major and Major Subjects in English. Consideration shall be given in order that international students can acquire the degree only in English. Additionally, students shall acquire comprehensive knowledge/ culture of other than in one's own area of expertise and ethical view and cultivate an ability to contribute to human resource development of the next generation.

Teaching and Learning Methods	The standard study schedule is as follows: 1. In the first year, students shall take a large number of subjects to meet completion requirements other than Dissertation in Medical Sciences (master's thesis research). 2. In the second year, students shall take the subjects to deepen knowledge of medical science centering on Dissertation in Medical Sciences (master's thesis research). 3. In the presentation of research plan of the first part of the first year, each student shall present his/her future research plan of master's thesis. 4. In the latter half of the first year, the members of master's thesis examination committee excluding research supervisor shall be selected (one chief examiner and two sub chief examiners) and interim individual examination shall be performed according to each student's progress status of research. 5. In the beginning of the latter term in the second year, presentation of research outcomes shall be held, where the research outcomes shall be presented so far. 6. At the end of the second year, the final examination shall be performed. The final examination shall consist of research presentation examination performed by the members of academic affairs committee in public presentation and individual examination performed by the members of master's thesis examination committee for academic abilities.

Admission Policy

Desired Student Profile	For this course, enrollment of the persons shall be required who have basic knowledge relating to medical science and motivation to actively perform research with an ability to logically analyze and creative and flexible idea. After enrollment, the students shall be required not only to learn fundamental knowledge of medical science and highly specialized knowledge, but also to have abilities to explore and independently solve various problems in their area of expertises they face from comprehensive perspective.
Student Selection Process	– By conducting and comprehensively evaluating both written examination and oral examination, the entrants shall be selected. – By written examination, English ability and basic knowledge related medical science shall be evaluated. – By oral examination, an ability for logical analysis, an ability for creative and flexible idea and motivation for learning shall be evaluated. – Both written and oral examination shall be performed either in Japanese or in English according to the applicants' desire.

Learning Support Framework

Academic Support	A Frontier Medical Sciences Degree Program Office has been established to provide a wide range of academic support, including assistance with the mid-term review, the final review, various presentation sessions, competence self-assessments, and degree examinations, as well as responding to inquiries as needed.In addition, courses directly related to research activities—such as Basic Medical Science Seminar, Scientific Ethics, English Discussion & Presentation on Medical Sciences, and Special Research Training in Medical Sciences—are offered and granted academic credit.
Opportunities for Peer Interaction	– In the course Dissertation in Medical Sciences (a subject for master's thesis research), three types of presentations are organized: a Research Proposal Presentation (three months after admission), a Research Progress Presentation (at the beginning of the fall semester of the second year), and a Public Presentation (at the end of the second year). These sessions provide opportunities for students to interact with peers from different disciplines. – For alumni, a system has been established to share information and facilitate exchanges of ideas using the program website and social networking services such as Facebook groups. In addition, Career Path Seminars are organized to create opportunities for interaction between current students and alumni. The Career Path Seminar is credit-bearing, and at the end of each academic year, the responsible faculty members hold a meeting to discuss improvements for the following year.
Opportunities for Student–Faculty Interaction	– For student consultations, the program has established Student Affairs Coordinators and Career Support Coordinators within the organization. The Degree Program Office serves as the primary contact point, providing routine support to students, including international students. – In the course Dissertation in Medical Sciences (a subject for master's thesis research), three types of presentations are organized: a Research Proposal Presentation (three months after admission), a Research Progress Presentation (at the beginning of the fall semester of the second year), and a Public Presentation (at the end of the second year). These sessions provide opportunities for students to receive advice from faculty members in different fields.

Approaches to Assuring and Enhancing Educational Quality

– The Steering Committee evaluates students' learning outcomes and examines the appropriateness of the curriculum and the adequacy of academic guidance.
– An Academic Affairs Committee is established to ensure the quality of education and to strengthen the program's overall structure by continuously monitoring and improving all educational activities.