

Message from the Program Coordinator



The Ph.D. Program in Humanics cultivates leaders equipped with doctoral-level knowledge and skills in the fields of both biomedical sciences and physical sciences/engineering/informatics, together with the scientific expertise to achieve integration of these fields and the capacity to apply them in wider society. The program aims thereby to address challenges to human life and health and enable the sustainable prosperity of all humankind.

We will welcome students who have studied either biomedical sciences or physical sciences/engineering/informatics, and who are willing to study the other discipline and fuse them together. People who have worked as a physician or an engineer are also very welcome.

Masashi Yanagisawa  
Director/Professor, International Institute for Integrative Sleep Medicine (WPI-IIS),  
University of Tsukuba

The Entrance Examination

August 2019 (Enrollment for April 2020)  
See below for the latest information.  
<https://www.phd-humanics.tsukuba.ac.jp/en/admission/>

Financial Supports

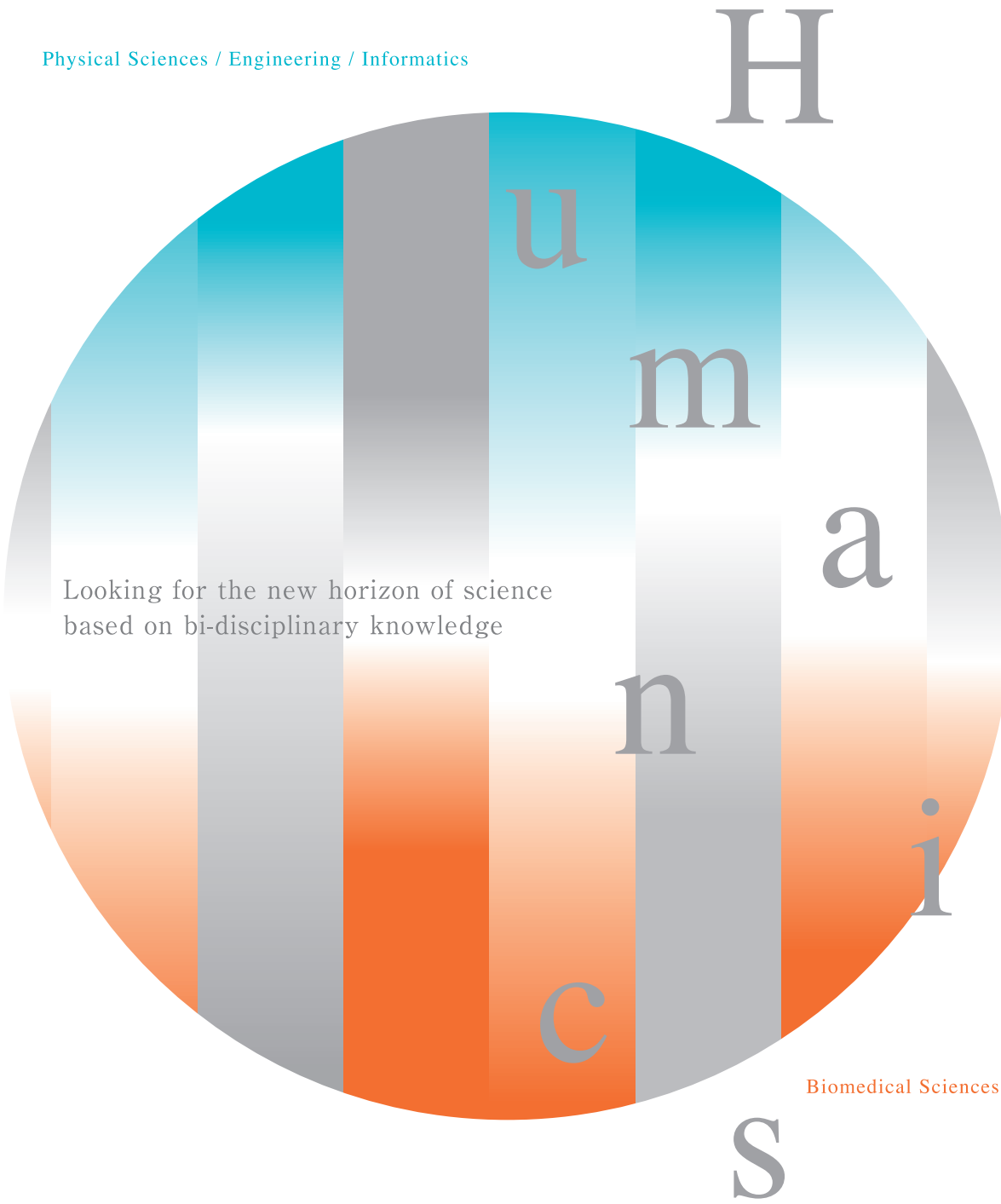
Financial support	<div>·Students who are yet to pass the Qualifying Examination (QE) obtain financial support according to their research contribution based on TA, RA, and Reverse Mentor work.</div> <div>·Excellent students who have already passed the QE may receive Education and Research Support Expenses (planned for 160,000 to 180,000 yen/month). Students who are judged as excellent in academic achievement by the university's regulations are eligible for the following exemption in tuition fees.</div> <div>·Before passing QE : Half exemption</div> <div>·After passing QE : Full exemption</div>
Support for overseas studies & research activities	University will provide students with the expenses for overseas studies & research activities, within the certain limit, such as research activities, joint research, and presentation at international conferences.
Student dormitory	Priority allocation.



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<https://www.phd-humanics.tsukuba.ac.jp/>



Physical Sciences / Engineering / Informatics



Biomedical Sciences

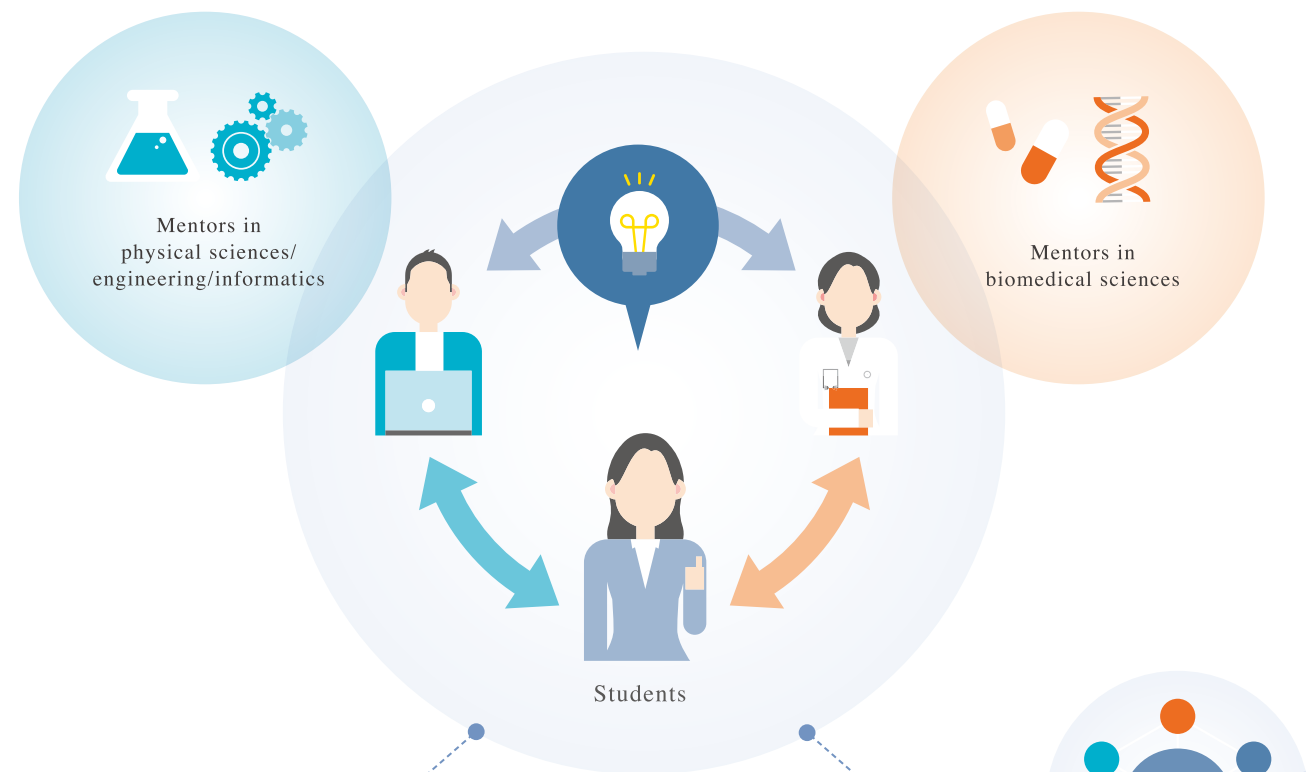
Ministry of Education, Culture, Sports, Science and Technology  
WISE Program (Doctoral Program for World-leading Innovative & Smart Education)  
School of Integrative and Global Majors (SIGMA) Office,  
University of Tsukuba

Ph.D. Program in Humanics



## About the Ph.D. Program in Humanics

“Humanics” is a discipline that sheds light on the fundamental principles of physiology and pathology of the human, generating new science and technology to achieve a healthy and comfortable life for human beings in society. The Ph.D. Program in Humanics cultivates leaders with doctoral-level knowledge and skills in the fields of both biomedical sciences and physical sciences/engineering/informatics, as well as the capacity to integrate two or more research fields and to apply them in human society.



### Double Mentor and Reverse Mentor Systems

“Double mentor system” in which faculty members from both biomedical sciences and physical sciences/engineering/informatics initiate research collaboration to provide guidance to students. “Reverse mentor system” means that students impart knowledge from one field to another and act as a bridge between different research fields. Students will learn bi-disciplinary expertise as well as communication skills.

### Combination of Biomedical Sciences and Physical Sciences/Engineering/Informatics

The program will build structures for collaboration between the fields of biomedical sciences and physical sciences/engineering/informatics, through a variety of horizontal linkages with university research centers. Linkages will also be developed with national research and development corporations within the Tsukuba Science City, international partner universities, and private companies.

#### Private companies

- CYBERDYNE Inc.
- Toyota Motor Corporation (R&D Center for Strategic Frontiers in Social Planning, University of Tsukuba)
- Hitachi, Ltd.
- S'UIMIN Inc.

#### Research centers

- International Institute for Integrative Sleep Medicine (WPI-IIS)
- Center for Cybernetics Research
- R&D Center for Precision Medicine (PMC)
- National Institute of Advanced Industrial Science and Technology (AIST)
- National Institute for Materials Science (NIMS,WPI-MANA)

#### Oversea Universities

- University of California, Irvine
- University of Bordeaux
- National Taiwan University

Generating new science and technology to achieve a healthy and comfortable life for human beings in society

### “Four capabilities” fostered in the program

- Bi-disciplinary Expertise
- Capability of Problem Discovery
- Capability of Breakthrough
- Capability of Application

Fusion research of biomedical sciences and physical sciences/engineering/informatics

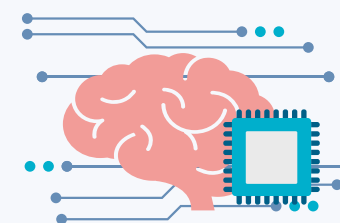
Cultivating capability to generate the ZERO to ONE task based on interdisciplinary learnings

QE in 1 to 2 years depending on student's achievement



Interdisciplinary learning through practices and exercises

### CASE 01



#### Improvement of cognitive function and mental health

Development of artificial neural network devices that can be linked to the brain, and understanding of sensibility, motivation, and thoughts, etc.

### CASE 02



#### Understanding of molecular mechanisms of pathogenesis and overcoming of intractable diseases

Development of molecular robot that can intervene in cell functions, and overcoming of intractable diseases such as virus infections and cancer.



### Future image of students

- **Researchers** creating a new interdisciplinary field
- **Entrepreneurs** who industrialize complementary technology of human function
- **Medical doctors** with knowledge of cybernetics and informatics
- **Government administrators** who can make a novel plan of medical administration
- **Diploma**  
Ph.D. in Medical Sciences  
Ph.D. in Science  
Ph.D. in Engineering