



Mahidol University
International College

MU3 Course Specification: ICBI 464 Entrepreneurship in Science

Section 1: General Information

1. Course Code and Title

Course Code: ICBI 464

Course Title (English): Entrepreneurship in Science

Course Title (Thai): การเป็นผู้ประกอบการในวิทยาศาสตร์

2. Number of Credits: 4(4-0-8)

(Theory 4 hrs. Practice 0 hrs. Self-Study 8 hrs./week)

3. Curriculum and Course Type

3.1 Program: B.Sc. (Biological Sciences)

3.2 Course Type: Specific Course (Elective Course)

4. Course Coordinator and Instructor

4.1 Course Responsible Instructor: Professor Chulathida Chomchai, M.D.

4.2 Instructors: 1. Professor Chulathida Chomchai, M.D.

2. Dichapong Kanchanawasee, M.D., PhD.

5. Semester/Class Level:

5.1 Semester: [e.g., Trimester 2] / Class Level: 3rd or 4th year (Summer, with pre-registration in Term 3)

5.2 Number of Students Allowed: Approximately 30-40 students

6. Prerequisites:

7. Co-requisites: None

8. Date of Preparation/Latest Revision: 24 July 2025

Section 2: Course Goals and Course Description

1. Course Goals:

To enable students to apply biological knowledge and human-centered design to solve real-world health challenges through innovation, entrepreneurship, and teamwork.

2. Course Description (English):

This course provides students with the opportunity to develop scientific innovations that address real-world health, social, and environmental challenges. Using a design thinking approach, students will identify unmet needs, conduct field research, co-develop and iterate prototypes, and present their innovations. The course emphasizes scientific feasibility, communication, ethical awareness, and interdisciplinary collaboration.

Course Description (Thai):

รายวิชานี้เปิดโอกาสให้นักศึกษาได้พัฒนาแนวคิดนวัตกรรมทางวิทยาศาสตร์เพื่อตอบสนองต่อความท้าทายด้านสุขภาพ สังคม

และสิ่งแวดล้อมโดยใช้กระบวนการคิดเชิงออกแบบ นักศึกษาจะศึกษาปัญหาจากพื้นที่จริง ทำงานร่วมกับผู้มีส่วนได้ส่วนเสีย พัฒนาแนวคิด

และนำเสนอผลงานต้นแบบอย่างสร้างสรรค์และมีจริยธรรม

Section 3: Course Objectives, Course-level Learning Outcomes and Course Implementation

1. Course Objectives:

To integrate biological sciences knowledge with design thinking in order to foster science-based innovation and entrepreneurship.

2. Course-level Learning Outcomes (CLOs):

1. CLO1: Identify and explain real-world challenges in health and biology using scientific knowledge.
2. CLO2: Apply the design thinking process to develop solutions to user-centered problems.
3. CLO3: Conduct stakeholder interviews and field observations to gather user insights.
4. CLO4: Prototype and iterate science-based solutions based on user feedback.
5. CLO5: Communicate innovation ideas effectively to diverse audiences.
6. CLO6: Demonstrate ethical awareness and professionalism in the innovation process.

Teaching and Learning Activities

Lectures and guest talks on global health, ethics, and innovation in low-resource settings

Field visits to health centers or communities to conduct user research and observations

Workshops on empathy, problem framing, ideation, prototyping, and business modeling

Team-based group work and mentoring sessions to support solution development

Pitch coaching and feedback sessions

Reflective discussions and journaling to enhance learning and ethical awareness

Assessment Methods

Formative: Participation in fieldwork, group discussions, and workshops (20%)

Formative: Submission of empathy maps, problem definitions, and prototype ketches(20%)

Summative: Final team pitch presentation (30%)

Summative: Individual written reflection on learning experience, ethics, and personal growth (30%)

Class Schedule (Subject to change)

Class schedule 2026	
Date	Activities
Monday, July 20, 2026	Introduction to Human-centered Design Thinking for Health Innovations Case studies in Human Centered Design for Health Framing the How Might We question
Tuesday, July 21, 2026	Field Research-Community/Hospital Visit Gathering inspirations for your innovation
Wednesday, July 22, 2026	Synthesize for actions
Thursday, July 23, 2026	Idea Generation-brainstorming Making ideas tangible 1-case studies in Biodesign for Health and Wellbeing
Friday, July 24, 2026	Entrepreneurship Essentials-making ideas tangible 2 Case studies in health entrepreneurship
Saturday, July 25, 2026	---
Sunday, July 26, 2026	---
Monday, July 27, 2026	Prototype visualization
Tuesday, July 28, 2026	Testing to learn-iterating your prorotype Role playing
Wednesday, July 29, 2026	Finalizing your prototype (desirable-feasible- viable)
Thursday, July 30, 2026	Sharing your innovative ideas
Friday, July 31, 2026	Final project pitch

Hours of instruction 48 hours of classroom instruction

Special Note

Key Features of this program

☒ **Field-embedded learning**

Students engage directly with real-world problems through field visits to hospitals, community health centers, and wellness programs in Thailand.

☒ **Human-centered design thinking**

Participants learn and apply each phase of the design thinking process—empathizing with stakeholders, framing critical health problems, ideating creative solutions, and building and testing prototypes.

☒ **Participation in the Designing Health Innovations Challenge**

All students will have the opportunity to join MUIC's flagship *Designing Health Innovations Challenge*, where teams compete to design impactful, scalable solutions for real-world health problems.

☒ **Multidisciplinary, global collaboration**

Open to international and MUIC students, the course promotes collaboration across cultural and disciplinary boundaries, creating a vibrant and diverse learning environment.

☒ **Mentorship and iterative feedback**

Students will receive coaching and feedback from faculty, healthcare practitioners, innovation specialists, and design mentors throughout the course.

☒ **Capstone pitch and showcase**

Each student team will deliver a final innovation pitch, presenting their prototype and design journey to a panel of academic and industry judges.

☒ **Global citizenship and ethical reflection**

The course emphasizes ethical practice, inclusion, sustainability, and global citizenship, helping students become responsible scientific innovators in today's complex world.