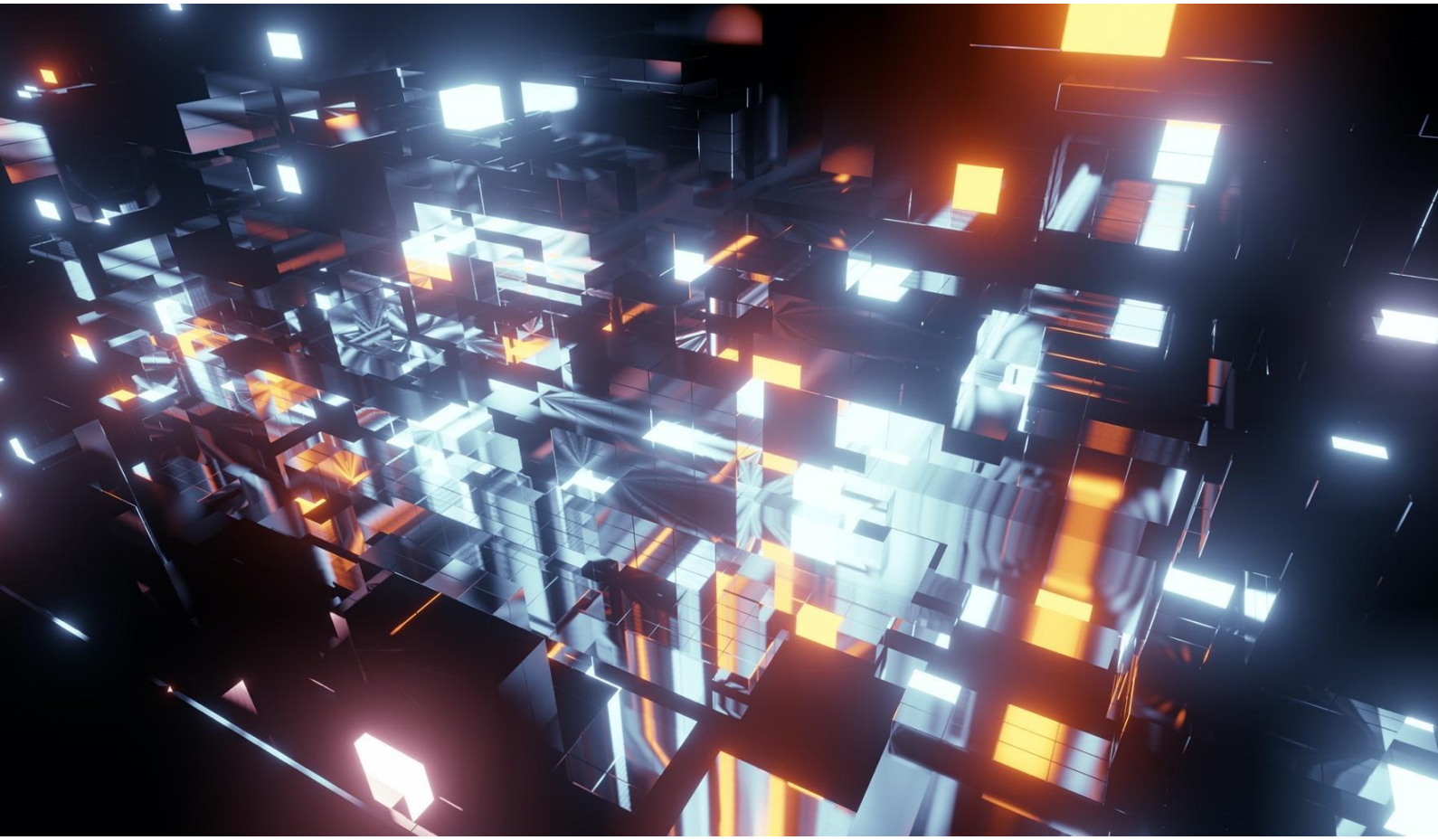
STUDENT HANDBOOK



Master of Science in

Technology and Creative Innovation

M.S. in TCI

CMKL University

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Ladkrabang, Bangkok 10520

Thailand

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www.cmkl.ac.th

CONTENTS

WELCOME TO TECHNOLOGY AND CREATIVE INNOVATION CENTER

CMKL University would like to introduce you to the Master of Science in Technology and Creative Innovation (M.S.TCI.), which aims to connect the brightest students in the fields of Entrepreneurship and innovation, Technology and Creativity, and equip them with the right knowledge and tools to innovate, transform, and create a long-lasting positive impact. Our professional master's curriculum provides teamwork, hands-on experience, and professional connections by bringing together not only specialists from various fields, but also instructors and professors who are top-level executives and industrial partners.

Graduate Capstone Projects are one of the M.S.TCI.'s primary areas of focus. Capstone Projects are conceptualized as students from various disciplines working together in teams to push the boundaries of the industry and innovate. Our core values are communication, collaboration, and creativity. M.S.TCI. students with original ideas are encouraged to push themselves, work within constraints, and collaborate in teams in order to conceptualize what may later become their year-long capstone projects.

M.S.TCI. places a high value on specialists and believes that these specializations make teams stronger and lead to more creative collaborations. As a result, our program is not designed to encourage students to leave their original fields, but rather to provide them with the necessary tools to expand beyond their current boundaries. Students will learn how to collaborate across specializations and disciplines at the M.S.TCI., and they will be better prepared to positively transform future organizations and communities.

Sincerely,

Akkarit Sangpetch, PhD
TCI Program Director, CMKL University

1. PROGRAM OVERVIEW

1.1 Mission

To revolutionize higher education and transform the industry by creating entrepreneurial professionals who will become global leaders through research and knowledge, technology, creativity, and innovation.

1.2 Vision

The M.S.TCI. program aims to be a technology enabler for corporations by developing the skills and expertise needed to solve long-term industry and business problems. Through an outstanding curriculum that prepares all of our students for the twenty-first century, we provide a rigorous academic foundation as well as a practical education.

1.3 Degrees Offered

Graduates will be awarded a degree of the Master of Science in Technology and Creative Innovation (M.S. in TCI) from CMKL University. Students will be supervised by CMKL University faculty advisors who will advise them in developing and defining capstone projects to complete in pursuit of their degree. Based on the student's background and academic goals, the advisors will also assist with the selection of learning activities and other elements of the M.S. in TCI program.

1.4 Using Student Handbook

The student handbook is intended to set guidelines and expectations for new and current students in Technology and Creative Innovation at CMKL University. This handbook is not exhaustive and will be subject to revision from time to time. It is the responsibility of each student to read and understand the contents of this handbook to familiarize themselves with the university policies and guidelines. This handbook, along with any revisions, will be posted and announced annually on the university website.

1.5 CMKL Statement of Assurance

CMKL University adheres to nondiscrimination policies set forth in Thai national laws and executive orders. The University does not discriminate against a person on the basis of race, color, religion, national origin, gender, sexual

orientation, religion, ancestry and belief in admission, employment, or administration of its programs or activities. Inquiries concerning the application of and compliance with this statement should be directed to the office of Admissions and Academic Affairs, CMKL University,1 Soi Chalongkrung 1, Ladkrabang, Bangkok 10520, Thailand. Obtain general information about CMKL University by calling +66 65 878 5000.

2. CMKL FACULTY

M.S.TCI. students will interact with a wide range of faculty and staff members who will advise them in completing their degree.

2.1 University Officers

President of CMKL University:	Dr. Supan Tungjitkusolmun
Vice President of CMKL University:	Dr. Orathai Sangpetch
TCI Program Director:	Dr. Akkarit Sangpetch

2.2 TCI Program Committees

Akkarit Sangpetch

- Assistant Professor, CMKL University
- School of Engineering, King Mongkut's Institute of Technology Ladkrabang
- Adjunct Faculty, Department of Electrical and Computer Engineering, Carnegie Mellon University
- Ph.D., Electrical and Computer Engineering, Carnegie Mellon University

Orathai Sangpetch

- Assistant Professor, King Mongkut's Institute of Technology Ladkrabang
- Assistant Professor, CMKL University
- Adjunct Faculty, Department of Electrical and Computer Engineering, Carnegie Mellon University
- Ph.D., Electrical and Computer Engineering, Carnegie Mellon University

Supan Tungjitkusolmun

- Associate Professor, King Mongkut's Institute of Technology Ladkrabang
- Associate Professor, CMKL University
- Ph.D., Electrical Engineering, University of Wisconsin

Sorakrit Phruthanontachai

- Senior Vice President, Technology Division, Bangkok Bank
- Adjunct Faculty, CMKL University
- B. Eng Computer Engineering, Chulalongkorn University
- MSc E-Commerce Technology, University of Sussex
- MS Information Technology in E-Business Technology, School of Computer Science, Carnegie Mellon University
- MBA, Sloan Fellows, MIT Sloan School of Management, Massachusetts Institute of Technology

Priyakorn Pusawiro

- ESIC LAB; ACM-SIGGRAPH Chair
- Adjunct Faculty, CMKL University
- Dr.-Ing. (Doctorate in Computer Engineering), Faculty of Computer Science, University of Bremen, Germany.
- M.S. in Computer Science, Department of Computer Engineering, Faculty of Engineering, Chulalongkorn University
- B.S. in Statistics (Electronic Data Processing), Department of Statistics, Faculty of Commerce and Accountancy, Chulalongkorn University

2.3 M.S.TCI. Program Faculty Members

A full listing of M.S.TCI. faculty and staff can be found on the website: https://www.tci.cmkl.ac.th/

3. ENROLLMENT & REGISTRATION

3.1 Overview

TCI students should create an academic plan and register for courses. Students should actively engage in their process by reviewing degree requirements on the

website, connecting with their academic advisor, and conferring with a faculty mentor.

Once a schedule is developed, it is the student's responsibility to register for courses via https://hub.cmkl.ac.th/. Students must be registered for every course that they plan to take for the semester, even if it is not taken for credit (e.g., audited courses). After the first semester, a student's assigned registration time is determined by the number of completed units and cannot be changed.

3.2 Student Responsibility

Students should follow the academic calendar at https://www.cmkl.ac.th/hub to add and drop courses. Students should consult their academic advisors for assistance if progress is behind or have concerns about not being able to complete the degree requirements as scheduled.

3.3 Full-Time Requirements

The M.S.TCI. degree is a full-time program in which students enroll for full-time (36 units) semesters. All international students are required to be full-time students. A student's schedule is considered overload when it exceeds 48 units per semester. Students must receive approval for a course overload from the Program director.

3.4 Auditing Courses

An audited course will not be counted towards the degree requirements. The units of audited courses will be counted toward the maximum course units and will be billed with the same tuition as regular courses.

Students who audit a class for an enrolled course will not receive academic credit or a letter grade. "O' will be assigned to an audited course. However, auditors failing to attend and prepare for the classes regularly will not receive a grade.

To audit a class, students need to register for the course via their student accounts. Then obtain written approval from the course instructor by signing the course audit approval form which can be downloaded at https://hub.cmkl.ac.th/. The form should be submitted to the academic advisor before the audit request

deadline listed on the academic calendar. Once the request has been approved and processed, it cannot be reversed.

3.5 Pass/Fail Courses

Students wishing to take an enrolled course with a Pass/Fail instead of a regular letter grade (‘A’-‘R’) have to submit the Pass/Fail approval form to their academic advisor for approval before the deadline listed on the academic calendar. Students will receive 'P’ or "S' for a passing letter C or above. Students will receive 'N' for failing the course with a grade C- or below. Once a Pass/Fail request has been approved and processed, it cannot be reversed.

This Pass/Fail course will not be factored into the QPA and will not be counted towards the degree requirements. However, the course units will be counted toward the maximum course units and will be billed with the same tuition as regular courses.

3.6 Course Load

We strongly recommend students take no more than 36 units each semester. Students should consult their academic advisors if they plan to take more than the regular load but are not sure whether they have the right plan to handle the additional load.

3.7 Add/Drop/Withdraw Courses

Students can add and drop courses from their assigned registration time until the add/drop deadline via their student account. Students wishing to add a course after the add deadline have to submit the Course Add Request Form (signed by the course instructor) to their academic advisors for processing. If a course is dropped before the drop deadline, it will not appear on the transcript and the course units will not be counted towards the maximum units. Withdrawing a course after the drop deadline but before the last day of the semester, students need to submit a Course Withdrawal Request form to their academic advisors. 'W' will be assigned for the withdrawn course on the transcript; it will not be factored into the QPA but the course units will be counted towards the maximum units.

3.8 Courses with Time Conflicts

Students are not permitted to register for two courses with time conflicts unless a course instructor allows attendance at an alternate time. Students should forward the written permission from instructors to their academic advisors to register for conflicting courses.

3.9 Final Exams

All TCI students must attend the final exams or final evaluation activities as scheduled by their course instructors. If students have a scheduling conflict for their final exams, they must discuss the issue with the course instructors. Please note that having a purchased airline ticket is not an acceptable excuse for missing a final exam.

4. ENROLLMENT AND DEGREE CERTIFICATION

4.1 Enrollment Verifications

The HUB (hub@cmkl.ac.th) is the primary contact for students or alumni who would like to request a transcript, enrollment verification, or other information related to their time in the M.S.TCI. program.

4.2 Leave of Absence

Students may need to interrupt their studies for a variety of reasons (financial, academic, or personal). Students who plan to leave the University by either taking a Leave of Absence (LOA) temporarily or withdrawing from the University without the intention to return should first contact their advisor to discuss their plans. Notifying instructors or no longer attending classes does not complete the LOA or withdrawal process. Students must contact the HUB and submit a LOA or withdrawal form.

Not completing the form will result in tuition being charged to the midpoint of the semester or the last date the student attended an academically related activity such as an exam, tutorial or study group, or the last day a student turned in a class assignment.

Per university policy, students taking a LOA are not allowed to take classes or work as student workers at CMKL. Students who are not on academic probation will be reinstated into the M.S.TCI. program at the same level as at the time of

taking the leave. Students on academic probation will be re-interviewed before permitting to resume their studies.

Note: international students who take a leave of absence will lose their Educational Visa and are required to leave Thailand.

4.3 Returning from a Leave of Absence

Students who are ready to resume their studies must submit their Return from LOA form to the HUB at least one month before the intended semester of return. International students should start the process at least two months earlier to allow time for the visa application. Graduate students may return to the TCI program within two years. After two years, students returning are subject to space constraints and academic performance reviews.

4.4 Degree Certification Process and Commencement

A student must satisfy all degree requirements and have a minimum of 3.0 QPA in the required 108 units being counted towards the graduate degree requirements. Students who are certified after the annual commencement ceremony will be invited to attend the next ceremony.

Students should update their contact information, including mailing address and personal email address, with the university, before graduation.

5. ACADEMIC STANDARDS

5.1 Grading Policy

M.S.TCI. follows the CMKL University grading policy with letter grades ‘A’ (highest), ‘A-’, ‘B+’, ‘B’, ‘B-’, ‘C+’, ‘C’, ‘C-’, ‘D+’, ‘D’, and ‘R’ (lowest). Grades C- and below are considered failures and will not be counted toward the degree requirements. If students need to leave the university, either take a leave of absence temporarily or withdraw from the university permanently, before the last day of classes, no grade will be recorded for that semester. Students should discuss their plans with their academic advisors and submit the appropriate signed form to the HUB.

5.2 Quality Points Average

Students must have a Quality Point Average (QPA) of 3.0 or above in the courses being counted towards the graduate degree requirements. Coursework or capstone project units with a grade lower than 'C' will not be counted towards the degree requirements. However, all registered courses will be calculated into the student's cumulative QPA.

5.3 Academic Probation

Students will be put on academic probation when the cumulative QPA is below 3.0 and receive a warning letter from the department. Students must meet their advisors and comply with their recommendations. Once a student's semester and cumulative GPA increase above 3.0, the academic probation will be removed automatically.

5.4 Academic Integrity

CMKL University is designed to provide a supportive and productive learning environment for our students. It provides the university's ethical expectations of our students and their rights and responsibilities. As members of the M.S.TCI. community, students are expected to make choices that reflect integrity and responsible behavior. When using other people's idea, providing credit to people are required. Failure to provide such acknowledgment is considered plagiarism. Students who violate the code of academic conduct are subject to disciplinary sanctions.

5.5 Critique

M.S.TCI. provides critique on student projects with insightful and supportive comments aiming to help students learn and find ways to improve their projects. Students should focus on the constructive elements with an open mind instead of individuals.

5.6 Incomplete Grade

If students cannot complete assignments for a class due to extenuating circumstances, they need to discuss with the course instructor and get approval to have an "incomplete" grade. Students must provide the course instructor an expected completion date. The incomplete grade will be changed to failing grade by the end of the following semester automatically.

5.7 Attendance and Tardiness

Students are required to attend mandatory events, such as seminars, meetings, lectures, presentations, and demonstrations, punctually. Each event's time and date will be announced in advance. Students cannot attend or are late for the events, prior approvals by the Program Director are required. With more than two unexcused absences, a student's grade in that semester's project course will be reduced by 1/3 of the letter grade. Each course has different attendance policies which are stated in its syllabus.

5.8 Final Grade Appeal

If a student believes a final grade has been incorrectly assigned, the student should first discuss it with the faculty or staff member responsible for the course. If an agreement cannot be reached, the student may pursue a formal written appeal with appropriate documentation within 14 days of the semester's final grades having been released. Department will issue a written decision on the appeal within 30 days. If the student is not satisfied with this decision, the student may submit a formal appeal to the Vice President within 7 days after receiving the department's decision. The decision of the Vice President shall be final and not appealable.

5.9 Publishing Papers

Publishing a paper for the M.S.TCI. projects is a way to share lessons learned with the teammates that lasts much longer than the project artifact itself. M.S.TCI. students should work closely with their project supervisors on the publications. An individual student who contributes the most effort in writing the paper will be listed as the first author. It is common practice to list the project supervisor as the last author as a senior author unless the supervisor writes the paper. In such a situation, all project members will be listed as authors on the publication in alphabetical order. All M.S.TCI. project teams must write post-mortems as part of their archival materials.

5.10 Instruction and Communication

Graduate programs at CMKL are conducted entirely in English. M.S.TCI. students are required to use English as the media for their academic work and meetings.

5.11 Academic Advising

Academic advisors provide administrative support helping you understand the program requirements and track your progress. While the Program Director is in charge of the approval of all matters dealing with the academic program, students are welcome to seek academic guidance from any member of the M.S.TCI. faculty. Students are encouraged to consult our faculty and staff on both academic and non-academic questions. We will provide referrals to other resources whenever necessary.

6. M.S.TCI. DEGREE REQUIREMENTS

M.S.TCI. is a three-semester professional graduate program with defined curriculum choices without a thesis. The program is detailed and strictly chronological; students should begin their studies towards the M.S.TCI. degree with the first semester courses that adhere to our first-semester curriculum. Summer break does not count as a full semester.

Total Number of Units Required for Graduation: *108 units*

	Standard M.S.TCI. Curriculum	Unit
Semester 1	56-603: Improvisational Acting	12 units
	56-604: Building Virtual Realities I */or* 56-605: AI for Business	12 units
	56-900 Capstone Project I	12 units
	Total	36 units
Semester 2	56-602 Foundations of Creative Innovation	12 units
	Elective Courses (1 – 2 courses)	12 units
	56-900 Capstone Project II	12 units
	Total	36 units
Semester 3	56-601 Entrepreneurship and Innovation	12 units
	Elective Courses (1 – 2 courses)	12 units
	56-900 Capstone Project III	12 unit
	Total	36 units

**The courses are subject to change without prior notice.*

6.1 First-Semester Courses

In the event that a student's semester or cumulative QPA falls below a 3.0, that student is on academic probation and will receive a letter from the department alerting them. While on probation, students must meet with their academic advisor and comply with their recommendations. Once a student's semester and cumulative QPA increase above 3.0, the student is automatically removed from probation.

6.2 Core Courses

TCI core courses require students to achieve three domains: entrepreneurship and innovation, technology, and creativity. To meet the core course requirements, students have to enroll 48 units in courses with a number starting with 56-6xx. Additionally, all core courses must be passed with a grade of B, 3.0 or higher to remain in good academic standing.

See list of Core Courses on Appendix A

6.3 Capstone projects

Taking three capstone projects is part of the graduation requirements. Students are not allowed to take more than one project per semester and must receive a minimum B grade for the project course to remain in good academic standing. Failing to earn a project grade with at least a grade B- for the second time during their final semester, students can submit a petition through the appeal process to retake the project course by taking an additional semester.

NOTE: International students cannot extend their student visa to stay for another semester due to failing courses.

6.4 Elective Courses

To count an elective course toward a student's degree requirements, they must receive a grade of C or higher. Students must earn a B or higher if they retake the same elective course. Alternatively, they can take another elective course in its place.

NOTE: International students cannot extend their student visa to stay for another semester due to failing courses.

See list of Elective Courses in Appendix B

6.5 Semester Performance Assessment

Faculty members have group meetings to evaluate each student's overall performance at least once per semester. This is not a grading evaluation but a performance assessment to identify students who need additional help to excel in our program. The Program Director will meet with those students whose performance is below satisfactory individually to discuss the perceived issues with recommended corrective actions.

Students will be placed on academic probation for having two performance reviews during the first semester. Students on academic probation will continue to have performance reviews during the second semester. Students who have been placed for performance reviews twice during the first semester and another two during the second semester must submit a petition to remain in the program.

6.6 Independent Study

- For M.S.TCI. students
  Students who are in good academic standing can opt for independent study. Students need to develop an idea and write a proposal to a faculty member, either inside or outside M.S.TCI., who agrees to supervise their projects. Then fill out the appropriate paperwork available from the Student Services.

- For non-M.S.TCI. students

  Non-M.S.TCI. students, who are interested in registering for an M.S.TCI. project, will have opportunities to join a project through the M.S.TCI. "open call" which usually happens at the beginning of each semester. Selected students need to sign an agreement detailing their contributions and grading criteria before starting the audition with the project team members and/or project course instructors. Auditioning includes but is not limited to, sharing/creating code samples, writing samples, and portfolio excerpts.

6.7 Field Research

The M.S.TCI. program is unique. We value hands-on learning, interacting with industry professionals, and behind-the-scenes tours as important parts of the M.S.TCI. educational process. First-year students will have opportunities to join

field trips to get an insider look at the creative innovative industry, attend exhibits, conferences, and trade shows, etc.

NOTE: Field research is an important educational opportunity but not an entitlement. All field research trips must be approved by the M.S.TCI. project instructors and the Program Director.

6.8 Outside Work

Outside employment is allowed but is not an excuse to skip classes or submit assignments late. International students must apply for a work permit through the HUB at CMKL University.

Note: Students, who receive a financial stipend as graduate assistants, cannot work outside the department during the same semester.

6.9 Intellectual Property

Any intellectual property created by students during the degree shall be owned by the University, subject to the University's intellectual property policy. However, students may request the university's permission to continue working on the intellectual property or exploit through said intellectual property, subject to the terms and conditions and benefit sharing stated in the University's intellectual property policy.

6.10 Non-Disclosure Agreement (NDA)

Students shall be requested to sign a non-disclosure agreement agreeing not to disclose any information received during participation in projects included in the agreement with any non-authorized parties. Signing the NDA shall not cause the signer any issues or lawsuits unless the signer willfully violates the agreement and intentionally disclosing confidential information received during participation to any third parties or made available to the public.

6.11 Grant of Rights and Licenses Student Form

When opportunities arise, students might have the opportunity to work in companies learning potential breakthrough technologies that lead to an industrial revolution. Students can use it as their reference and often include a demo of the work for their portfolio review even if a Grant of Rights and Licenses Student Form is signed.

6.12 Graduate Assistant Requirements

Students can apply for Graduate Assistant (GA) positions after their first semester. These positions are mostly related to M.S.TCI. courses where students need to be approved by the course instructors. M.S.TCI. courses only have a GA if there are 20 (or more) students enrolled in the course. Accepted GAs for the M.S.TCI. courses can opt for a financial stipend or course credit.

Other GA positions might be available in the library, labs, and workshops around the M.S.TCI.; students will need to be approved by the faculty or staff member in charge of the position. GA openings will be emailed to students every semester.

7. M.S.TCI. PROJECT AND GROUP POLICIES

7.1 Professional Standards

When representing M.S.TCI. or CMKL for client meetings, business casual dress is expected. Professional behaviors and punctuality are essential.

7.2 M.S.TCI. Project Process

Projects are an essential part of the M.S.TCI. curriculum. Regular surveys will be used to collect inputs and interests from students. Projects will be offered based on the students' interests and the department's resources. Faculty will work with students to assign roles that resonate with their interests. When projects generate high interest from students for roles, students need to apply with resumes and portfolios to help with the selection.

7.3 M.S.TCI. Project Course Structure

Student project teams are grouped in a small interdisciplinary team. Artifacts are created for working prototypes and/or proofs of concept that can be demonstrated or eventually lead to the production system. Each project team should design what they plan to create under the supervision of project course instructors.

Students will receive the project course syllabus during their semesters of studies. The project course concept is new to many students. Don't hesitate to ask your project course instructors or M.S.TCI. faculty for guidance. Our goal is

to help students work effectively and professionally with interdisciplinary team members.

7.4 Year-Long Projects

Students wishing to work on a larger-scale project can spend two semesters on the project. The project instructor and students may decide to end or pivot the project after one semester when the project is not meeting expectations.

7.5 Project Purchasing

When a project needs certain types of software, props or materials that are not available internally, a purchase request should be made through the course instructor with a reasonable lead time. If there is a serious time constraint, a petition can be made directly to the Director. Requests for equipment that is likely to be useful for future projects will likely be approved. Purchases made by students without prior approval will not be reimbursed.

8. UNIFIED PROGRAM

8.1 About the unified program

The unified program is an alternative pathway for bachelor's degree students who desire to graduate with both bachelor's and master's degrees within 5 years. This unified program enables undergraduate students to start their master's degree journey as soon as the first semester of their bachelor's degree. The student is eligible to enroll and collect one master's degree course per semester at the same time as a student studying for their bachelor's degree, and in the 5th year, students will intensively study master-level courses and do TCI Capstones Project at CMKL University.

8.2 Degrees Offered

Students who have satisfied the criteria will be awarded a degree of the Master of Science in Technology and Creative Innovation (M.S. in TCI) from CMKL University and a bachelor's degree from the university partner.

8.3 Student Responsibility

- Part-time students must strictly comply with the current university policy and regulation, or any new policy and regulation may be issued in the future.

- Students should follow the academic calendar on the course add and drop schedule. (at https://www.cmkl.ac.th/hub)
- Students should consult their academic advisors for assistance if progress is behind or have concerns about not being able to complete the degree requirements as scheduled.

8.4 Enrollment

- New students
  You may not enroll in more than one graduate program.
- Existing students
  You are entitled to continue your studies in each subsequent semester, except for the following conditions.
  - You haven't made a payment of the Tuition fee and required fees, or the finance department hasn't received a clear payment from you.
  - You have been put on academic probation.
  - You haven't enrolled in the course prior to the deadline due

8.5 Course Registration for Unified Program

During the first year to fourth year the maximum course students can enroll in per semester is limited to 1 course per semester. Once you are in the fifth year your limitation on enrollment shall be removed.

9. PAYMENT

Once you have accepted the offer you are obligated to make a timely payment and follow the payment instruction and due date of your tuition fee and required university fees set by the Finance department.

***Tuition fees and required fees are non-refundable.

*In case any amendment is made to this policy the current students or students who are admitted to the program prior to the amendment of this policy shall automatically be obliged under the new policy.

10. GRANDFATHER POLICY

New rules will be added to the department policies for improvement when necessary. These changes will be discussed with students before implementation. Students, who matriculated in the program before the new policies, will be governed by the grandfather policies if they are affected by the changes in degree requirements/course offerings.

APPENDIX A: LIST OF PROGRAM COURSES

The following courses are offered at CMKL University in Thailand. Additional courses may be added later.

56-601: Entrepreneurship and Innovation (12 units)*

Students will be able to think strategically about communication and negotiation with shared values in Business and Communication Class. This class will also assist students in sharpening their oral presentation, interpersonal communication, and negotiation skills as leaders. We will look at a variety of case studies as examples of best practices and guidelines based on research and experience.

**Please note that the course 56-601: Entrepreneurship and Innovation, which consists of 12 units, can be considered equivalent to the course 56-668: Business Communication, which consists of 9 units.*

56-602: Foundations of Creative Innovation (12 units)

Students work on developing a leadership and teamwork mindset. Throughout the semester, workshops and lectures will be given by industry experts and guest lecturers to provide historical context for creative innovation. In this semester-long class, students work in small groups to develop ideas for their Capstone projects. At the annual CMKL Innovation Summit, proposals are developed, and final pitches are delivered to a panel of selected faculty members and industry professionals.

56-603: Improvisational Acting (12 units)

This class is the M.S.TCI.'s "special sauce." It's the secret ingredient that adds zing to our program and gives you an edge. Taught concurrently with Building Virtual Worlds, Improvisational Acting fosters team building, exercises spontaneity, sharpens focus, and increases listening skills.

Students learn to solve problems on the fly, build from scratch, stretch their imaginations, and overcome inhibitions when communicating publicly, and working with others.

56-604: Building Virtual Realities I (12 units)

BVR is an introductory but highly intensive and hands-on class in which students are introduced to the development process of mixed reality, augmented reality, and virtual reality experiences. Small teams of students are challenged to create virtual worlds quickly and creatively together using Unity and other industry-standard tools. While this class is highly technical and intensive, it is beginner friendly, and no previous experience is required.

56-605: AI for Business (12 units)

This course is a comprehensive master's degree course designed to equip professionals with a practical and profound comprehension of AI and its practical applications in the business realm. It aims to facilitate a clear understanding of the business problems that AI can address, explore AI use cases across diverse industries, and present case studies and best practices.

Project Course

56-900: Capstone Project (12 units)

The Capstone project course is a significant part of the M.S.TCI. curriculum. In these interdisciplinary project courses, small teams of students work together to build prototypes and/or develop interactive projects to help solve existing industry problems. Depending on the nature of the projects, some groups may be assigned Capstone clients to work with while some may work more closely with faculty advisors.

APPENDIX B: LIST OF ELECTIVE COURSES

Additional courses may be added later. Course descriptions are subject to change.

Business and Innovation

- 56-610: Introduction to Blockchain
- 56-611: Project Management
- 56-612: Business Strategy and Analytics
- 56-613: Marketing Digital Media
- 56-614: Strategic Communication and Negotiation
- 56-710: Intellectual Property Law in Media, Entertainment, and Technology
- 56-711: Entrepreneurial Financing and Investing
- 56-712: Influencer Marketing Strategy
- 56-713: Test Your Startup Idea: Lean Entrepreneurship, Design Thinking, and Rapid Prototyping in Action!
- 56-714: Startup from Idea to Impact

Creative Design and Technology

- 56-621: Introduction to Motion Graphic
- 56-622: Building Virtual Realities II
- 56-623: Introduction to 3D Modeling and Animation I

- 56-624: Introduction to 3D Modeling and Animation II
- 56-625: Introduction to VR/AR/MR
- 56-626: Introduction to Game Development
- 56-627: Introduction to Virtual Production
- 56-721: 3D Art and Audio Pipeline for Game Development
- 56-722: User Experience & User Interface Design
- 56-723: Human-centered UI/UX Design Crash Course
- 56-724: Accessibility and Universal Design
- 56-725: Graphics and Visual Storytelling
- 56-726: Festival Production and Design
- 56-727: Design Thinking, Innovation, and Creative Confidence
- 56-728: Interaction Design and Experiential Design

Engineering and Technology Development

- 56-631: Introduction to Web Programming
- 56-632: Introduction to IoT with Arduino and Raspberry Pi
- 56-633: Introduction to AI and Machine Learning
- 56-634: Introduction to Neural Network and Deep learning
- 56-635: Startup Engineering
- 56-731: User Research Methodologies & Data

- 56-732: Software Development Processes and Methodologies
- 56-733: Storytelling with Data
- 56-734: Visualization
- 56-735: Ethical Principles for AI (Fairness, Accountability, Transparency, Ethics)
- 56-736: Creating Explainable AI

Business and Innovation

56-610: Introduction to Blockchain

We will address the limitations of the Internet for business and economic activities in this first course of the specialization, as well as how blockchain technology offers the way forward. You will be able to explain what blockchain is, how it works, and why it is revolutionary after completing this course. You'll learn about mining, hashing, proof-of-work, public key cryptography, and the double-spend problem, among other topics. You'll be able to explain seven design principles for blockchain technology, as well as the problems that developers face.

56-611: Project Management

Boost your project management skills as you learn how to best manage people, teams, and budgets, and examine the latest trends in project management.

56-612: Business Strategy and Analytics

The students will be introduced to strategies to develop sustaining a business while continuously finding the new growth strategy. Also, they will learn how to develop sustainable business and growth strategies for the firm portfolio.

56-613: Marketing Digital Media

This course is designed to achieve two goals. It offers social analytics tools as well as training to assist you in becoming a social media influencer. The course provides you with the information and resources you need to create a comprehensive social media marketing strategy, from consumer insights to final justification data. In addition, specific toolkits with timely information will be provided in each course, and when you pay for the Capstone, you will receive a market planning toolkit.

56-614: Strategic Communication and Negotiation

In business today, it is inevitable to get into negotiations and communication. Whether giving the presentation to the team or customer or negotiating the business deals, it is necessary for you as the stakeholder to learn how to engage, communicate and negotiate for better with shared value.

Negotiation requires skill and strategic thinking; we need to learn how to strategically create value for our counterparts and effectively communicate the matter so that we aim for distributive negotiation and value claiming, applying the principles of influence and bargaining practice.

In this course, we will learn the fundamental principles of communicating and negotiating strategically, not only the theory and concept but also putting the theory into practice by immersive engaging in presentation and negotiation case simulations.

56-710: Intellectual Property Law in Media, Entertainment, and Technology

Become fluent in the rules of the new economy. The objective of this course is to provide students with a practical understanding of the underlying legal principles of intellectual property laws regulating the creation and exhibition of entertainment content. The class covers the basic legal concepts of intellectual property law, including case studies, but is aimed at non-lawyers and non-law students. In this class, you will learn how to identify the types of intellectual property protection available, analyze and interpret a patent document for a competing product, evaluate your options for protecting your creative

innovations with copyright law, and develop strategies for protecting and maximizing your brand with a comprehensive trademark strategy.

56-711: Entrepreneurial Financing and Investing

Entrepreneurial finance is a special topic for startups and project decision-making. The course provides fundamental tools such as payback period, internal rate of return, discounted cash flow, net present value, and risk management for project analysis. The sources of funding will be discussed in the course. Stakeholders such as angel investors, venture capital, private equity, and crowdfunding will play a role in the financing. The course also provides company analysis through various analytical techniques. The entrepreneur will learn about different ratios and measures in analyzing their business operation. Valuation for business will also be discussed. In addition, the entrepreneur will learn about investing strategies in the equity market and personal financial planning.

56-712: Influencer Marketing Strategy

The class provides a comprehensive overview of the influencer marketing landscape and covers the key elements of planning, running, and reporting on a successful campaign. By completing this class, you'll be able to confidently navigate the new digital advertising format, understand the various influencer archetypes and campaign use cases, and comfortably run a campaign for the brand you represent. The class will cover the fundamentals of influencers and their audiences, discuss effective strategies and budgeting, as well as key campaign insights to save you time and money.

56-713: Test Your Startup Idea: Lean Entrepreneurship, Design Thinking, and Rapid Prototyping in Action!

Learn how to validate your million-dollar startup ideas using well-known methodologies such as Lean Startup and Design Thinking. In this class, students will go through a series of hands-on exercises and learn to use various tools for testing their ideas. Form groups (or go solo if you dare), identify market segments, validate customer needs, and test key assumptions to ensure that you build the right product for the right people. This class will also provide some

basic training for tools that are essential for early startup entrepreneurs, such as UI/UX design, analytics, user testing, rapid prototyping, and landing page building, which will be essential for your experiments.

56-714: Startup from Idea to Impact

This class will take you along the process of starting a successful startup. From conceptualizing your ideas, to marketing your business, and leading your own company.

Creative Design and Technology

56-621: Introduction to Motion Graphics

This class will get you started with the basics of creating full Motion Graphics Videos using After Effects, which is widely used in the industry and on modern-day commercials. You'll learn how to apply the most useful visual effects to graphics and video, touch on all After Effects motion graphics properties and methods and master the most useful techniques.

56-622: Building Virtual Realities II

In this course, students will design and develop immersive and interactive experiences with Unity's real-time 3D platform, Oculus Head Mounted Display (HMD), and related technologies. This course will build upon the Building Virtual Worlds (BVW) course, taught by Kamin Phakdurong and modeled after the groundbreaking ETC course by co-founder Randy Pausch. This course seeks to expand upon students' knowledge of the Unity game engine, Unity XR Toolkit, Unity XR Device Simulator, virtual reality (VR) design principles, and Oculus software tools for Quest and Quest 2 (Android) development. By the end of the course, students will have their own unique VR experience prototype to showcase. This course is designed for students to be able to participate online. Lectures, tutorials, and meetings may be conducted using live video, pre-recorded video, Google Meet, Zoom, Mozilla Hubs, Gather, Canvas discussions, Line discussions, and other methods as deemed appropriate by the instructor(s).

56-623: Introduction to 3D Modeling and Animation I

This class introduces the core concepts and tools in 3D modeling and animation using the industry-standard software. Students will learn the fundamentals of 3D modeling, texturing, and basic animation through a series of hands-on exercises. After the class, students will know how to apply their 3D skills in game development and design, animated movies, and 3D printing.

56-624: Introduction to 3D Modeling and Animation II

This class is a continuation of Introduction to 3D Modeling and Animation I, designed to deepen your understanding of 3D tools and production techniques. It delves into the animation industry's business processes, providing comprehensive knowledge and practical insights. By taking this course, you will enhance your professionalism in 3D Modeling and Animation.

56-625: Introduction to VR/AR/MR

This class is designed for students who are new to mixed reality and want to learn about the principles of VR and AR technologies including optics, displays, stereopsis, tracking, and major hardware platforms. By the end of this class, you will understand the physical principles and knowledge to create a comfortable, high-performance VR and AR application using Unity.

56-626: Introduction to Game Development

This is an introductory course on Game Development, the foundational step toward acquiring the crucial skills required for a successful career in the gaming industry. This course will begin by covering the fundamental aspects of Game Design and Game Business before delving into Game Engines like Unreal Engine, Unity, and Godot. You will need a combination of design and technical engineering skills to enhance your abilities in this field.

56-627: Introduction to Virtual Production

In this course you will learn the fundamentals of cutting-edge technology and gain insights into the future of media production processes. This field is currently receiving significant attention from the global media industry. Virtual

Production explores the use of virtual cameras, 3D asset-based environments, and the Unreal Engine, offering valuable techniques and skills for the modern media landscape.

56-721: 3D Art and Audio Pipeline for Game Development

Take your first step into the 3D art and audio pipeline. This class will guide you through the processes and the best practice involved in bringing 3D assets from Maya or audio assets from DAW into the final game. No matter if you're a 3D artist, a sound designer, a Unity programmer, or a team lead, this class will equip you with knowledge in one of the most challenging aspects of game development. You will learn about asset management, different asset formats and limitations in Unity, different stages in the pipeline, and any technical challenges you would face in the team setting.

56-722: User Experience & User Interface Design

The course focuses on the following topics: use case modeling, user surveys, user diversity, user experience, psychological principles influencing user experience, and user interface design guidelines. The course will provide an overview of designing and developing a user interface and general rules of thumb for designing UIs that provide a positive user experience. Also, students will learn about techniques for designing and analyzing survey tools to acquire information about potential users.

56-726: Design Thinking, Innovation, and Creative Confidence

The fundamental ideas and methods of design thinking will be introduced in this course. Students will practice using several techniques for idea testing through a series of practical exercises in this subject. During the course of the lesson, students will also learn how to identify user groups and customers' needs, translate those needs into product specifications, and create a prototype.

56-727: Interaction Design and Experiential Design

This class covers the fundamental understanding of the experiential design process from ideation to deployment, how the five senses work (smell, hear, sight, taste, touch), spatial design, and technologies necessary to develop the

interactive experiences. By the end of the class, the students will get to develop their interactive experiences as the final project.

Engineering and Technology Development

56-631: Introduction to Web Programming

The class will cover the current tools available for developing websites and cover basics for HTML5, CSS, and JavaScript.

56-632: Introduction to IoT with Arduino and Raspberry Pi

Gain an understanding of what the IoT is and the requirements to design your IoT solutions with Raspberry Pi and Arduino.

56-635: Startup Engineering

This course aims to connect academic computer science and real-world software engineering by providing a fast-paced overview of essential tools and techniques. The topics covered include command line, dotfiles, text editor, distributed version control, debugging, testing, documentation, reading code, etc.

56-732: Software Development Processes and Methodologies

Students will get an overview of how software teams work. They will learn the different processes and compare the pros and cons of industry-standard methodologies such as Agile, Kanban, and Scrum. By the end of the course, students will learn enough to have meaningful conversations about software development processes.

56-733: Storytelling with Data

Storytelling with Data will cover the basics of data visualization and exploratory data analysis. You will learn the principle of data visualization and develop a critical mindset when looking at the dataset. You will also be looking at how errors and unexpected problems often lead to a biased conclusion, and how to deal with them. As data visualization is about making sense of information and communicating to an audience, this class will allow you to go through each step

and make sure you know how to disseminate keys and actionable information from complex data. No matter which industry you are from, data visualization is an all-time high-demanding skill. This course will equip you with everything you need to leverage data and reveal valuable insights, and boost your career.

56-734: Visualization

It is useful to be able to design visual representations of data that most people can gain insights from. The increasing appearance of visualization in online environments has made it important to look at how visualizations are used to communicate information effectively. In this competency, you will learn about some of the key principles of human visual perception, storytelling with visualization, some practical guidelines for effective data visualization, as well as a number of established visualization tools and resources. In the labs, you will learn about the D3.js (a JavaScript library for visualization) helping you bring data to life using HTML and CSS and SVG.

56-735: Ethical Principles for AI (Fairness, Accountability, Transparency, Ethics)

Ethical Principles for AI (Fairness, Accountability, Transparency, Ethics). Gain a comprehensive understanding of how to apply ethical considerations to AI technologies, fostering fairness, accountability, transparency, and ethical practices at the forefront of this innovative field.

56-736: Creating Explainable AI

This course will take you on a journey to enhance the transparency and comprehensibility of artificial intelligence. This program delves into the intricacies of making AI systems transparent and interpretable, fostering ethical and accountable AI solutions.

M.S. in Artificial Intelligence and Computer Engineering

The AICE courses approved by M.S.TCI. are listed below;

Image and Video Processing (CMKL41-793) – 12 Units

This course focuses on signal processing techniques for 2D (images) and 3D (videos) signals. It extends 1D signal processing techniques and specializes in image and video processing. In this class, you will learn core tools and techniques for image and video processing, as well as how to apply them to a variety of practical applications. This course teaches the principles of image and video analysis. We will create picture and video-specific signal models, as well as associated optimization strategies for solving restoration challenges such as denoising and inpainting, as well as research specialized compression algorithms. The emphasis will be on transform-domain, PDE, and sparsity-based models, as well as the accompanying optimization approaches. Applications in mobile devices, medical image processing, and compressive sensing will enhance these formal techniques.

** Additional courses may potentially be included.*