STUDENT
HANDBOOK & PLANNER
UNDERGRADUATE

BACHELOR OF SCIENCE IN DIGITAL INNOVATION

INTERNATIONAL COLLEGE OF
DIGITAL INNOVATION
CHIANG MAI UNIVERSITY

ABOUT INTERNATIONAL COLLEGE OF DIGITAL INNOVATION

On June 9, 2008, the Council of Chiang Mai University unanimously resolved to establish the International College (hereafter referred to as CMUIC). The College aims at achieving quality international undergraduate programs stipulated in the University's strategic plan for the internationalization of its educational and research.

Since international programs are developed and implemented by the University's various faculties, Chiang Mai University International College's major role is to support those faculties in producing graduates for the global community. Thus, Chiang Mai University International College will be the active partner in curriculum development and effective management and administration of those international programs. The Chiang Mai University International College is also entrusted to create an international atmosphere that will be conducive to achieving Chiang Mai University's objective of positioning itself as an internationally recognized university.

In order to incorporate international and bilingual undergraduate programs in CMU, in 2011, the main academic mission is to facilitate student mobility in ASEAN and Europe. CMU practices ASEAN University Network Quality Assurance (AUNQA) and ASEAN Credit Transfer System (ACTS) as well as European Credit Transfer System (ECTS). To facilitate the best practices, International College has support roles to other academic faculties in student mobility with credit transfer, Inbound and Outbound visiting professor exchange, Cross Border Co-Research with ASEAN+3 university partners, Common European Framework Reference in English for General Education and Free Elective courses, student leadership program and, other infrastructures and activities for international students in CMU.

In CMU, International College plays as the major mechanism for internationalization. Therefore the college assists CMU academic departments to acquire international funding for student and staff exchange in AUN-ACTS, AIMS (ASEAN International Mobility Students), EU-Share and Erasmus Plus as well as Horizon 2020. Other target international scholarships and funds include New Columbo Plan, China Scholarship Council, Reinventing Japan, Korea Foundation, DAAD, Franco-Thai and Newton fund, etc. International College also helps international students to engage the local funds including CMU Presidential Funding, TICA and other Thai government international funding.

In 2017, International College has been enhanced her academic roles to entrepreneurship and digital innovation. The enhanced mission directly responds to the Thailand 20 Years Strategic Plan in digital startup especially Digital Economic Cluster for Chiangmai. This aims at the development of TransNation Education with leading entrepreneurship and innovation universities in United Kingdom, Australia, China, Korea, etc.

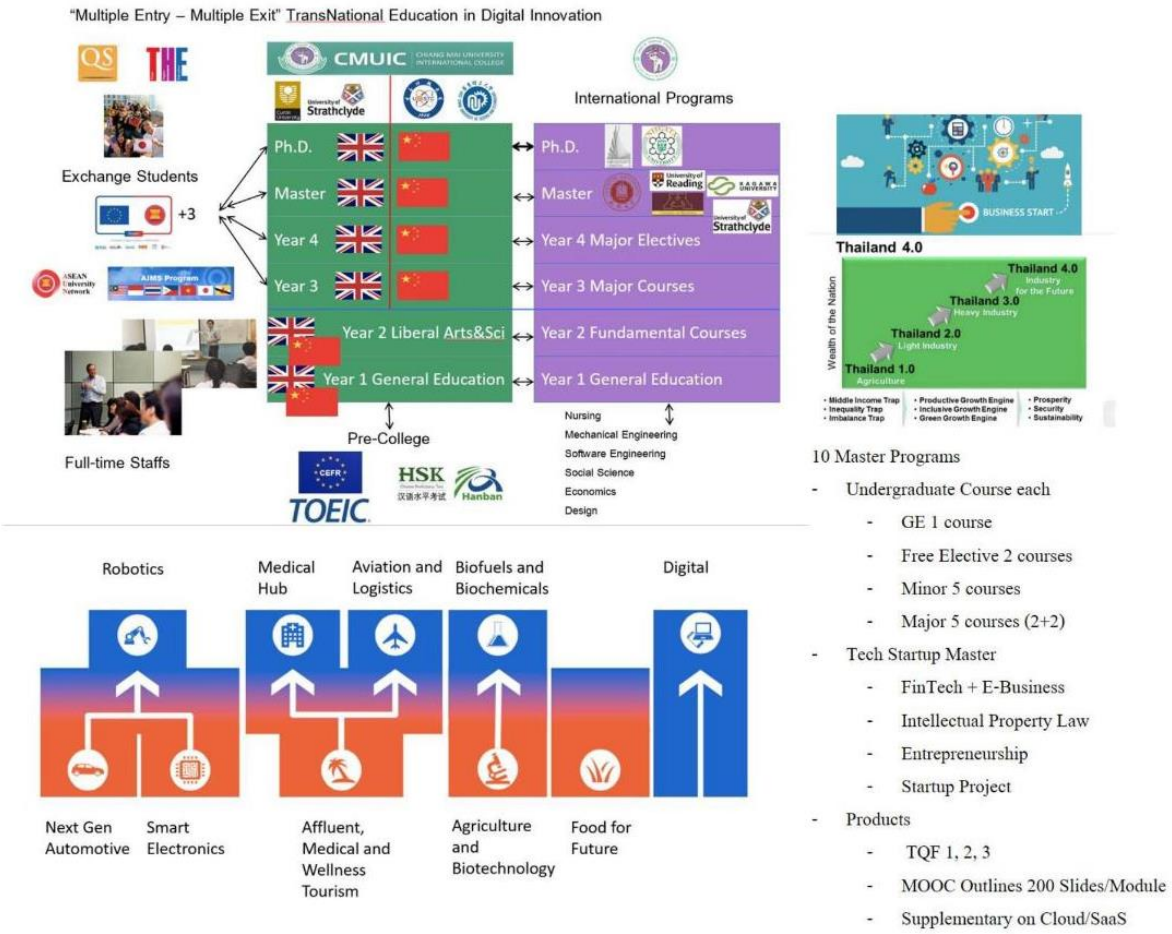
The new International College of Digital Innovation (ICDI) offers three cutting-edge degree programs in digital innovation and financial technology that answer and respond to demands and challenges of a digital environment in the 21st Century.

Bachelor of Science (Digital Innovation): Digital Business of 4.0

Master of Science (Digital Innovation and Financial Technology): Digital Startups and Financial Technology

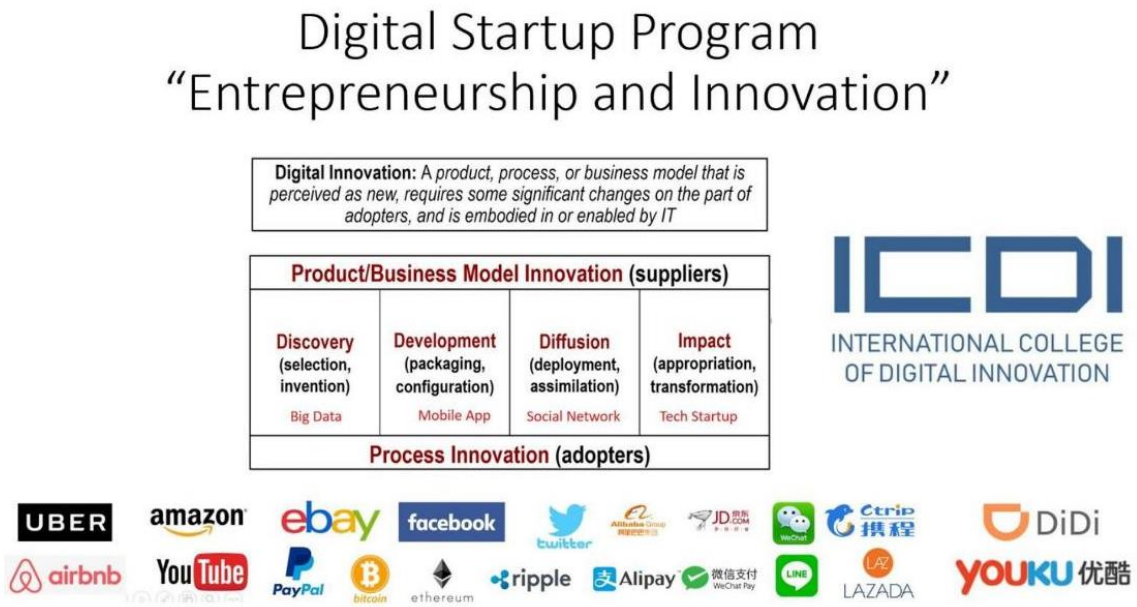
Doctor of Philosophy (Digital Innovation and Financial Technology): Digital Policy Maker

Besides the bachelor, master, doctoral programs in digital innovation and financial technology, and major courses, ICDI also offers General Education and free elective courses in digital entrepreneurship literacy to any CMU students in other faculties. This helps students to learn disruptive digital technologies for engaging new digital economy and society.

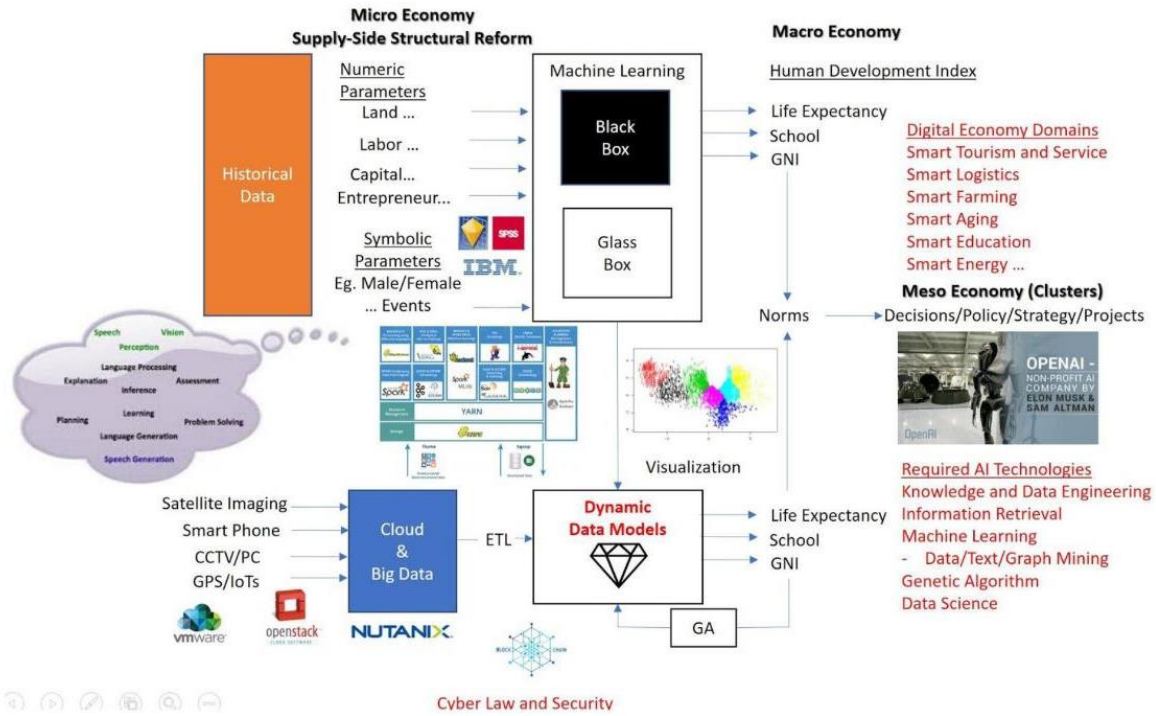


ICDI CMU PEx on 25 February 2017 by the university council

To encourage digital startup, ICDI provides academic and training programs for entrepreneurship and innovation. The digital innovation process for SMEs and startups consists of Discovery, Development, Diffuse and Impact by Big Data, mobile application, social network and financial technology respectively. Fundamentally ICDI is doing research and development in cross border e-commerce, logistics and FinTech to bridge Chinese platforms to western platforms for Thai, Chinese and international students.



To conduct policy research in entrepreneurship and innovation by using machine learning, research study is based on Supply Side Structural Reform for improving inputs factors for SMEs and startup in new digital economy and society. The intervention of very high-speed broadband Internet such as 4G is the main consideration. The input factors are categorized into land, labor, capital and entrepreneurship and outputs are measured by United Nation Human Development Index which consists of life expectancy, knowledge and net income. By Schumpeterian Cobb-Douglas approach, the creative destruction theory is employed for study of the 10 new S-curve industries of Thailand. The machine learning techniques are used for developing predictive models of decisions, policies, strategies or projects to improve some input factors for the industrial cluster of SMEs and startups. After word, Big Data technology can be utilized for online monitoring the outcome.



Vision

Northern ASEAN Digital Hub

Mission

1. Provide education at the bachelor degree level in digital innovation, and master and doctorate degree levels in digital innovation and fintech.
2. Provide education at the doctorate degree level in digital innovation and fintech which is carried out by research works in order to establish a body of digital innovation knowledge necessary to form strategic policy for SMEs businesses.
3. Establish educational collaboration with well-known foreign universities and institutes based upon the principles of international credit transfer and Transnational Education (TNE).
4. Provide educational services (consultation, incubation, training, research) to digital industries, digital services of SMEs, government agencies, private entities and communities.

NAME LIST OF LECTURERS IN THE COLLEGE

No.	Name-Surname	Position	Email
1.	Asst.Prof.Dr. Nopasit Chakpitak	Dean and Acting Head of School of Digital Innovation	nopasit@cmuic.net
2.	Asst.Prof.Dr.Wera Phaphuangwittayakul	Associate Dean (Academic Affairs)	phaphuang@hotmail.com
3.	Asst.Prof.Dr. Pichayalak Pichayakul	Associate Dean (International Student Affairs)	pichayalak@gmail.com
4.	Assoc.Prof.Lampang Saenchan	Associate Dean (Administrative Affairs)	lampang.s@cmu.ac.th
5.	Lect. Kanya Hirunwattanapong	Assistant Dean (Academy Affair)	kanya.hi@cmu.ac.th
6.	Lect. Dr. Tanachai Pankasemsuk	Assistant Dean (Research Affairs)	tanachai.p@cmu.ac.th
7.	Asst.Prof.Dr. Rujira Ouncharoen	Assistant Dean (Quality Assurance and Risk Management)	rujira.o@cmu.ac.th
8.	Assoc.Prof.Dr. Nisit Panthamit	Acting Director of Center for ASEAN Studies	nisit@gmail.com
9.	Dr. Annop Tananchana	Director of International Research and Academic Service Center and Chairman of Curriculum (B.S. in DIN)	Annop.t@cmuic.net
10.	Dr. Nathee Naktanasukarn	Lecturer	natty.shen@gmail.com
11.	Dr. Anukul Tamprasert	Lecturer	anukul@innova.or.th
12.	Dr. Teerapot Chandarasupsang	Lecturer	tirapot@gmail.com
13.	Dr. Piang-or Laohavilai	Lecturer	piangor@gmail.com
14.	Dr. Tanarat Rattanadamrongaksorn	Lecturer	Tanarat.r@cmuic.net
15.	Dr. Piyachat Udomwong	Lecturer	piyachat.u@cmu.ac.th
16.	Dr. Saronsad Sokantika	Lecturer	Saronsad.s@cmu.ac.th
17.	Dr. Ahmad Yayah Dawod	Lecturer	Ahmad YahyaDawod@gmail.com
18.	Dr. Pimporn Anataworasakul	Lecturer and Coordinator of CMU-DIN SMILE	vicky_rx007@windowslive.com

INFORMATION ABOUT THE PROGRAM

Program Title

Bachelor of Science Program in Digital Innovation (International Program)

Degree Title

Bachelor of Science (Digital Innovation)

B.S. (Digital Innovation)

Duration of Study and Credit Requirement

4 years, 132 credits

Tuition Fee (at CMU)

Regular Semester	55,000 Baht/semester
Summer Session	27,500 Baht/semester

ACADEMIC MEASUREMENT AND EVALUATION

Grades and grade point values are employed in measurement and evaluation, divided into 4 groups;

1) grades which contain grade point value
2) grades which do not contain grade point value
3) grades which are in progress
4) grades which are assigned for transferred or considered equivalent courses

I. Grades, Grade Point Values and Meaning

1.) Grades which contain grade point value

A	GP value	4	means	Excellent
B_+	GP value	3.5	means	Very good
B	GP value	3	means	Good
C_+	GP value	2.5	means	Fairly good
C	GP value	2	means	Fair
D_+	GP value	1.5	means	Poor
D	GP value	1	means	Very poor
F	GP value	0	means	Failed

2.) Grades which do not contain grade point value

S	means	Satisfactory
U	means	Unsatisfactory
V	means	Visitor
W	means	Withdrawn

3.) Grades which are in progress

I	means	Incomplete
P	means	In progress
T	means	Thesis/Independent study in progress

4.) Grades which are assigned for transferred or considered equivalent courses

CE	means	Credits from Examination
CP	means	Credit from Portfolio
CS	means	Credit from Standardized Tests
CT	means	Credit from Training
CX	means	Credit from Exemption

II. Explanation

I	indicates that the evaluation in a course is incomplete due to reasons beyond control. The course lecturer and the dean of the appropriate faculty's Study Committee must agree to the student's receiving an "I".
P	indicates that a course is still in progress and that measurement and evaluation cannot be made that semester. "P" can be used only in courses specified by the curriculum. A "P" will be replaced by a proper grade when evaluation is completed, which must be done by the last day of final examinations within the next two regular semesters. Failure to do so will result in the university's changing the "P" to "F" or "U".
V	indicates that a student is a visitor and will not be academically evaluated for a course. The student must take at least 80 percent of study hours. Failure to do so or if student cannot observe course specifications will result in the lecturer being entitled to change the "V" to "W".
W	indicates that: (1) Ineligible registration and void. (2) Course conditions have not been met. (3) The student was ordered to drop for the semester. (4) The student has resigned before the grade report date of that semester or died before the last evaluation was complete. (5) The student withdrew within the withdrawing period. (6) The university allowed the student to withdraw all the courses he has registered for after the withdrawing period due to some unforeseen cause. (7) The student receives I or P and has not completed the evaluation before resigning from being a student.
S and U	Where "S" and "U" are assigned for a compulsory course, a student must receive "S" for the course. The student who receives "U" will have to reenroll until "S" is obtained.

Note:

1) "S", "U", "I", "P", "T", "V" and "W" are not calculated into the students' overall grade point averages (GPA).

2) CE CP CS and CT: The letter grade CE, CP, CS and CT are assigned for some courses that can be transferred

or considered equivalent for transferring from non-formal education or informal education the formal education system.

3) CX: The letter grade CX is used to exempt courses.

4) The Letter grades S, U, I, P, V, W, CE, CP, CT and CX are not used to calculate the grade point average (GPA).

III. Accumulation of Credits

1. Only courses in which students receive "A", "B+", "B", "C+", "C" or "S" will be counted as accumulated credits.
2. In the case where a student enrolls in the same course more than once, only the credits of the last enrollment will be included in the accumulated credits. However, in cases specified by the university, re-enrollment credits may be included in the accumulated credits at every enrollment. Accumulated credits of lower-level undergraduates are excluded from the accumulated credits to graduate.
3. In the case where a student enrolls in courses which are declared equivalent to each other the credit of only one course will be included in the accumulated credits.

The GPA is calculated from the total credits earned and the grade value of all the courses. All the grade values of the courses that have been registered for more than one time shall be used in the calculation.

For the GPA the multiple sum of all the credits and the grade value for each course are added together and then divided by the number of credits of the courses with the evaluation scheme and only the first two digits are kept. If the third digit is higher than 5 it (the second digit) will be rounded up one digit.

A student whose letter grade(s) does not match the criteria of his program must repeat the course registration until he can get the required letter grade(s).

A student who receives permission to study at another higher institute temporarily can request for course equivalence or credit transfer as well as study results to be calculated with those earned from the university.

The courses taken at another institute must be equal credits and study hours both in theory and/or practicum to be in accordance to the university standards.

In the cases of complaints or discovering that some letter grades are incorrect or do not match with the criteria, the president of the university can appoint a committee to investigate the case and he shall have the care and charge as deemed appropriate.

IV. Forfeiture of Student Status

A student will forfeit his/her status as a student if any one of the following occurs:

1) Death.
2) Resignation.
3) Transfer to another institution.
4) Failing to register for a course(s) or register for usage of service or taking a leave within 30 days after the regular semester begins.
5) Misbehaving as a student or acting in such a way as to disgrace the university and the university agrees to remove his name from the student list according to the Regulations on Student Discipline.
6) Having registered as a full-time student for two times longer than the time allowed for the program. For a transfer student, this is counted from the first semester he registered with the university until the end of the summer session of the last academic year.
7) **Having a study result in one of the following:**
   - **Having a GPA less than 1.50 after two regular semesters.**
   - **Having a GPA less than 1.75 after four regular semesters.**
   - **Having a GPA less than 1.75 for 2 consecutive regular semesters after four regular semesters.**
   - **Having a GPA of less than 2.00 after registering and receiving the transfer credits with the letter grade with value and the letter grades S, U, V, CE, CP, CS, CT and CX for 240 credits for the four-year program, 300 credits for the five year program and 360 credits for the six-year program. This excludes the credits for courses with W.**
8) Having been granted graduation.

V. Honors

1.) A degree with distinction

(1) First class distinction: achieved an overall GPA of 3.50 or higher

(2) Second class distinction: achieved an overall GPA of 3.25 – 3.49

(3) Have never received a grade F or U

(4) Have complete the study within the specified time of study program starting from the first semester the student enrolled as a student with an exemption for the semester in which a leave from the study program was granted.

(5) A transfer student must complete the study within the specified time of the new major after combining the length of time of his study program with the previous major with that of the new major.

(6) For a student who was granted permission to transfer the credits or is exempted from taking a course and received grade CE, CP, CS, CT or CX, the number of credits transferred must not exceed 12 credits and he/she must not have received

grade For U or the equivalent from any courses either at the previous institute or at Chiang Mai University.

2.) Medal

(**1**) **Gold medal**: First class distinction with **GPA 3.75 or higher**

(**2**) **Silver medal**: First class distinction with **GPA 3.50 – 3.74**

3.) Certificate of distinction for each year

To qualify for a certificate of distinction for each year, a student must have been enrolled in two regular semesters of that year for a minimum of 30 credits except for the academic year in which enrollment must be done as specified in the study program especially designed for that curriculum. In addition, there must be no record of F or U for any courses taken in that academic year and the GPA must be 3.50 or higher.

VI. Leave of Absence

Students who have not registered in a regular semester, should request for leave of absence within 30 days of the first day of classes.

A student who takes a leave of absence, or who is suspended for a semester of an academic year, must pay a student status maintenance fee for each semester he/she misses, except for the regular semester for which course enrollment fees were already paid.

Students who request for leave of absence:

1. Submit a request for leave of absence online and printout the requested form at www.reg.cmu.ac.th
2. Sign on the form and obtain approval of advisor, including with the agreement of his/her parents.
3. Present the form at the Educational Services Section at the respective faculty. Approvals from the dean are required.
4. Contact the Registration Counter Service, Registration Office to pay the fees.
5. Present the receipt at the Educational Services Section at the respective faculty.

VII. Resignation

To make the resignation from being a student at Chiang Mai University comply with the regulations of the university for studying at the undergraduate and the graduate levels, the university therefore announces the following:

1. Supersedes the Announcement of Chiang Mai University on Resignation from Being a Student at Chiang Mai University dated September 24, 2003.

2. A student who wishes to resign from being a student at Chiang Mai University can submit a request for doing so at his/her respective faculty as defined in the Regulations of Chiang Mai University concerning that particular curriculum.

3. The last day for submitting the resignation request for undergraduate students to the Registration Office has been stated in the Academic Calendar (of the Academic Year). All the courses enrolled in that semester will receive grade W.

4. For courses receiving grade I or P

4.1. If the assessment and evaluation for the courses have not been completed before submitting the request to the Registration Office, a grade W will be given for that course.

4.2. If the documents for resignation have been submitted to the Registration Office after the instructors have reported the results of changing grade I or P, the student will receive the grade given by the instructor according to the evaluation.

4.3. If the documents for resignation reach the Registration Office after the time allotted for the change of grade I or P as defined in the Academic Calendar, the grade I or P will be changed to grade For U.

5. Submission of the resignation documents to the Registration Office on the date for grade submission for that respective semester onward will result in receiving a grade in according to the instructors' evaluation and assessment.

If the student has received a study results in the same criteria for disqualification to be a student as defined in the University Regulations, the student will have their student status revoked accordingly

VIII. Important Information about Course Enrollment

1. Course Code
2. Course Title
3. Credit Points
4. Prerequisite
5. Course Description

1 **2** **3**

DIN 111 **Innovative Entrepreneurship Theory and Practice** **3(3-0-6)**

Pre: None **4**

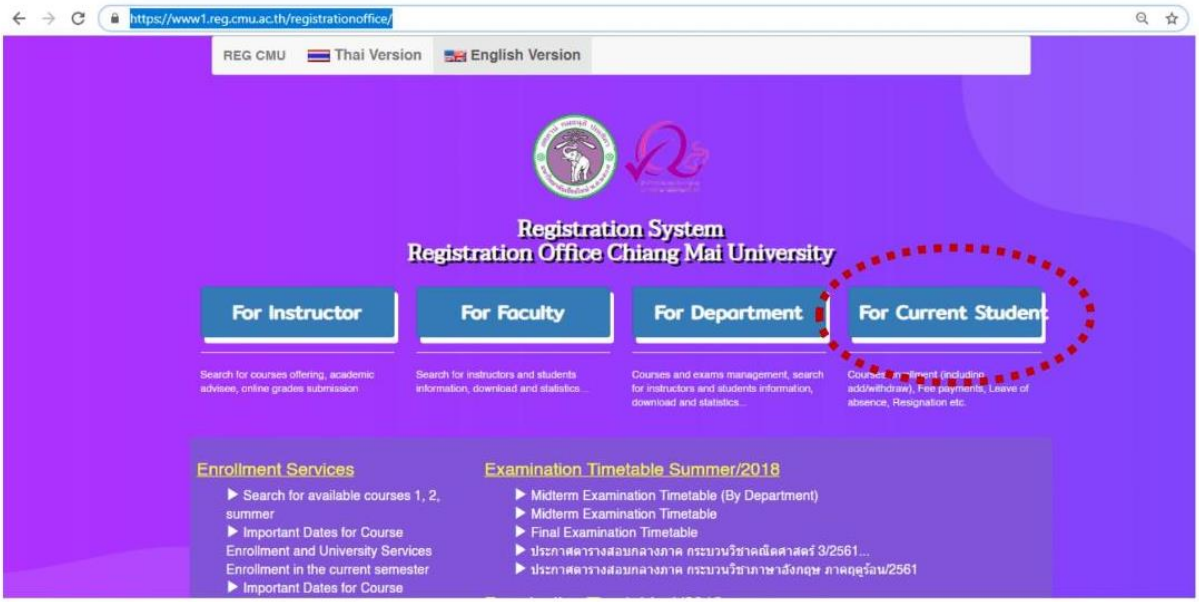
Evolutionary development of innovative entrepreneurship. Financial preparation for innovative entrepreneurial ventures. Social entrepreneurship and the global environment for innovative entrepreneurship. Creativity and innovation. Marketing challenges for innovative entrepreneurial ventures. Ethical and socially-responsible innovative entrepreneurship. Effective innovative business plan development. Business pitching. Economics for innovative entrepreneurship. Creation and protection of intellectual property. Technology for innovative entrepreneurship.

5

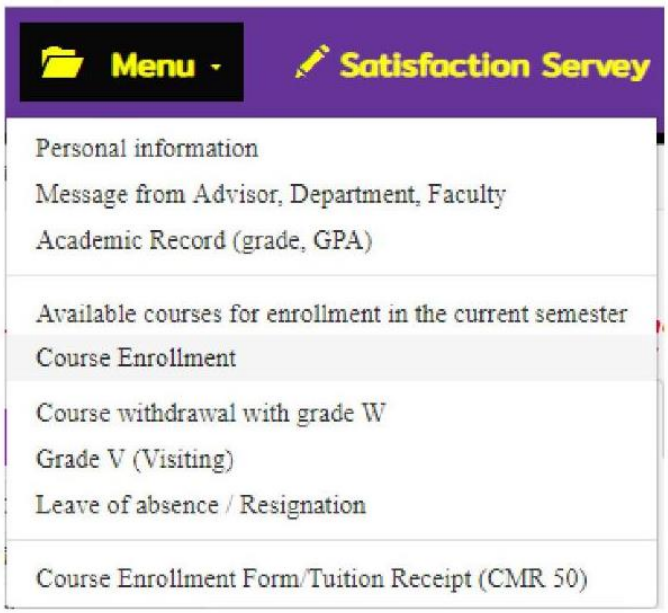
IX. Course Enrollment

1. The period for pre-enrollment or course enrollment are scheduled under the Academic Calendar for the Academic Year.

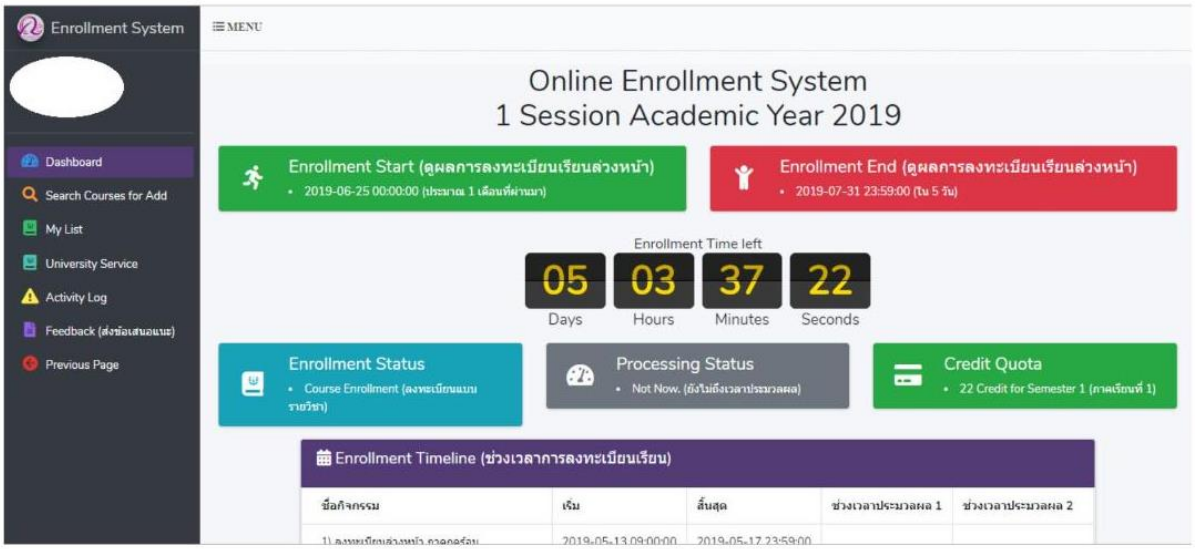
2. At the registration office website, www.reg.cmu.ac.th or https://www1.reg.cmu.ac.th/registrationoffice/ , click on the menu "*For Current Student*" and *sign in with CMU IT @cmu.ac.th account.*



3. On the Menu tab, click on "**Course Enrollment**"



4. The site will show Enrollment System Screen, as shown in the picture below:



https://www1.reg.cmu.ac.th/registrationoffice/

X. Course Withdrawal with Grade "W" via Online System

1. The period for course withdrawal with grade W are scheduled under the Academic Calendar for the Academic Year.

2. At the registration office website, **www.reg.cmu.ac.th,** click on the menu *"For Current Student" and sign in with CMU IT @cmu.ac.th account.*

3. After logging in successfully, choose "Course withdrawal with grade W" from the main menu. Students may select a course(s) to withdraw, then the request will be sent to the academic advisor to review. The withdrawal is completed after the advisor has approved the request through the system. It is students' responsibility to follow up with the decision from the system and their advisors. Students should expect the result to be in within 5 business days from the system.

4. The result from academic advisors can be "Approved", "Disapproved" or "See your advisor" for each individual course. The meanings of each result are as follows:

"Approved" means the advisors have approved on the withdrawal request and the grade W will be granted for that course.

"Disapproved" means the advisors have disapproved on the withdrawal request and the grade W will NOT be granted for that course. The request is hereby canceled.

"See your advisor" means the advisors have requested the students to meet or contact for consulting before making decisions. In this case, the advisors can change their decisions to

"Approved" or "Disapproved" later on within a period from the first day of the course withdrawal with grade W and up to 5 business days after the last day of the course withdrawal with grade W.

Unchanged decision will result in an incomplete process and a cancellation of student's request. Student must complete all requirements for course evaluation.

5. If academic advisors have not responded to the student's request in the system within 5 business days after the notification. The result as "Approved" will be applied to the request and the grade W will be granted automatically.

6. Students are able to withdraw a course that the request has been disapproved or that the approved withdrawal has been canceled within the specific period of times for course withdrawal with grade W scheduled under the Academic Calendar for the Academic Year. If the decisions of "Approved" or "Disapproved" have been made within 5 business days after the last day of the course withdrawal with grade W. The decision is final and cannot be canceled.

XI. Related Regulations or Rules

https://bit.ly/2K7J3kj

ITSC Services for Student

https://itsc.cmu.ac.th/Services/

Contact Information

Technology Service Center, Chiang Mai University
239, Huay Kaew Road,Muang District,
Chiang Mai, Thailand, 50200
+66 53 943811, +66 53 943827-28
itsc@cmu.ac.th

2. หลักสูตรและแผนการศึกษา

2.1 จำนวนหน่วยกิต รวมตลอดหลักสูตร ไม่น้อยกว่า 132 หน่วยกิต

2.2 โครงสร้างหลักสูตร

		หน่วยกิต
(1) หมวดวิชาศึกษาทั่วไป		30
วิชาบังคับ		21
- กลุ่มวิชาด้านการพัฒนาทักษะการเป็นผู้เรียนรู้		15
- กลุ่มวิชาด้านการพัฒนาทักษะการเป็นผู้ร่วมสร้างสรรค์นวัตกรรม		3
- กลุ่มวิชาด้านการพัฒนาทักษะการเป็นพลเมืองที่เข้มแข็ง		3
วิชาเลือก		9
(2) หมวดวิชาเฉพาะ	ไม่น้อยกว่า	96
- วิชาแกน		24
- วิชาเอก	ไม่น้อยกว่า	72
วิชาเอกบังคับ		33
วิชาเอกเลือก	ไม่น้อยกว่า	39
- วิชาโท (ถ้ามี)	ไม่น้อยกว่า	15
(3) หมวดวิชาเลือกเสรี	ไม่น้อยกว่า	6

2.3 รายการกระบวนวิชา

(1) หมวดวิชาศึกษาทั่วไป **30 หน่วยกิต**

1. วิชาบังคับ (Required Courses) **21 หน่วยกิต**

กลุ่มวิชาด้านการพัฒนาทักษะการเป็นผู้เรียนรู้ (Learner Person) **15 หน่วยกิต**

001101	ม.อ.	101	ภาษาอังกฤษพื้นฐาน 1	3(3-0-6)
	ENGL	101	Fundamental English 1	
001102	ม.อ.	102	ภาษาอังกฤษพื้นฐาน 2	3(3-0-6)
	ENGL	102	Fundamental English 2	
001201	ม.อ.	201	การอ่านเชิงวิเคราะห์และการเขียนอย่างมีประสิทธิผล	3(3-0-6)
	ENGL	201	Critical Reading and Effective Writing	
001225	ม.อ.	225	ภาษาอังกฤษในบริบทวิทยาศาสตร์และเทคโนโลยี	3(3-0-6)
	ENGL	225	English in Science and Technology Context	

และเลือก 1 กระบวนวิชา จากกระบวนวิชาต่อไปนี้

Choose one course from the followings:

204100	ว.คพ.	100	เทคโนโลยีสารสนเทศและชีวิตสมัยใหม่	3(3-0-6)
	CS	100	Information Technology and Modern Life	
261111	วศ.คพ.	111	อินเทอร์เน็ตและสังคมออนไลน์	3(3-0-6)
	CPE	111	Internet and Online Community	
953111	ศท.วว	111	ซอฟต์แวร์สำหรับชีวิตประจำวัน	3(3-0-6)
	SE	111	Software for Everyday Life	

กลุ่มวิชาด้านการพัฒนาทักษะการเป็นผู้ร่วมสร้างสรรค์นวัตกรรม
(Innovative Co-creator) **3 หน่วยกิต**

เลือก 1 กระบวนวิชาจากกระบวนวิชาต่อไปนี้:

Select 1 course from the followings:

159100	ส.สม.	100	โลกสมัยใหม่ในชีวิตประจำวัน	3(3-0-6)
	SA	100	Modern World in Everyday Life	
201110	ว.วท.	110	คณิตศาสตร์บูรณาการ	3(3-0-6)
	SC	110	Integrated Mathematical Sciences	
201117	ว.วท.	117	คณิตศาสตร์และวิทยาศาสตร์กับอารยธรรม	3(3-0-6)
	SC	117	Mathematics and Science in Civilization	
208102	ว.สถ.	102	การให้เหตุผลและการคิดเชิงสถิติ	3(3-0-6)
	STAT	102	Statistical Reasoning and Thinking	
751100	ศศ.	100	เศรษฐศาสตร์ในชีวิตประจำวัน	3(3-0-6)
	ECON	100	Economics for Everyday Life	
176100	น.ศท.	100	กฎหมายและโลกสมัยใหม่	3(3-0-6)
	LAGE	100	Law and Modern World	
703103	บธ.กจ.	103	การเป็นผู้ประกอบการและธุรกิจเบื้องต้น	3(3-0-6)
	MGMT	103	Introduction to Entrepreneurship and Business	
013110	ม.จว.	110	จิตวิทยากับชีวิตประจำวัน	3(3-0-6)
	PSY	110	Psychology and Daily Life	

กลุ่มวิชาด้านการพัฒนาทักษะการเป็นพลเมืองที่เข้มแข็ง (Active Citizen) **3 หน่วยกิต**

140104	ร.ท.	104	การเป็นพลเมือง	3(3-0-6)
	PG	104	Citizenship	

2. วิชาเลือก (GE Electives) **9 หน่วยกิต**

ให้นักศึกษาเลือกเรียน 9 หน่วยกิต จากกระบวนวิชาต่อไปนี้

A student also chooses 9 credits from the followings:

057122	ศ.ล.	122	ว่ายน้ำเพื่อชีวิตและการออกกำลังกาย	1(1-0-2)
	EDPE	122	Swimming for Life and Exercise	
057127	ศ.ล.	127	แบดมินตันเพื่อชีวิตและการออกกำลังกาย	1(1-0-2)
	EDPE	127	Badminton for Life and Exercise	
057138	ศ.ล.	138	กีฬาภูมิปัญญาไทยเพื่อการต่อสู้ป้องกันตัว	3(3-0-6)
	EDPE	138	Thai Wisdom Sports for Self-Defense	
259109	วศ.ท.	109	โทรคมนาคมในประเทศไทย	3(3-0-6)
	ENGR	109	Telecommunication in Thailand	
359204	ก.พส.	204	พืชสวนเพื่อสุขภาพ	2(2-0-4)
	HORT	204	Horticulture for Health	
359206	ก.พส.	206	ภูมิทัศน์ สิ่งแวดล้อม พฤติกรรม และจิตใจมนุษย์	3(3-0-6)
	HORT	206	Landscape, Environment, Behaviors, and Minds	

	461100	ภ.วภ.	100	สมุนไพรเพื่อสุขภาพและความงาม	3(3-0-6)
		PHPS	100	Herbs for Health and Beauty	
	702101	บธ.กง.	101	การเงินในชีวิตประจำวัน	3(3-0-6)
		FINA	101	Finance for Daily Life	
	888102	นว.ด.	102	อภิมหาข้อมูลเพื่อธุรกิจ	3(3-0-6)
		DIN	102	Big Data for Business	
	159151	ส.สม.	151	สังคมและวัฒนธรรมล้านนา	3(3-0-6)
		SA	151	Lanna Society and Culture	
	888106	นว.ด.	106	การสื่อสารและการสร้างเครือข่ายในสังคมออนไลน์	3(3-0-6)
		DIN	106	Communication and Networking in Online Society	
	888194	นว.ด.	194	การเรียนรู้ด้วยการบริการในสังคม 5.0	3(3-0-6)
		DIN	194	Service Learning in Society 5.0	

(2) หมวดวิชาเฉพาะ **ไม่น้อยกว่า** **96 หน่วยกิต**

2.1 วิชาแกน **24 หน่วยกิต**

	204101	ว.คพ.	101	คอมพิวเตอร์เบื้องต้น	(5-2-2)3
		CS	101	Introduction to Computer	
	204217	ว.คพ.	217	ภาษาโปรแกรมคอมพิวเตอร์	3(2-2-5)
		CS	106	Computer Programming Languages	
	206113	ว.คณ.	113	แคลคูลัสสำหรับเทคโนโลยีซอฟต์แวร์	3(3-0-6)
		MATH	113	Calculus for Software Technology	
หรือ	206171	ว.คณ.	171	คณิตศาสตร์ทั่วไป 1	3(3-0-6)
		MATH	171	General Mathematics 1	
	206255	ว.คณ.	255	คณิตศาสตร์สำหรับเทคโนโลยีซอฟต์แวร์	3(3-0-6)
		MATH	255	Mathematics for Software Technology	
หรือ	206172	ว.คณ.	172	คณิตศาสตร์ทั่วไป 2	3(3-0-6)
		MATH	172	General Mathematics 2	
หรือ	888152	นว.ด.	152	การเขียนโปรแกรมสร้างภาพนิทัศน์จากข้อมูลทางธุรกิจ	3(2-3-4)
		DIN	152	Programming for Data Visualization in Business	
	208150	ว.สถ.	150	ความน่าจะเป็นและสถิติ	3(3-0-6)
		STAT	150	Probability and Statistics	
	888111	นว.ด.	111	ทฤษฎีและการปฏิบัติในการเป็นผู้ประกอบการนวัตกรรม	3(3-0-6)
		DIN	111	Innovative Entrepreneurship Theory and Practice	
	888121	นว.ด.	121	เศรษฐกิจดิจิทัล	3(3-0-6)
		DIN	121	Digital Economy	
	888231	นว.ด.	231	ระบบนิเวศของพาณิชอิเล็กทรอนิกส์ในเศรษฐกิจนวัตกรรม	3(3-0-6)

		DIN	231	Ecosystem of E-Commerce in Innovative Economy	
2.2 วิชาเอก				**ไม่น้อยกว่า**	**72 หน่วยกิต**
2.2.1 วิชาเอกบังคับ					**33 หน่วยกิต**
	204251	ว.คพ.	251	โครงสร้างข้อมูล	3(3-0-6)
		CS	251	Data Structures	
	206281	ว.คณ.	281	คณิตศาสตร์ดิสครีต	3(3-0-6)
		MATH	281	Discrete Mathematics	
หรือ	208251	ว.สถ.	251	การวิเคราะห์การถดถอยและสถิติไม่อิงพารามิเตอร์	3(2-2-5)
		STAT	251	Regression Analysis and Non-Parametic Statistics	
หรือ	888212	นว.ด.	212	เครื่องมือดิจิทัลพื้นฐานสำหรับผู้ประกอบการ	3(2-3-4)
		DIN	212	Fundamental Digital Tools for Entrepreneurs	
	208250	ว.สถ.	250	วิธีเชิงสถิติสำหรับวิทยาศาสตร์ข้อมูล	3(2-2-5)
		STAT	250	Statistical Methods for Data Science	
	888151	นว.ด.	151	นวัตกรรมดิจิทัลและแนวโน้ม	3(3-0-6)
		DIN	151	Digital Innovation and Trends	
	888211	นว.ด.	211	การระดมทุนในเศรษฐกิจดิจิทัล	3(3-0-6)
		DIN	211	Fundraising in Digital Economy	
	888232	นว.ด.	232	การจัดการทรัพย์สินทางปัญญาและการเจรจาต่อรองในเศรษฐกิจดิจิทัล	3(3-0-6)
		DIN	232	Intellectual Property Management and Negotiation in Digital Economy	
	888251	นว.ด.	251	แพลตฟอร์มดิจิทัล	3(3-0-6)
		DIN	251	Digital Platforms	
	888311	นว.ด.	311	ระบบนิเวศทางธุรกิจดิจิทัล	3(3-0-6)
		DIN	311	Digital Business Ecosystem	
	888399	นว.ด.	399	การสำรวจโครงการสตาร์ทอัพเทคโนโลยี	3(0-9-0)
		DIN	399	Technology Startup Project Survey	
	888498	นว.ด.	498	การเตรียมโครงการสตาร์ทอัพเทคโนโลยี	3(0-9-0)
		DIN	498	Technology Startup Pre-Project	
	888499	นว.ด.	499	โครงการสตาร์ทอัพเทคโนโลยี	3(0-9-0)
		DIN	499	Technology Startup Project	
2.2.2 วิชาเอกเลือก				**ไม่น้อยกว่า**	**39 หน่วยกิต**
	204321	ว.คพ.	321	ระบบฐานข้อมูล	3(3-0-6)
		CS	321	Database System	
	204423	ว.คพ.	423	การทำเหมืองข้อมูล	3(3-0-6)
		CS	423	Data Mining	

204453	ว.คพ.	453	การรู้จำแบบ	3(3-0-6)
	CS	453	Pattern Recognition	
208350	ว.สถ.	350	สถิติประยุกต์หลายตัวแปรสำหรับวิทยาศาสตร์ข้อมูล	3(3-0-6)
	STAT	350	Applied Multivariate Statistics for Data Science	
208450	ว.สถ.	450	การวิเคราะห์สำหรับข้อมูลเชิงสังเกต	3(3-0-6)
	STAT	450	Analytics for Observational Data	
208451	ว.สถ	451	การวิเคราะห์สำหรับข้อมูลเชิงทดลองและข้อมูลจำลอง	3(2-2-5)
	STAT	451	Analytics for Experimental and Simulated Data	
888312	นว.ด.	312	สตาร์ทอัพในธุรกิจด้านสุขภาพ	3(2-3-4)
	DIN	312	Startup in Health Business	
888341	นว.ด.	341	สตาร์ทอัพในเทคโนโลยีอินเทอร์เน็ตและอุปกรณ์เคลื่อนที่	3(1-4-4)
	DIN	341	Startup in Internet and Mobile Technology	
888342	นว.ด.	342	ระบบสารสนเทศเพื่อการจัดการเบื้องต้น	3(3-0-6)
	DIN	342	Introduction to Management Information System	
888350	นว.ด.	350	การใช้สะเต็มในธุรกิจเพื่อเป้าหมายการพัฒนาที่ยั่งยืน	3(3-0-6)
	DIN	350	Implementation of STEM in Business for Sustainable Development Goals	
888361	นว.ด.	361	สตาร์ทอัพในการจัดการพลังงานและระบบโลจิสติกส์	3(1-4-4)
	DIN	361	Startup in Energy and Logistics Management	
888411	นว.ด.	411	การวิจัยดำเนินการสำหรับนวัตกรรมดิจิทัล	3(3-0-6)
	DIN	411	Operation Research for Digital Innovation	
888450	นว.ด.	450	สตาร์ทอัพในเทคโนโลยีดิจิทัล	3(1-4-4)
	DIN	450	Startup in Digital Technology	
888451	นว.ด.	451	สตาร์ทอัพในเทคโนโลยีอิเล็กทรอนิกส์อัจฉริยะ	3(1-4-4)
	DIN	451	Startup in Smart Electronic Technology	
888452	นว.ด.	452	สตาร์ทอัพในอุตสาหกรรมการเกษตรและเทคโนโลยีชีวภาพ	3(1-4-4)
	DIN	452	Startup in Agriculture and Biotechnology Industry	
888453	นว.ด.	453	สตาร์ทอัพในอุตสาหกรรมอาหารแห่งอนาคต	3(1-4-4)
	DIN	453	Startup in Food for Future Industry	
888454	นว.ด.	454	สตาร์ทอัพในเทคโนโลยีเชื้อเพลิงชีวภาพและเคมีชีวภาพ	3(1-4-4)
	DIN	454	Startup in Biofuel and Biochemical Technology	
888455	นว.ด.	455	การออกแบบระบบความปลอดภัยบล็อกเชนสำหรับเทคโนโลยีการเงิน	3(3-0-6)
	DIN	455	Blockchain Security Design for Financial Technology	
888461	นว.ด.	461	สตาร์ทอัพในอุตสาหกรรมการผลิต	3(1-4-4)
	DIN	461	Startup in Manufacturing	

2.3 วิชาโท (ถ้ามี) **ไม่น้อยกว่า** **15 หน่วยกิต**

นักศึกษาที่ประสงค์จะเรียนวิชาโท อาจเลือกเรียนวิชาโทในสาขาใดก็ได้ที่เปิดสอนตามประกาศมหาวิทยาลัยเชียงใหม่ เรื่อง วิชาโทที่เปิดสอนสำหรับนักศึกษามหาวิทยาลัยเชียงใหม่ ไม่น้อยกว่า 15 หน่วยกิต โดยความเห็นชอบของอาจารย์ที่ปรึกษา ซึ่งจะทำให้มีจำนวนหน่วยกิตรวมตลอดหลักสูตรเพิ่มขึ้นอีก ไม่น้อยกว่า 15 หน่วยกิต

Students who would like to take minor courses may study any minor courses according to CMU announcement on Minor Courses for Chiang Mai University Students for at least 15 credits with approval from academic advisors. This will result in the increase of the total credits of the program for at least 15 credits.

(3) หมวดวิชาเลือกเสรี **ไม่น้อยกว่า** **6 หน่วยกิต**

<u>หมายเหตุ</u> ความหมายของเลขรหัสกระบวนวิชา

รหัสกระบวนวิชาที่ใช้กำหนดเป็นตัวเลข 6 หลัก ดังต่อไปนี้

1. เลข 3 ตัวแรก แสดงถึง คณะ และภาควิชา/สาขาวิชา ที่กระบวนวิชานั้นสังกัด
2. เลข 3 ตัวท้าย จำแนกได้ดังนี้
    1) เลขตัวแรก (หลักร้อย) แสดงถึง ระดับของกระบวนวิชา
        “100-200” แสดงถึง กระบวนวิชาระดับพื้นฐาน
        “300-400” แสดงถึง กระบวนวิชาระดับสูง
    2) เลขตัวกลาง (หลักสิบ) แสดงถึง หมวดหมู่ในสาขาวิชา
    3) เลขตัวท้าย (หลักหน่วย) แสดงถึง อนุกรมในหมวดหมู่ของสาขาวิชา

3. แผนการศึกษา

ชั้นปีที่ 1 ภาคการศึกษาที่ 1

001101	ม.อ.	101	ภาษาอังกฤษพื้นฐาน 1	3(3-0-6)
	ENGL	101	Fundamental English 1	
204101	ว.คพ.	101	คอมพิวเตอร์เบื้องต้น	3(2-2-5)
	CS	101	Introduction to Computer	
206113	ว.คณ.	113	แคลคูลัสสำหรับวิศวกรรมซอฟต์แวร์	3(3-0-6)
	MATH	113	Calculus for Software Engineering	
หรือ 206171	ว.คณ.	171	คณิตศาสตร์ทั่วไป 1	3(3-0-6)
	MATH	171	General Mathematics 1	
208150	ว.สถ.	150	ความน่าจะเป็นและสถิติ	3(3-0-6)
	STAT	150	Probability and Statistics	
888111	นว.ด.	111	ทฤษฎีและการปฏิบัติในการเป็นผู้ประกอบการนวัตกรรม	3(3-0-6)
	DIN	111	Innovative Entrepreneurship Theory and Practice	
			วิชาศึกษาทั่วไป (เลือก)	3
			วิชาศึกษาทั่วไป (กลุ่มวิชาด้านการพัฒนาทักษะการเป็นผู้ร่วมสร้างสรรค์นวัตกรรม)	3
			General Education Electives (Innovative Co-creator)	
			รวม	**21**

ชั้นปีที่ 1 ภาคการศึกษาที่ 2

001102	ม.อ.	102	ภาษาอังกฤษพื้นฐาน 2	3(3-0-6)
	ENGL	102	Fundamental English 2	
140104	ร.ท.	104	การเป็นพลเมือง	3(3-0-6)
	PG	104	Citizenship	
204217	ว.คพ.	217	ภาษาโปรแกรมคอมพิวเตอร์	3(2-2-5)
	CS	217	Computer Programming Languages	
206255	ว.คณ.	255	คณิตศาสตร์สำหรับเทคโนโลยีซอฟต์แวร์	3(3-0-6)
	MATH	255	Mathematics for Software Technology	
หรือ 206172	ว.คณ.	172	คณิตศาสตร์ทั่วไป2	3(3-0-6)
	MATH	172	General Mathematics 2	
หรือ 888152	นว.ด.	152	การเขียนโปรแกรมสร้างภาพนิทัศน์จากข้อมูลทางธุรกิจ	3(2-3-4)
	DIN	152	Programming for Data Visualization in Business	
208250	ว.สถ.	250	วิธีเชิงสถิติสำหรับวิทยาศาสตร์ข้อมูล	3(2-2-5)
	STAT	250	Statistical Methods for Data Science	
888121	นว.ด.	121	เศรษฐกิจดิจิทัล	3(3-0-6)
	DIN	121	Digital Economy	
888151	นว.ด.	151	นวัตกรรมดิจิทัลและแนวโน้ม	3(3-0-6)
	DIN	151	Digital Innovation and Trends	
			รวม	**21**

ชั้นปีที่ 2 ภาคการศึกษาที่ 1

001201	ม.อ.	201	การอ่านเชิงวิเคราะห์และการเขียนอย่างมีประสิทธิผล	3(3-0-6)
	ENGL	201	Critical Reading and Effective Writing	
204251	ว.คพ.	251	โครงสร้างข้อมูล	3(3-0-6)
	CS	251	Data Structures	
206281	ว.คณ.	281	คณิตศาสตร์ดิสครีต	3(3-0-6)
	MATH	281	Discrete Mathematics	
หรือ 208251	ว.สถ.	251	การวิเคราะห์การถดถอยและสถิติไม่อิงพารามิเตอร์	3(2-2-5)
	STAT	251	Regression Analysis and Non-Parametric Statistics	
หรือ 888212	นว.ด.	212	เครื่องมือดิจิทัลพื้นฐานสำหรับผู้ประกอบการ	3(2-3-4)
	DIN	212	Fundamental Digital Tools for Entrepreneurs	
888231	นว.ด.	231	ระบบนิเวศของพาณิชอิเล็กทรอนิกส์ในเศรษฐกิจนวัตกรรม	3(3-0-6)
	DIN	231	Ecosystem of E-Commerce in Innovative Economy	
888251	นว.ด.	251	แพลตฟอร์มดิจิทัล	3(3-0-6)
	DIN	251	Digital Platforms	
204100	ว.คพ.	100	เทคโนโลยีสารสนเทศและชีวิตสมัยใหม่	3(3-0-6)
	CS	100	Information Technology and Modern Life	
หรือ 261111	วศ.คพ.	111	อินเทอร์เน็ตและสังคมออนไลน์	3(3-0-6)
or	CPE	111	Internet and Online Community	
หรือ 953111	ศท.วว	111	ซอฟต์แวร์สำหรับชีวิตประจำวัน	3(3-0-6)
or	SE	111	Software for Everyday Life	
			วิชาศึกษาทั่วไป (เลือก)	3
			General Education (Electives)	
			รวม	**21**

ชั้นปีที่ 2 ภาคการศึกษาที่ 2

001225	ม.อ.	225	ภาษาอังกฤษในบริบทวิทยาศาสตร์และเทคโนโลยี	3(3-0-6)
	ENGL	225	English in Science and Technology Context	
888211	นว.ด.	211	การระดมทุนในเศรษฐกิจดิจิทัล	3(3-0-6)
	DIN	211	Fundraising in Digital Economy	
888232	นว.ด.	232	การจัดการทรัพย์สินทางปัญญาและการเจรจาต่อรอง ในเศรษฐกิจดิจิทัล	3(3-0-6)
	DIN	232	Intellectual Property Management and Negotiation in Digital Economy	
888311	นว.ด.	311	ระบบนิเวศทางธุรกิจดิจิทัล	3(3-0-6)
	DIN	311	Digital Business Ecosystem	
			วิชาเอกเลือก	3
			Major Elective	
			วิชาศึกษาทั่วไป (เลือก)	3
			General Education (Electives)	
			รวม	**18**

ชั้นปีที่ 3 ภาคการศึกษาที่ 1

			วิชาเอกเลือก Major Elective	3
			วิชาเอกเลือก Major Elective	3
			วิชาเอกเลือก Major Elective	3
			วิชาเอกเลือก Major Elective	3
			วิชาเลือกเสรี Free Elective	3
			รวม	**15**

ชั้นปีที่ 3 ภาคการศึกษาที่ 2

888399	นว.ด.	399	การสำรวจโครงการสตาร์ทอัพเทคโนโลยี	3(0-9-0)
	DIN	399	Technology Startup Project Survey	
			วิชาเอกเลือก Major Elective	3
			วิชาเอกเลือก Major Elective	3
			วิชาเอกเลือก Major Elective	3
			วิชาเลือกเสรี Free Elective	3
			รวม	**15**

ชั้นปีที่ 4 ภาคการศึกษาที่ 1

888498	นว.ด.	498	การเตรียมโครงการสตาร์ทอัพเทคโนโลยี	3(0-9-0)
	DIN	498	Technology Startup Pre-Project	
			วิชาเอกเลือก Major Elective	3
			วิชาเอกเลือก Major Elective	3
			วิชาเอกเลือก Major Elective	3
			รวม	**12**

ชั้นปีที่ 4 ภาคการศึกษาที่ 2

888499	นว.ด.	499	โครงการสตาร์ทอัพเทคโนโลยี	3(0-9-0)
	DIN	499	Technology Startup Project	
			วิชาเอกเลือก	3
			Major Elective	
			วิชาเอกเลือก	3
			Major Elective	
			รวม	**9**

3. คำอธิบายลักษณะกระบวนวิชา – ระบุไว้ในภาคผนวก -

4. แผนที่แสดงการกระจายความรับผิดชอบมาตรฐานผลลัพธ์การเรียนรู้จากหลักสูตรสู่กระบวนวิชา (Curriculum Mapping)

ผลลัพธ์การเรียนรู้ของหลักสูตรมีความหมายดังนี้

คุณลักษณะบัณฑิตที่พึงประสงค์ ประกอบด้วย

<u>หมวดวิชาศึกษาทั่วไป</u>

GELO 1 เป็นบุคคลผู้เรียนรู้

1.1 ติดตามความก้าวหน้า และเลือกใช้เครื่องมือเทคโนโลยีดิจิทัลมาใช้ให้ เกิดประโยชน์ต่อการทำงานอย่างปลอดภัย

1.2 สามารถสื่อสารกับผู้อื่นได้อย่างตรงประเด็น

1.3 สามารถเลือกใช้ข้อมูลต่างๆ ในการดูแลตนเองและผู้อื่นอย่างเหมาะสม อาทิ ด้านสุขภาพกาย ใจ การเงิน

GELO 2 เป็นผู้ร่วมสร้างสรรค์นวัตกรรม

2.1 แสดงออกซึ่งทักษะการคิดที่มีประสิทธิผล เพื่อการปรับปรุงแก้ไขหรือสร้างสรรค์สิ่งใหม่

2.2 ปรับตัวและแก้ไขปัญหาเฉพาะหน้าได้

GELO 3 เป็นพลเมืองของประเทศและโลก ที่มีความรับผิดชอบและเข้มแข็ง

3.1 ปฏิบัติตามหน้าที่ของตนเอง เคารพสิทธิมนุษยชนกล้าต่อต้านในการกระทำที่ไม่ถูกต้อง เสนอแนวทางการสร้างความเป็นธรรมให้กับสังคม

3.2 แสดงออกซึ่งความเป็นผู้ให้โดยไม่คำนึงถึงสิ่งตอบแทน มีจิตเสียสละ

3.4 ยอมรับความหลากหลายทางวัฒนธรรม มีสุนทรียะทางศิลปะ

3.5 มีส่วนร่วมในการดูแลสิ่งแวดล้อม

หมายเหตุ : หลักสูตรไม่ได้กำหนดให้เลือกเรียนกระบวนวิชาที่สอดคล้องกับ GELO ข้อ 1.4 และ 3.3

<u>หมวดวิชาเฉพาะ</u>

PLO1 สามารถหาโอกาสและสร้างแนวคิดทางธุรกิจในระดับชาติและนานาชาติ โดยการประยุกต์ใช้เทคโนโลยีดิจิทัลหรือองค์ความรู้ด้านต่าง ๆ

PLO2 สามารถทดสอบแนวคิดทางธุรกิจ สร้างต้นแบบนวัตกรรม และมีความรู้ ความเข้าใจ ในการเริ่มดำเนินธุรกิจ

PLO3 วิเคราะห์และสังเคราะห์ ทฤษฎีและหลักการ กฎหมายที่เกี่ยวข้องทางธุรกิจและสามารถวิเคราะห์วางแผนดำเนินงานบริหารจัดการองค์กรและดำเนินธุรกิจ ด้วยเทคโนโลยีดิจิทัล

PLO4 สามารถวิเคราะห์ข้อมูลและใช้ผลลัพธ์ที่ได้เพื่อประโยชน์ทางธุรกิจ

PLO5 มีคุณลักษณะของผู้ประกอบการที่ดี สามารถเรียนรู้ตลอดชีวิต ในบริบทการเปลี่ยนแปลงทางด้านเทคโนโลยีและสังคม มีทักษะการสื่อสารและประสานงาน ทั้งในองค์กรและนอกองค์กรภายใต้วัฒนธรรมที่หลากหลาย ได้อย่างมีประสิทธิภาพ

Course Description

Bachelor of Science Program in Digital Innovation (International Program)

1. Genneral Education

1.1 Required Courses

1.1.1 Learner Person

ENGL 001101 : Fundamental English 1 3(3-0-6)

Pre : None

Communication in English for everyday interactions. Basic listening, speaking, reading and writing skills in various social and cultural contexts for life-long learning.

ENGL 001102 : Fundamental English 2 3(3-0-6)

Pre : None

Communication in English for everyday interactions. More advanced listening, speaking, reading and writing skills in various social and cultural contexts for life-long learning.

ENGL 001201 : Critical Reading and Effective Writing 3(3-0-6)

Pre : None

English language skills for critical reading from different sources and media and effective writing on topics of students' interests.

ENGL 001225 : English in Science and Technology Context 3(3-0-6)

Pre : None

Specific language functions, components and skills for effective communication in science and technology contexts.

CS 204100 : Information Technology and Modern Life 3(2-2-5)

Pre : None

Computers in everyday life. Data processing and information management. Office automation software for modern life. Internet and webpage construction.

CPE 261111 : Internet and Online Community 3(3-0-6)

Pre : None

Introduction to Internet and social networking. Emerging trends in technology. Efficient utilization of search engine. Online services and cloud computing. Impact of Internet and social networking in daily life. E-Commerce and advertising in Internet and social networking. Online social ethics and morals. Social aspects of Internet and online community. Legal aspects of Internet and online community. Security and privacy on Internet and social networking. Future trends of Internet and social networking.

SE 953111 : Software for Everyday Life 3(3-0-6)
Pre : None

The course will provide basic understanding of computer software: what it is and its role in improving our daily lives. Major areas of software applications and products popularly used today will be introduced including software for personal use to improve productivity and quality of life, for organizational enterprises to support business operations and management, and for education and research activities. Latest issues in today's software industry such as career choices, ethics, future trends, and direction will also be surveyed to provide the overall picture of the field.

1.1.2 Innovative Co-creator

SA 159100 : Modern World in Everyday Life 3(3-0-6)
Pre : None

Globalization and change in economy, society, politics, and culture, ethnic conflicts, human security, risk society, consumer culture, modern medias and changing everyday life in the modern worlds.

SC 201110 : Integrated Mathematical Sciences 3(3-0-6)
Pre : None

Computer science in everyday life, history of computing, internet, statistics in everyday life. Statistics for solving the problems in everyday life. Probability for describing the phenomena, simulation, examples of mathematical models. Matrix operations and its applications. Optimization. Data representation. Artificial intelligence and machine learning. Sorting and searching. Statistics for decision making.

SC 201117 : Mathematics and Science in Civilization 3(3-0-6)
Pre : None

Mathematics and civilization, calendar systems and calendar eras, science and civilization.

STAT 208102 : Statistical Reasoning and Thinking 3(3-0-6)
Pre : None

Statistical thinking. Statistical reasoning. Visual displays of data. Describing data. Chance and uncertainty. Normal curve. From samples to populations. Relationship and correlation.

ECON 751100 : Economics for Everyday Life 3(3-0-6)
Pre : None

Basic economic concepts and application for everyday life concerning production, consumption, markets, national income, public finance, money and banking, inflation and deflation, employment, international trade and finance, and economic development and environment.

LAGE 176100 : Law and Modern World 3(3-0-6)
Pre : None

Legal concepts. Legal Institutions. Law and its roles in society. Law and international societies. Law and local problems. Law and community rights. Roles of law in the rural and urban societies. Roles of law in the globalized era. Analyses of issues derived from case studies relating to law and modern world.

MGMT 703103 : Introduction to Entrepreneurship and Business 3(3-0-6)
Pre : None

Entrepreneur role in economics development country. Entrepreneur and business opportunities. The characteristic of entrepreneur and motivation factors, environment, types of business, forms of business, business plans, principle of management, marketing management, production management, financial management, accounting, taxation, business law, international business and business ethics for entrepreneur.

PSY 013110 : Psychology and Daily Life 3(3-0-6)
Pre : None

Psychology and daily life. Individual factors. Interpersonal factors. Social factors.

1.1.3 Active Citizen

PG 140104 : Citizenship 3(3-0-6)
Pre : None

Meaning, definition and concept of citizenship. Rights, liberties and obligations of citizenship. Problems awareness of daily life at local, national and international levels. Creation of public mind and moral for social responsibility and social awareness. Citizenship and the way of life in plural and multicultural societies. Creating a positive and peaceful attitude to enable conflict resolution by peaceful means. Political expression under laws, regulations, social norms and communal practice. Citizenship and the understanding of cultural tradition and local history. Ethics and vocational citizen.

1.2. GE Electives

1.2.1 Learner Person

EDPE 057122 : Swimming for Life and Exercise 1(1-0-2)
Pre : None

The principles of exercise for health by Swimming. Warm up and cool down. Principles of breathing and movement under water. Using body physically to swim in each style. Helping others from dangers in swimming. Swimming for health and participation in competition at different levels. Benefits and etiquette for players and spectators.

EDPE 057127 : Badminton for Life and Exercise 1(1-0-2)

Pre : None

The principles of exercise for health by playing Badminton. Warm up and cool down. How to hold the racquet and body movements to hit the shuttlecock. Rules and scoring in Badminton. Playing Badminton in different styles. Analysis of Badminton matches and participation in Badminton competition at different levels. Benefits and etiquette for players and spectators.

EDPE 057138 : Thai Wisdom Sports for Self-Defense 3(3-0-6)

Pre : None

History, basic skills, conservation and dissemination in Thai identity of Thai wisdom sports for self-defense of Sword and Pole, Thai fencing, and Muay Thai including physical activity promotion by Sword and Pole, Thai fencing, and Muay Thai.

ENGR 259109 : Telecommunication in Thailand 3(3-0-6)

Pre : None

Telecommunication evolution in Thailand, telecommunication policies and related laws, telecommunication economics, basic telephone and mobile telephone, radio broadcasting, television broadcasting, fiber optic communication, submarine cable network in Thailand, wireless communication network microwave communication, satellite communication, internet protocol communication and next generation telecommunication.

HORT 359204 : Horticulture for Health 3(3-0-6)

Pre : None

Importance, categories, production, and health benefits from horticultural crops which are vegetables, medicinal plants, fruits, and flowers, including their use as horticultural therapy.

HORT 359206 : Landscape, Environment, Behaviors, and Minds 3(3-0-6)

Pre : None

Theories about landscape, nature, environment, and human behaviors; learning and analyzing data about human health and behaviors; importance and definitions of landscape aesthetics; landscape and stress management; landscape, cognitive ability, and success; landscape and social behaviors; using landscape in daily life for self-improvement; strategies for supporting environmentally-friendly behaviors.

PHPS 461100 : Herbs for Health and Beauty 3(3-0-6)

Pre : None

Herbs for health promotion, those used to treat common diseases, indigenous vegetables including some toxic plants. Medicinal plants, both in fresh and dry forms and their various products. Their uses as drugs, food and cosmetics, emphasizing daily usage for proper and safe use.

FINA 706101 : Finance for Daily Life 3(3-0-6)
Pre : None

Basic knowledge of financial management for daily life. Wealth creation. Financial health evaluation. Financial planning. Income, expenses and debt management. Financial institution services. Savings. Letting the money work for you. Financial planning for life events. Risk insurance. Tax planning. Preparing for happiness.

DIN 888102 : Big Data for Business 3(3-0-6)
Pre : None

Introduction to big data. Business problems and data science solutions. Basic tools for data mining. Predictive modelling. Clustering data. Decision analytic thinking. Visualizing model performance. Evidence and probabilities. Text mining.

1.2.2 Active Citizen

SA 159151 : Lanna Society and Culture 3(3-0-6)
Pre : None

Historical background of Lanna. The formation and the end of Lanna states. House, village and principality in Lanna. Temples and Buddhism in Lanna. Rituals and belief in Lanna. Ethnic groups in Lanna. Muslim and Christian in Lanna. Language, music and arts in Lanna. Customary events in Lanna. Mueang or Tai Yuan people. Lanna and changes in globalized era. Lanna and neighbors in Mekong region.

DIN 888106 : Communication and Networking in Online Society 3(3-0-6)
Pre : None

Introduction to social networks. Graph theory and social networks datasets. Game theory and social networks. Behavior of social networks. Diffusion in networks. Privacy, anonymity and authentication on social networks. Introduction to online social network applications. How social networks affect the way of our living? Connection between social networks and economic development.

2. Field of Specialization

2.1 Core Courses

CS 204101 : Introduction to Computer 3(2-2-5)
Pre : None

Computer system. Data processing. Number system and data representation. Structure flowchart and pseudocode. Computer programming language and data communication.

CS 204217 : Computer Programming Languages 3(2-2-5)
Pre : 204101 or 204105 or 204111

This course is intended to introduce a currently used programming language. The contents will cover a basic concept of the language, system and utility programs, basic components of the language, statements, subprograms, files and applications.

MATH 206113 : Calculus for Software Technology 3(3-0-6)
Pre : None

Vectors , derivative of functions of one variable and applications, indefinite and definite integrals and applications, functions of several variables and partial derivatives

MATH 206281 : Discrete Mathematics 3(3-0-6)
Pre : 206103 or 206111 or 206161 or 206113

Basic background. General counting methods. Elementary graph theory. Trees and sorting. Networks. Boolean algebra.

MATH 206171 : General Mathematics 1 3(3-0-6)
Pre : None

Matrices and systems of linear equations, linear programming, functions and graphs, limits and continuity of functions, the derivative, graph sketching and optimization.

MATH 206172 : General Mathematics 2 3(3-0-6)
Pre : 206171

Indefinite integral, definite integral, partial derivatives, first order linear differential equations, second order linear differential equations, difference equations and applications.

STAT 208150 : Probability and Statistics 3(3-0-6)
Pre : None

Basic concept of probability. Discrete and continuous probability distributions. Joint probability distributions. Expectation and variance, Probability models and their means and variances. Inference for proportions. Chi-square and F-distributions. Inference for variances. Goodness of fit and tests for independence and homogeneity.

DIN 888111 : Innovative Entrepreneurship Theory and Practice 3(3-0-6)
Pre : None

Evolutionary development of innovative entrepreneurship. Financial preparation for innovative entrepreneurial ventures. Social entrepreneurship and the global environment for innovative entrepreneurship. Creativity and innovation. Marketing challenges for innovative entrepreneurial ventures. Ethical and socially-responsible innovative entrepreneurship. Effective innovative business

plan development. Business pitching. Economics for innovative entrepreneurship. Creation and protection of intellectual property. Technology for innovative entrepreneurship.

DIN 888121 : Digital Economy 3(3-0-6)
Pre : None

Digital economy. Concept and theory in digital economy. Game theory in digital economy. Current issues in digital economy. Decision making process in digital economy. Case study. Group assignment and presentation.

DIN 888231 : Ecosystem of E-Commerce in Innovative Economy 3(3-0-6)
Pre : None

Introduction to international trade driven by innovative economy. Ecosystem of the e-commerce and the relevant digital law: International trade laws of digital commerce, Intellectual property rights, Tax, Logistics, Cryptocurrency, Computer crimes. Major cases study.

2.2 Major

2.2.1 Required Course

CS 204251 : Data Structures 3(3-0-6)
Pre : 204211 or 204214 or 204215 or 204216 or 204217 or 204219

Problem solving and concept of abstraction. Analysis of algorithms. Linear lists. Stacks. Queues. Priority queues. Sets. Maps and hashing. Sorting. Trees. Graphs.

MATH 206255 : Mathematics for Software Technology 3(3-0-6)
Pre : 206113

Error of numerical methods, polynomial interpolation and curve fitting, root of equation of one variable and system of non-linear equations, system of linear equations and matrices, vector spaces and linear transformation

STAT 208251 : Regression Analysis and Non-Parametic Statistics 3(2-2-5)
Pre : 208250

Concepts of regression analysis. Simple linear regression analysis. Multiple linear regressions analysis. Model diagnostic. Concepts of non-parametric statistics. Test for one sample. Test for two related samples and two independent samples. Test for k related samples and k independent samples.

STAT 208250 : Statistical Methods for Data Science 3(2-2-5)
Pre : 208150

Introduction to statistical methods. Collecting data. Exploratory data analysis. Normal distribution and normality tests. Inference about population means. Analysis of variance. Regression and correlation analysis.

DIN 888151 : Digital Innovation and Trends 3(3-0-6)

Pre : None

Introduction and key drivers of digital innovation. Cybersecurity, digital currency and payments. Big Data, augmented and virtual reality. Digital advertising, Web and App. Cloud computing. Artificial Intelligence. Internet of Things and wearable technologies. Next-Generation social networks. Presentation of your creativity and innovation project.

DIN 888211 : Fundraising in Digital Economy 3(3-0-6)

Pre : 888111

Trend of fundraising in digital economy. Fundraising ethics. Planning of fundraising in digital economy. Digital fundraising – Crowdfunding and social media. Fundraising performance assessment. Managing public trust and confidence in digital economy. Case study.

DIN 888232 : Intellectual Property Management and Negotiation in Digital Economy 3(3-0-6)

Pre : None

Intellectual Property Rights (IPRs) in digital economy. Intellectual Property Rights management: international level of IPRs protection and IPRs Mapping for business investment. Negotiation of trade and business in digital economy: licensing agreement and economic benefits in digital economy. Case studies and workshops: copyright, trademark and patent.

DIN 888251 : Digital Platforms 3(3-0-6)

Pre : None

Introduction to digital platforms. Content strategy. Content Management System (CMS). Development using template and workflows. Content information architecture, taxonomy and metadata. Content integration and content standards. Digital asset management and document management. Content security. Content infrastructure. Enterprise search.

DIN 888311 : Digital Business Ecosystem 3(3-0-6)

Pre : 888151

Definition of digital business ecosystem. Digital business ecosystem life cycle. Digital business ecosystem constructive element. Digital business ecosystem configuration pattern. Digital business ecosystem nurturing process. Digital platform. Application programming interfaces (API). Digital business ecosystem: cases study.

DIN 888399 : Technology Startup Project Survey 3(0-9-0)

Pre : 888232

Survey and research to select topics for projects and innovative business model to do technology startup project. Reporting the plan and time schedule for the approval of pre-project in the next semester. Grading will be given on satisfactory or unsatisfactory basis.

DIN 888498 : Technology Startup Pre-Project 3(0-9-0)
Pre : 888399

The proof of concept/business prototype is carried out by students on any topics of interest in the current and recent developments of the selected business domain. It integrates all components studied through the course. Grading will be given on satisfactory or unsatisfactory basis.

DIN 888499 : Technology Startup Project 3(0-9-0)
Pre : 888498

The business proposal of the startup is wrapped up and presented by students on any topics of interest in the current and recent developments of the selected business domain. Students have mentoring and intensive coaching to develop business plan, pitching and negotiation strategies. Finally Pitching event is arranged by online or face-to-face or both of them an evaluated by business angels as external examiners. Internships are available to provide students academic credit for experiential learning. Grading will be given on satisfactory or unsatisfactory basis.

2.2.2 Major Elective

CS 204321 : Database System 1 3(3-0-6)
Pre : 204251

Introduction to database system. Database system concepts and architectures. Relational data model and relational database constraints. Data modeling using Entity-Relationship (ER) model. Normalization. Structure Query Language (SQL). Relational algebra and relational calculus. Query processing. Indexing: basic structure, physical database design and transaction processing.

CS 204423 : Data Mining 3(3-0-6)
Pre : 204222 or 204320 or 204321 or 229323; and 208150 or 208263 or 208264

Basic concept of data mining. Data preprocessing. Dimensional data reduction. Mining for association rules. Data clustering, data classification and data prediction.

CS 204453 : Pattern Recognition 3(2-2-5)
Pre : 204251; and 208150 or 208263

Overview of pattern recognition. Pattern representation. Nearest neighbor algorithms. Bayes classifiers. Decision trees. Neural networks and support vector machines. Class imbalance problem.

STAT 208350 : Applied Multivariate Statistics for Data Science 3(3-0-6)
Pre : 208250

Multivariate data and its graphical display. Measures of central tendency, dispersion and association of multivariate data with results from statistical package. Principal component analysis and factor analysis. Inference for multivariate data. Classification of observation. Canonical correlation analysis. Methods of clustering and multidimensional scaling. Case studies.

STAT 208450 : Analytics for Observational Data 3(3-0-6)
Pre : 208251

Exploring and understanding observational data. Exploratory data analysis with results from statistical package. Exploring relationships between variables with results from statistical package. Probability modeling and prediction. Models for count data and categorical response data. Model selection. Classification trees. Case studies.

STAT 208451 : Analytics for Experimental and Simulated Data 3(2-2-5)
Pre : 208251

Linear model. Generalized linear model. Non-linear model. Analysis of variance. Design of experiments. Analysis of computer simulated experiments.

DIN 888341 : Startup in Internet and Mobile Technology 3(1-4-4)
Pre : 888111 and 888151

Business survey in internet and mobile industry. Supply chain analysis. Value chain analysis. Business model. Proof of business concept. Marketing strategy development. Business prototyping. Pitching planning. Financial planning. Business startup design. Business running in.

DIN 888342 : Introduction to Management Information System 3(3-0-6)
Pre : 206281

Computer system. Foundation of information system. Telecommunication and network. Data resource management and decision support systems (DSS). Business application. Functional applications of information system.

DIN 888361 : Startup in Energy and Logistics Management 3(1-4-4)
Pre : 888151

Study of business planning and practicum in business practice of energy and logistics management industry, engrossing key aspects of business in energy and logistics management industry such as business survey, supply chain and value chain analysis, business modelling, proof of business concept, business prototyping and marketing strategy development, financial planning, pitching planning, business startup design and test run.

DIN 888411 : Operation Research for Digital Innovation 3(3-0-6)
Pre : 206255

Introduction to operation research. Linear programming. Transportation problems. Multi-objective programming. Integer programming. Dynamic programming. Queuing theory. Inventory theory. Decision analysis. Applications.

DIN 888450 : Startup in Digital Technology 3(1-4-4)
Pre : 888111 and 888151

Study of business planning and practicum in business practice of digital industry, engrossing key aspects of business in digital industry such as business survey, supply chain and value chain analysis, business modelling, proof of business concept, business prototyping and marketing strategy development, financial planning, pitching planning, business startup design and test run.

DIN 888451 : Startup in Smart Electronic Technology 3(1-4-4)
Pre : 888111 and 888151

Study of business planning and practicum in business practice of smart electronic industry, engrossing key aspects of business in smart electronic industry such as business survey, supply chain and value chain analysis, business modelling, proof of business concept, business prototyping and marketing strategy development, financial planning, pitching planning, business startup design and test run.

DIN 888452 : Startup in Agriculture and Biotechnology Industry 3(1-4-4)
Pre : 888111 and 888151

Study of business planning and practicum in business practice of agriculture and biotechnology industry, engrossing key aspects of business in agriculture and biotechnology industry such as business survey, supply chain and value chain analysis, business modelling, proof of business concept, business prototyping and marketing strategy development, financial planning, pitching planning, business startup design and test run.

DIN 888453 : Startup in Food for Future Industry 3(1-4-4)
Pre : 888111 and 888151

Study of business planning and practicum in business practice of food for future industry, engrossing key aspects of business in food for future industry such as business survey, supply chain and value chain analysis, business modelling, proof of business concept, business prototyping and marketing strategy development, financial planning, pitching planning, business startup design and test run.

DIN 888454 : Startup in Biofuel and Biochemical Technology
Pre : 888111 and 888151

Study of business planning and practicum in business practice of biofuel and biochemical industry, engrossing key aspects of business in biofuel and biochemical industry such as business survey,

supply chain and value chain analysis, business modelling, proof of business concept, business prototyping and marketing strategy development, financial planning, pitching planning, business startup design and test run.

DIN 888455 : Blockchain Security Design for Financial Technology 3(3-0-6)
Pre : 888211

Definition and mechanism of Blockchain. Importance of Blockchain. Limitations and how to overcome. Design principles for Blockchain 1.0 – Currency. Design principles for Blockchain 2.0 - Smart contract. Design principles for Blockchain 3.0 - Decentralized application (dApp). Blockchain summary and outlook..

DIN 888461 : Startup in Manufacturing 3(1-4-4)
Pre : 888111 and 888151

Study of business planning and practicum in business practice of manufacturing, engrossing key aspects of business in manufacturing such as business survey, supply chain and value chain analysis, business modelling, proof of business concept, business prototyping and marketing strategy development, financial planning, pitching planning, business startup design and test run.

DIN 888463 : Startup in Agro and Food Business 3(1-4-4)
Pre : 888111 and 888151

Study of business planning and practicum in business practice of agro and food industry, engrossing key aspects of business in agro and food industry such as business survey, supply chain and value chain analysis, business modelling, proof of business concept, business prototyping and marketing strategy development, financial planning, pitching planning, business startup design and test run.