INSTITUTE OF TECHNOLOGY OF CAMBODIA

CONSORTIUM MEETING
INTERNATIONAL SUPPORT

PERSPECTIVE & STRATEGY 2025-2026

26 – 27 March 2025

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1 INTRODUCTION

Since its establishment in 1964, the Institute of Technology of Cambodia (ITC) has received greater recognition for its successes and achievements in serving the country through human resources development, institutional capacity building and working intensely on the economic and infrastructure development of Cambodia. ITC, for more than four decades, has established a link between the French and English-speaking networks in the region and in the world. With its numerous collaborators, administrators, students, faculty staffs and alumni, this institution offers a unique multilateral context for an exchange of views with ministries, local authorities, NGOs, the private sectors and partner institutions.

ITC has a mission to train students with high-quality education in the fields of engineering, sciences and technologies and to develop innovative technology transfer. Students are provided with a strong scientific base and technical know-how and skills which allow their integration and evolution in the labor market. Based on the decision of the annual board meeting, the future orientation of ITC is to expand the engineering education area and develop research platforms in order to sustain the development of the country. This requires strengthening the basic scientific knowledge, developing research programs in connection with the private sectors and national and international stakeholders, supporting communities, fostering economic development through entrepreneurship programs, and helping our graduate students integrating the global economy. Ultimately, it is important for ITC to keep its own identity of a multilingual institution maintaining and expanding a network with French and English-speaking universities, to provide an education that motivates teaching staffs and students, stimulates creativities and inspires future ambitions, and to develop an internationally recognized research in adequacy with the needs of the society.

The vision of Institute has been set out based on the Rectangular Strategy Phase 4 of the Royal Government of the 6th legislative term of the National Assembly "**to improve work, equity and effectiveness, to form a basis towards achievement of Cambodia's Vision for 2050**".

2 PERSPECTIVE AND STRATEGIES

2.1 Perspectives

To become a leading institution with efficiency and excellence offering the academic, research, science, technology, innovation and engineering in technology transfer to the community.

ITC has adopted the new Strategic Plan (2021-2030) based on the Rectangular Strategy (Phase IV) of the government together with the National Strategic Development Plan (2019-2023). This Strategic Plan will provide directions for effective implementation of the Action Plans and address the challenges in order to improve the engineering education quality in a competitive environment.

Two main objectives of ITC Strategic Plan (2021-2030) to be reached by 2030 are as follows:

1- To train 17200 students with high qualification towards the Cambodia Vision 2030
2- To implement 175 applied projects with technology transfer and start-up for harmonization and development towards the Cambodia Vision 2030

2.2 Strategy of ITC

ITC has developed 5 main strategies to meet the 10-year objectives as follows:

1- Establish and apply academic program responding to the market needs with national and international recognition

2- Develop human resources and modernize technology for good governance, management and financial affairs
3- Develop physical infrastructure and modernize the laboratories
4- Establish the investment projects and applied research projects targeting to start-up and technology transfer
5- Modernize the data information system for dissemination of activities and results to the communities

2.3 Result Framework

The Result Framework for 10 Years: 2021 to 2030-Institutional Level is presented in Table 1.

Table 1: Result Framework for 10 Years: 2021 to 2030-Institutional (Institute) Level

Indicators	-	Basis	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
1. Number of students graduated from national program with minimum quality standard	Admitted postgraduate students	0	0	0	20	100	180	260	340	440	540	640	640
	Graduated postgraduate students	0	0	0	0	18	90	162	234	306	396	486	486
	Admitted engineer students	0	0	140	1180	3760	6600	8090	9690	11450	13270	15090	15090
	Graduated engineering students	0	0	0	0	126	1070	3497	6138	7524	9012	10649	10649
	Admitted technical students	0	0	150	800	1500	2200	2900	3600	4300	5000	5700	5700
	Graduated technical students	0	0	0	135	731	1395	2046	2697	3348	3999	4650	4650
2. Number of students graduated from international program	Admitted postgraduate students	0	0	0	30	80	130	220	310	400	490	580	580
	Graduated postgraduate students	0	0	0	0	27	76	124	209	295	380	466	466
	Admitted engineer students	0	0	0	25	75	230	460	690	1000	1360	1720	1720
	Graduated engineering students	0	0	0	0	0	23	70	213	435	656	950	950
3. Number of Research Studies in connection with development		62	83	93	103	108	114	121	129	137	145	153	153
4. Number of Research Studies on		0	0	0	0	0	0	0	2	2	2	4	4

Indicators	-	Basis	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Technology Transfer													
5. Number of Business Startup Projects		0	0	0	0	0	4	4	8	11	14	18	18
6. Number of international programs		0	0	0	1	2	7	9	9	14	15	15	15
7. Number of national programs with minimum quality standard		0	0	2	13	15	18	19	22	24	25	25	25
8. Number of students who have received middle income (at least five times of unskilled workers' salaries)		0	0	0	0	62	385	1089	1925	2487	3083	3753	3753
9. Number of Center of Excellence		0	0	0	0	1	1	2	2	3	3	4	4
10. Number of publications of international scientific articles		39	59	84	109	139	169	204	239	279	319	359	359

3 PROGRESS OF PERSPECTIVES 2024-2025

In the academic year 2024-2025, ITC proposed 15 main activities in total, in which 3 activities for modification and improvement of curriculum of associate programs, 8 activities for curriculum updating for engineering program, 1 for new establishment of international engineering programs (Artificial Intelligence Engineering and Cybersecurity) and 1 for modification of international engineering program (Industrial Engineering and Supply Chain Management Program), 1 activity for establishment of new master program (Master of Architectural Engineering), and 1 activity for revising the name of research unit (MSS). As results, 14 proposed program modification are completed. All necessary documents were technically prepared. The name of research unit Material Science and Structure (MSS) was agreed to keep the same unchanged. Summary of the progress activities is illustrated in Table 2.

Table 2: Overall progress of the proposed activities in perspective 2024 – 2025

No.	Main activities proposed in 2024-2025	Unit	# Proposed	# Achieved by Feb 2025	Status
I	**Revision/Establishment of Associate Programs**				
1	Propose to establish the associate degree program "IT Network and Programming"	Program	1	1	Completed

No.	Main activities proposed in 2024-2025	Unit	# Proposed	# Achieved by Feb 2025	Status
2	Propose to establish the associate degree program "Industrial Engineering"	Program	1	1	Completed
3	Propose to establish the associate degree program "Geotechnical Engineering"	Program	1	1	Completed
II	**Revision/Establishment of Engineering Programs**				
4	Modify/improve the Civil Engineering program of Faculty of Civil Engineering	Program	1	1	Completed
5	Modify/improve the Transport and Infrastructure Engineering program of Faculty of Civil Engineering	Program	1	1	Completed
6	Modify/improve the Geo-resources and Geotechnical Engineering program	Program	1	1	Completed
7	Modify/improve the Mechanical Engineering program	Program	1	1	Completed
8	Modify/improve the Industrial Engineering program	Program	1	1	Completed
9	Modify/improve the Water Resources Engineering and Rural Infrastructure program	Program	1	1	Completed
10	Modify/improve the Water and Environmental Engineering program	Program	1	1	Completed
11	Modify/improve the Chemical Engineering program	Program	1	1	Completed
III	**Revision/Establishment of International Programs**				
12	Establishment of international program "Artificial Intelligence Engineering and Cybersecurity (AIECS)"	Program	1	1	Completed
13	Modification of Industrial Engineering and Supply Chain Management Program	Program	1	1	Completed

No.	Main activities proposed in 2024-2025	Unit	# Proposed	# Achieved by Feb 2025	Status
IV	**Revision/Establishment of Graduate Programs**				
14	Establishment of new master program "Architectural Engineering"	Program	1	1	Completed
V	**Establishment of labs/centers/platforms**				
15	Propose to revise name of research unit from "Materials Science and Structure" to "Materials and Built Environment"	Research Unit	1	1	Keep same name MSS

4 PERSPECTIVES AND ACTION PLAN FOR 2025 – 2026

4.1 Propose main activities/outputs in perspective 2025 – 2026

There are 5 main activities for perspective in academic year 2025 – 2026. All 5 activities to be proposed for curriculum modification of engineering programs in department of Electrical and Energy Engineering, Transport and Infrastructure Engineering, and Department of Applied Mathematics and Statistics.9 institutional development projects are conducted at ITC in which 3 projects are newly implemented. The summary of the proposed activities is shown in Table 3.

Table 3: Proposed main activities/outputs of ITC's perspective 2025-2026

No.	Main activities proposed in 2024-2025	Unit	Faculty/ Department	Estimated completion date
I	**Revision/Establishment of Associate Programs**			
	N/A			
II	**Revision/Establishment of Engineering Programs**			
1	Modification of curriculum of Electronic and Automating Engineering program *(see Annex 1)*	Program	GEE	Aug 2024
2	Modification of curriculum of Electrical Energy Engineering program *(see Annex 2)*	Program	GEE	Aug 2024
3	Modification of curriculum of Transport and Infrastructure Engineering program *(see Annex 3)*	Program	GCI	Aug 2024

No.	Main activities proposed in 2024-2025	Unit	Faculty/ Department	Estimated completion date
4	Modification of curriculum of Data Science program *(see Annex 4)*	Program	AMS	Aug 2024
5	Modification of curriculum of Financial Engineering program *(see Annex 5)*	Program	AMS	Sept 2024
III	**Revision/Establishment of International Programs**			
	N/A			
IV	**Revision/Establishment of Graduate Programs**			
	N/A			
V	**Establishment of labs/centers/platforms**			
6	Establishment of Reginal AI Training Center at ITC	Center	GTR	Concept Note development
VI	**Institutional Development Project Implementation**			
7	Implementation the project: "SATREPS: Establishment of Risk Management Platform for Air Pollution in Cambodia" - JICA	Project	ITC	Jul 2022 - 2027
8	"Institutional Support to Institute of Technology of Cambodia" – ARES-CCD	Project	ITC	Sept 2022 - 2027
9	"Science and Technology Project in Upper Secondary Education (STEP UP)" - ADB	Project	ITC	2023 - 2029
10	"Skills for Future Economy (SFE)" - ADB	Project	ITC	2023 - 2029
11	"Research and Training Platform on Power System" – EU/AFD	Project	ITC	2023 - 2027
12	"Project for Enhancing Industry-Academic Networks for Engineering Research and Development in Cambodia (INACON)" - JICA	Project	ITC	Oct 2024 - 2029
13	"Establishment of Center of Research and Technology Transfer (CRTT)" – MEF	Project	ITC	2024 – 2026
14	"2nd Higher Education Improvement Project" – 2nd HEIP – World Bank	Project	ITC	Jan 2025 – 2030
15	"Secondary Education for Human Capital Competitiveness Project (SE4HC)" - ADB	Project	ITC	Jan 2025 – 2030

4.2 Summary of main achievement and action plan for 2025-2026 from various institutional development projects

4.2.1 Establishment of Risk Management Platform for Air Pollution

The Air Quality Monitoring System plays crucial role in assessing and managing air pollution in Cambodia. Under support of the Project for Establishment of Risk Management Platform for Air Pollution, funded by SATREPS (Science and Technology Research Partnership for Sustainable Development), the Air Quality Research Laboratory was established at ITC to perform its tasks on data collection, monitoring, and real-time responding and forecasting on air quality in Phnom Penh.

Main achievement by 2024:

- New monitoring system of air quality monitoring and control has been established and implementing at 5 different locations in Phnom Penh
- Data on air quality from other 12 site locations has been received from MoE for analyzing to understand the characteristics of air pollution in Cambodia
- Guideline on PAHs analysis and Carbon analysis have been developed
- Capacity building of research teams

Activity Plan for 2025-2026:

- Develop online monitoring network for regional information on air quality
- Conduct consultation on regulation and data management to be developed
- Conduct draft of health risk assessment guideline along with guideline of MoE Japan

4.2.2 Enhancing Industry-Academic-Community Network

Project for Enhancing Industry-Academic-Community Networks for Strengthening Capacity of Engineering Research and Development (INACON) is a 5 years project supported by JICA. The project is a continued project from LBE and has been implemented at ITC from October 2024 to September 2029. This project aims to i) strengthen industry-academic community collaboration in engineering education, ii) support capacity and capability of local universities (NUBB and SRU) on engineering education and research, and iii) establish academic network in Cambodia.

Main achievement by 2024:

- Selected 5 research teams of ITC for LBE Research Grant (15,000USD/year)
- Supported on “The 3rd International Conference on Earth Resources and Geo-Environment Technology (EraGET 2024)”, December 12-15, 2024, Phnom Penh and Siem Reap
- Supported on International Symposium for Life Mechatronics 2024 (LMS2024), December 27, 2024, Phnom Penh
- Discussed with SRU and NUBB about human resource development plan for science and engineering fields and implementation plan for LBE research grant
- Discussed with Japanese companies and universities for further collaborations with ITC

Activity Plan for 2025-2026:

- Support on any international symposiums and seminars to strengthen the capacities of research and education with target universities.

- Support on any events, workshops, activities related to promoting collaborations with industries and communities
- Select model fields and develop workplan for establishment of Academic Societies
- Provide scholarships of ITC graduate schools for SRU and NUBB
- Provide LBE Research Grant for ITC, SRU, NUBB, and RUPP
- Support on short trainings both inside and outside of Cambodia

4.2.3 Establishment of Advance Makespace

- **Introduction**

Under the framework of Skills for Competitiveness (S4C) project supported by ADB. The Institute of Technology of Cambodia (ITC) proposes the establishment of an Advanced Makerspace to support multidisciplinary innovation, industrial prototyping, and workforce development. This facility will be strategically designed to bridge the gap between academia and industry, enabling students, startups, and researchers to develop real-world solutions through hands-on fabrication and testing.

- **Objectives**
  i) Upgrade ITC's existing fabrication spaces into a high-tech Advanced Makerspace.
  ii) Provide state-of-the-art prototyping tools to support students, startups, and industry collaborations.
  iii) Strengthen industry-academia collaborative R&D in IoT, automation, and robotics.
  iv) Enable hardware innovation and commercialization for Cambodian startups.
  v) Develop industry-ready talent through hands-on training and specialized workshops.

The makerspace will be located in ITC main campus and will include:

- Fast Prototyping Zone – CNC machining, 3D printing, laser cutting.
- IoT Fabrication & Testing Lab – PCB production, wireless module testing.
- Robotic & Autonomous Systems Lab – AI-powered robot and UAV development.
- Metal & Plastic Processing Zones – Metalworking, injection molding, vacuum forming.
- Co-working & Training Spaces – Seminar rooms, IT & media zone, shared workspaces.

- **Expected Outcomes**
  - Enhanced fabrication capacity for students and startups.
  - Stronger industry partnerships through joint R&D and prototype testing.
  - Expanded startup ecosystem, supporting new hardware innovations.
  - Industry-ready graduates, trained with hands-on experience in advanced manufacturing.
  - Sustainable operations, funded through training programs, industry collaborations, and consulting services.

4.2.4 Establishment of Center of Research and Technology Transfer (CRTT)

The proposed Center for Research and Technology Transfer (CRTT) at the Institute of Technology of Cambodia (ITC) aims to strengthen Cambodia's industrial development, promote innovation, and cultivate a new generation of highly skilled graduates. The current research units (5 research units) will be upgraded with advance equipment to work on innovation link to start-up and technology transfer. CRTT is one of the Public Investment Program (PIP) funded by the Royal Government of Cambodia with the total budget of USD 25 million. This is multi-faceted initiative focusing on both hard infrastructure (lab buildings and equipment) and soft infrastructure (research capacity, industry collaboration, and start-up incubation).

Project Objectives and Scope

1. Enhance Research and Technology Transfer: Establish modern labs for prototyping, testing, and product development, enabling faculty, students, and industry partners to advance new technologies.
2. Promote Entrepreneurship and Start-Ups: Develop a robust innovation ecosystem through business incubation, mentorship programs, and strong industry linkages, helping researchers and students transform their ideas into market-ready solutions.
3. Improve Skills for Innovation: Provide training programs aligned with industry needs, emphasizing areas such as food processing, robotics, AI, IoT, mechatronics, and big data.

Eight-floor CRTT building (total area about 18,000 m²) began construction in December 2024 and is expected to be completed in the first quarter of 2026. It accommodates research laboratories, classrooms, offices, workspaces for master's and PhD students, incubation spaces, and an auditorium.

Activity Plan for 2025-2026:

- Prepare and process the procurement plan for advance equipment
- Install equipment to upgrade the 5 research units

4.2.5 Establishment of Regional AI Training Center

- **Background**

As Cambodia, Vietnam, and Laos accelerate their digital transformation, the demand for skilled ICT professionals is growing. To address this, ITC and Huawei propose an establishing the Regional AI Training Center at the Institute of Technology of Cambodia (ITC) to develop a strong talent pipeline and support national digitalization goals.

- **Objectives**
  i) Develop ICT talent through hands-on training and industry-recognized certification.
  ii) Enhance practical skills with real lab environments and cutting-edge training platforms.
  iii) Foster regional collaboration among Cambodia, Vietnam, and Laos.
  iv) Align training with industry needs to improve employability and support digital economy growth.

➢ **Training Programs & Structure**

The Training Center will deliver a variety of ICT programs, including:

- Train-the-Trainer (TTT) Model: Developing university instructors into certified trainers to expand training capacity.
- Cloud & AI Training: Providing theory and practical lab sessions to develop expertise in cloud service & computing, and AI technologies.

➢ **Expected Outcomes**

- Train hundreds of ICT professionals annually.
- Strengthen the regional ICT workforce and improve employability.
- Establish Cambodia as a leading hub for ICT talent development.

4.2.6 Infrastructure development at ITC campuses

➢ Under the project of Higher Education Improvement Project (HEIP), an establishment of ITC new campus at Win-Win Monument with total land area of 5 hectares was initiated. 2 buildings are planned to construct in the campus in which one building (student dormitory) was already completed with 74 rooms to accommodate up to 292 students and another building (Research and Training Center) is under construction and expected be completed by June 2025. This two building investment costs about USD 11.68 million. This new campus is planned to inaugurate its operation at the end of 2025.

Figure 1: Student Dormitory at ITC Win-Win Monument campus

Figure 2: Research and Training Center under construction at ITC Win-Win Monument campus

- Under the Public Investment Program (PIP) funded by the Royal Government of Cambodia, the Center for Research and Technology Transfer (CRTT) was approved to construct at ITC Win-Win Monument campus from December 2024 and to be operated in 2026. The total investment is about USD 25.00 million for hard component (building and lab equipment) and soft component (research capacity, industry collaboration, and start-up incubation), whereas the investment for the building is about USD 14.00 million.

Figure 3: Architecture of Center for Research and Technology Transfer

Figure 4: Center for Research and Technology Transfer under construction

- Under the investment of 2nd Higher Education Improvement Project (HEIP 2), 3 more buildings were approved to construction in which 2 building will be constructed at ITC main campus (construction of complex building and construction of library) and one more building (construction of industrial 4.0) to be constructed at ITC Win-Win Monument campus. The 11th floor complex building was designed to improve access and teaching & learning by increasing classrooms, administrative offices, and laboratories, whereas the 6th floor library is to increase access and improving self-learning and soft skills of students. The buildings are now under detail engineering design and the design was conducted by ITC team. The construction is expected to start from Q1 2026. Total investment for the three buildings costs about USD 19.80 million.

Figure 5: 11th floor complex building at ITC main campus (1)

Figure 6: 11th floor complex building at ITC main campus (2)

Figure 7: 8th floor industrial 4.0 building (1)

Figure 8: 8th floor industrial 4.0 building (2)

4.2.7 Enhancing capacity and infrastructure development of library at ITC

Under the supports by ARES-CCD project, the basic library equipment was operationally enhanced, the catalog management software was migrated and improved from PMB to Koha, capacity building to staffs was conducted on library management system Koha and open access, 205 new books were added into the library system, library website and thesis management system was created.

Activity Plan for 2025-2026:

- Develop the culture of open science among ITC researchers and teachers, support teachers and researchers to publish in open access
- Upgrade library server for institutional repository
- Staff capacity building in Malaysia and Belgium

To supplement the operation and capacity of ITC' s library, new library building will be construction funded by the Higher Education Improvement Project Phase 2 (HEIP 2). 6th-floor library building is under detail design and to be constructed at the end of 2026. The new library will serve as both physical and digital hub and also open access to public. The library will compose of admin office, open access area, private access area, book repairing room, computer rooms, symposium rooms, seminar rooms, multi-media room, and multi-purpose hall. The capacity of the library could accommodate up to 500 students.

Figure 9: 6th floor ITC new library building (1)

Figure 10: 6th floor ITC new library building (2)

4.2.8 Establishment of Cambodian Science and Technology Center (CSTC)

Under the project of Science and Technology Project in Upper Secondary Education (STEP UP), the Cambodian Science and Technology Center (CSTC) is initiated to establish and construction at ITC Win-Win Monument campus. The center is designed to build strong foundation of STEM Education at secondary level which link to ITC's mission and inspire public to engage with science and technology. The center will compose of exhibition and show, physical STEM displays, digital STEM contents, education center for enhancing Continuous Professional Development (CPD) program to higher school STEM teacher, and fabrication workshop to develop STEM experimental instrument/tools at secondary education. The investment of hard infrastructure (building) costs about USD 11.0 million.

The vision of Cambodia Science and Technology Center is to inspire everyone to find joy in learning and become a lifelong learner, knowledgeable of their opportunities and abilities to make positive contributions for their own lives and for the communities around them. The mission of Cambodia Science and Technology Center is to provide opportunities for the public to experience, explore, discover and create, inspired by the advances in science and technology globally, connected with opportunities in Cambodia.

The CSTC building is just completed conceptual design and the detail design is expected to start October 2025. The construction of the center is planned to start in Q4 2026.

Figure 11: Cambodia Science and Technology Center building (Conceptual Design) (1)

Figure 12: Cambodia Science and Technology Center building (Conceptual Design) (2)

4.3 Baseline and projected data of number of students, staffs and labs

The number of students, PhD staff, lab for baseline 2024-2025 and projected 2025-2026 is given in Table 4.

Table 4: Number of students, staffs, and labs for baseline 2024-25 and projected 2025-2026

Faculty	Department/ Option	Baseline Academic Year 2024-2025								
		No. Technician Student	No. Eng. Student	No. Master Student	No. PhD Student	No. Master Staffs*	No. PhD Staffs*	No. Support Staffs	No. Lab (Teaching)	No. Lab (Research)
	Tronc Commun		2517			10	0	2	3	
Faculty of Civil Eng.	GCI	256	657			6	20	7	5	
	Arch		256			5	2			
	Transport		180			2	4			
Faculty of Electrical Eng.	GEE	334	463			23	8	5	8	4
	GTR	45	147			7	6	3	4	3
	GIM	113	368			25	9	5	12	4
	GIC		252			17	1	12	9	2
	AMS		259			6	4	2	2	
Faculty of Chemical and Food Eng.	Food	347	333			23	20	11	6	3
	Chemical		242							0
Faculty of Hydrology and Water Resources Eng.	WRI	27	152			15	19	12	11	2
	WEE		117							2
Faculty of Geo-resources and Geotechnical Eng.	GGG		233			6	14	3	6	2
Graduate School	GS			139	57					
TOTAL		**1122**	**6176**	**139**	**57**	**145**	**107**	**62**	**66**	**22**

Faculty	Department/ Option	Baseline Academic Year 2025-2026								
		No. Technician Student	No. Eng. Student	No. Master Student	No. PhD Student	No. Master Staffs*	No. PhD Staffs*	No. Support Staffs	No. Lab (Teaching)	No. Lab (Research)
	Tronc Commun		2858			10	0	2	3	
Faculty of Civil Eng.	GCI	310	641			7	21	7	6	
	Arch		268			6	3			
	Transport		153			2	4			
Faculty of Electrical Eng.	GEE	340	471			25	8	4	8	4
	GTR	60	159			8	6	4	5	3
	GIM	120	336			26	9	7	16	4
	GIC		255			17	1	11	12	2
	AMS		246			8	5	2	2	
Faculty of Chemical and Food Eng.	Food	350	324			24	20	13	8	3
	Chemical		220							0
Faculty of Hydrology and Water Resources Eng.	WRI	40	142			16	19	12	11	2
	WEE		131							2
Faculty of Geo-resources and Geotechnical Eng.	GGG		225			6	14	3	6	2
Graduate School	GS			150	59					
TOTAL		**1220**	**6429**	**150**	**59**	**155**	**110**	**65**	**77**	**22**

4.4 Pedagogy

Innovative pedagogy for improving Teaching & Learning at ITC has been strengthened and improved every year. The recommended pedagogies are as following:

- Implement Fab-lab (through HEIP project)
- Implement Lab-based education (through JICA project)
- Implement competency-based training
- Implement project-based learning
- Increase hand-on practice in the lab and field
- Introduce e-learning classes (encourage staff to develop more E-Learning courses)

4.5 Quality Assurance

- **Strengthen the internal quality assurance system**
  - Coordinate with relevant departments to organize seminars/workshops related to QA and Teaching& Learning (e.g., Outcome-Based Education, Accreditation Standards, Assessment Methods) for all lecturers four times per year.
  - Develop an action plan for the Internal Quality Assurance (IQA) guideline, including actions to strengthen and develop the capacity of ITC staff.
  - Ensure a cohesive curriculum pathway: from associate's degree, engineering degree, master's degree to Ph.D. degree.

- **Enhance the capacity of internal quality assurance officers**
  - Encourage staff participate in training with Accreditation Committee of Cambodia (ACC), Directorate General of Higher Education (DGHE), and relevant HEIs to enhance capacity in IQA.
  - Participate training towards International Accreditation (e.g. AUN/QA)
  - Regular seminar to be conducted by IQA Office on indicators of IQA National Standard and International Accreditation.

- **Prepare internal assessment mechanisms to monitor and evaluate educational quality**
  - GAR, GIM (2), GCA (2), HRE (2), GGG, GIC, GEE (2), GTR, GTI, AMS) (program level).
  - Conduct an internal assessment of the Institution (institutional level).
  - Conduct student satisfaction surveys twice a year.
  - Intergrade a student grievance mechanism through Pre-CEVU and CEVU twice per year,
  - Conduct regularly tracer study to monitor graduates' employability

- **Applying for ACC accreditation and international recognition**
  - Focus on development of outcome-based education for the Engineer program
  - Selected pilot program for AUN/QA assessment (Program Electronics and Automation

4.6 Promote Research and Innovation

- **Activities/Strategy of Research 2025 - 2026**
  - Strengthen triple-helix collaboration and research partnerships (University, Industry, Government)
  - Increase scientific publication
  - Increase number of external active reviewers and editorial members for Techno-SRJ

- Publish proceeding of 14th Scientific Day and 4th EraGET into Techno-SRJ platform
- Publish special issues of good papers from scientific events into Techno-SRJ platform
- Increase the number of research proposals and projects
- Disseminate the research outputs to society
- Enhance the lab services and short training services
- Organize scientific events

➢ **Capacity building for researchers**

1. Project proposal writing training
2. Introduction to start up and entrepreneurship training
3. Training on IP (patent search, patent filing, licensing)
4. Training on project management

Action Plan 2025 – 2026

➢ **Laboratory Management**

- Organize two trainings on the principle of analytical instruments for research students and researchers at the beginning of the new Semester 1 and 2 (February and August)
- Organize laboratory orientation and exams at least two times per semester.
- Extend laboratory utilization through research collaboration and external service

➢ **Research, Development and Dissemination**

- Prepare 10 research proposals for grant applications from all research units
- Conduct 5 joint research projects with collaborating partners
- Join and organize research dissemination workshops, training, and seminar
- Develop research prototypes

➢ **Toward ACI for Techno-Science Research Journal**

- To organize the workshop on “Seminar Sharing Session on How to Publish on Open Access Journals”.
- Prepare application of Techno-SRJ toward ACI
- Improve Techno-SRJ platform outreach

4.7 Research Projects implementing in 2024-2025

In academic year 2024-2025, 52 research projects in total (Annex 6) have been implementing at ITC from all 5 research units, in which there are 27 new projects are approved and have been conducting their research activities in this facial year (Table 5). By end of 2024, 40 projects were successfully completed.

Table 5: Detail of 27 new research projects implementing in 2024-2025

No.	Name of PI	Sex	Research title	Period	Budget
1	Dr. VONGCHAN Kinnaleth	F	Capacity for Cambodian Energy Efficiency (CapCEE)	2025-2026	552,322
2	Dr. VAI Vannak	M	Python-Based LV Microgrid Planning Strategies: Clustered Topology and PV Hosting Capacity	2024-2025	3,000
3	Dr. CHAN Sarin	M	Training Programme to Promote Low Carbon Buildings in Cambodia	2024-2027	89,970
4	Dr. PHAT Chanvorleak	F	The development of functional beverages with improved nutritional and sensorial properties toward local economic growth through diversifying Cambodia's agriculture products	2025-2029	1,488,000
5	Dr. MITH Hasika	M	Improvement of quality of Kimchi and garlic/ginger in honey	2025	8,000
6	Dr. PHAT Chanvorleak	F	Pesticide Analysis in irrigation water of different rice practices_WAT4CAM	2024-2025	24,000
7	Dr. SRANG Sarot	M	Integrating the Electrification and Smart Mechanisation of Two-Wheel Tractors with Precision Agriculture for Improved Productivity and Sustainability	2024-2029	200,000
8	Dr. SRANG Sarot	M	Development of Two Mobile Robots for Joining a Robocon Competition in 2025	2024-2025	7,000
9	Dr. NGETH Rithea	M	Design and Implementation of Health Monitoring for Older People	2024-2025	5,000
10	Dr. SRANG Sarot	M	Autonomous Land-Leveling Robot Tractor	2024-2025	20,000
11	Mr. CHOU Koksal	M	"Kayvika" Khmer Sign Language Translation	2024-2026	1,500
12	Dr. Kuchvichea KAN	M	Enhanced Durability and Sustainability of Asphalt Concrete through Waste Plastic Recycling	2024-2028	250,000
13	Mrs. AUN Srean	F	Hybrid Coatings For The Photodynamic Inactivation Of Microbial Infections	2024-2027	380,000

No.	Name of PI	Sex	Research title	Period	Budget
14	Mr. Nuth Visal	M	Climate-resilient soil stabilization in cambodia's SUBGRADE: adapting to the challenge of flooding and seasonal variations.	2024-2025	33,000
15	Ms. Sreng Laymey	F	Natural Rubber Latex Powdered Gloves for Medical applications	2024-2025	39,000
16	Dr. SOK Ty	M	SATREPS: development and social implementation of greenhouse gas emission reduction technologies in paddy fields of west Tonle Sap Lake by establishing a large paddy area water management system	2024-2028	250,000
17	Dr. SOK Ty	M	Integrated River Basin Management of the Mekong Basin Tributary for Adaptation to Climate Change	2024-2027	380,000
18	Dr. BUN Saret	M	Addressing Water Scarcity through Groundwater Use: Development of Solar-Powered Groundwater Treatment System for Remote Area of Cambodia	2024-2025	33,000
19	Dr. THENG Vouchlay	F	Development of Eco-Friendly Microplastic Removal Filters from Seawater for Sea Salt Farms in Cambodia	2024-2025	39,000
20	Dr. EANG Khyeam	M	Establishment of Sustainable Groundwater Management Platform in the Lower Mekong Region	2025-2028	499,647
21	Dr. SOK Ty	M	Establishing an Evidence-based National Adaptation Plan (NAP): National Climate Report	2024-2025	60,000
22	Dr. PEN Sytharith	M	Sustaining the shared groundwater resources of the Transboundary Cambodia-Vietnam Mekong River Delta aquifer under climate change impacts through Strategic Gender equality, disability, and social inclusion (GEDSI) tools and suitable Nature-based Solution (SAGA)	2024-2025	5,000
23	Dr. PEN Sytharith	M	Evaluation of Nature-based solutions for the enhancement of urban water security in South-East Asian Cities	2024-2025	8,000

No.	Name of PI	Sex	Research title	Period	Budget
24	Dr. DUONG Ratha	M	Anticipating the inversions of the Tonle Sap river (INVERSAP)	2024-2025	100,000
25	Mr. SOK Kimhuy	M	Research collaboration on sustainable water resources management in Koh Ker heritage site	2024-2025	12,000
26	Mr. SOK Kimhuy	M	Restoration of the Preah Vihear Temple's Gopura V (Phase II)	2024-2025	51,500
27	Dr. PENG Chanthol	F	Mutual learning toward just-in-time information for grassroots climate adaptation in the lower Mekong countries	2024-2026	60,000

4.8 Promote Graduate School 2025-2026

- **Mission of the Graduate School for 2021-2030**
  - Improve and develop ***10 graduate training programs*** in STEM to align with national, regional, and international standards.
  - Educate ***952 graduate students*** to have full potentials and skills in STEM to meet the requirement of the Cambodia's 2030 vision.
- **Strategy of Graduate School**
  - Improve and develop the curriculum of master and doctoral programs.
  - Develop the laboratory, facility and ICT system responding to the master and doctoral training needs.
  - Internationalize the master and doctoral programs via double degree programs and mobility exchanges.
  - Enhance the capacity of administration and teaching staffs.

Action Plan 2025– 2026

- **Program Implementation**
  - Operate 9 thematic Master programs (1 new: Master of Architectural Engineering) and 5 doctoral programs.
  - Increase number of research topics that respond to the societies needed through support from research fund institutions.
  - Increase number of students' publications in journals/conferences
  - Conduct students' satisfaction for courses in Master programs.
  - Continue preparation for AUN-QA for 3 programs (M-WEE, M-ETM, M-DAS)
- **Program development and improvement**
  - Develop the E-learning courses for the master programs M-AIE, M-ECS, and M-DAS. To (1) Align with the policy of CCUN and (2) Broaden the availability of study program pathways through E-learning courses.

- Prepare the curriculum development for a new master program in management of technology.
- Prepare to modify the curriculum of doctoral programs into three themes focusing on: 1) Teaching, 2) Research, and 3) Entrepreneurship. Some course options should be included such as Andragogy and Pedagogy. Research ethics and Integrity needs emphasis. Entrepreneurship focus for doctoral research will align with ITC's missions (Technology Transfer and Start-Ups).

➢ **Internationalization**
- Increase number inbound and outbound exchanges of master students.
- Increase number of staff mobility to abroad
- Increase number of guest lecture from international partners.

➢ **Partnership**
- Enhance collaborations with existing partners: 21 academics institution, 4 development agencies and 4 Government/Private sectors/NGO.
- Increase number of partners via the double degree doctoral program agreement

➢ **Project**
- Implement the EDC-AFD-EU project to support Master and Doctoral program in Energy and Technology Management 2023-2027
- Implement the Erasmus+ project for Master program in Materials and Structural Engineering (M-MSE) 2022-2025 and develop a new joint proposal for M-MSE to strengthen the pathways with distinct specializations: Materials science, Structural design, and Modelling and Characterization.
- Implement the Erasmus+ project “Smart City for ASEAN Learning Network (SCALe)” for micro-course development and integration into relevant master programs.
- Implement AUF project to support Master of Materials and Structural Engineering

➢ **Promotion**
- Create promotional video containing successful showcase of master and doctoral graduates.
- Participate in study fair and other event to promote the master and doctoral programs.
- Improve the webpage of graduate school.

➢ **Tracer study**
- Conduct employment survey for fresh graduate.
- Conduct employment survey for alumni who graduated master’s degree in 2019 (5 years after graduation).

➢ **Capacity building**
- Conduct training on student supervision.
- Conduct training on using Moodle and e-learning.
- Create staff and lecturer e-portfolio.
- Participate in AUN-QA training sessions

4.9 Promote University-Industry Linkage (UIL) 2025-2026

- **Vision**

From To be a driving force in university-industry collaboration, fostering excellence in education, research, and services that contribute to Cambodia's sustainable development and global competitiveness.

- **Mission**

From The University-Industry Linkage Office (UIL) at ITC is committed to fostering strong partnerships between the university and industry by:

(1) Facilitating research collaborations, technology transfer, and industrial training opportunities.
(2) Enhancing the employability of students and faculty engagement through internships, joint projects, and consultancy.
(3) Promoting entrepreneurship and commercialization of university research and innovations.
(4) Bridging the gap between academic knowledge and industry needs to support national and global economic development.

Table 6: UIL Key Result Indicators: 2024-2025

No	Result Indicators	Responsible	Budget Support	Remark
1	**Standard Operation Manual of ITC Services & Internal Financial Rule Guideline** – Drafted and expected launch in 2026.	- Dr. Bun Long - UIL main office - All faculties/departments - RIC	ITC Budget (from services)	Draft completed, pending stakeholder review.
2	**Data Management System for UIL** – Platform development for ITC services (quotation, invoice, and receipt generating systems). **Updating UIL Website** – To enhance the visual appeal of the UIL website	- UIL main office - All faculties/departments - RIC	ARES-CCD Project (R1)	Under development, expected completion by June 2025, launch in January 2026.
3	**Industry Visits for Collaboration** – Discuss industry needs, promote ITC services, and explore partnerships.	- UIL main office - All faculties/departments - RIC	ITC Budget and other sources	**12 industries visited** and **50 industries visited ITC** (June 2024 - March 2025)
4	**Annual ITC-Industries Consortium Meeting** – Gather industry feedback for ITC improvement. The event gathered over **30 companies and academic leaders** to discuss strategies for enhancing Cambodia's industrial and technological sectors.	- All relevant personnel	S4C Project	New initiatives, including an **Industry Advisory Board and an Apprenticeship Program**, were introduced to bridge the gap between academia and the job market, fostering long-term partnerships and skills development.

5	**Intellectual Property (IP) Policy for ITC** – Develop and formalize ITC's IP framework.	- Dr. SANG Davin - Dr. YIN Molika - RIC - All faculties/departments	CAPFISH, LBE, and ERIA projects	Draft completed, pending stakeholder review, expected launch in 2026.
6	**Brochures and catalog of all type of services including testing, training, equipment rental, and consultancy from 9 faculties/departments** – Developed and promoted in our platform (UIL Website, Telegram Channel and Facebook Page)	- UIL main office - All faculties/departments	ITC Budget (from services)	Developed and promoted, keep updating. **Available in soft-copy only for the training catalog, we need budget to produce hard-copy.*
7	**Legal Documents (Khmer & English):** 1. **Intellectual Property Assignment Agreement** 2. **Consulting or Training Service Contract** – Developed with financial support.	- UIL main office - All faculties/departments - RIC	ARES-CCD Project (R2)	Completed, waiting for dissemination workshop in 2025.
8	**Services & Industry Engagement:** • Number of MoUs/MoAs signed with industry partners • Number of companies engaging in joint projects, consultancy, training, or sponsorships with ITC (60th ITC Anniversary) Revenue generated from lab testing, training, consultancy, and renting services.	- UIL main office - All faculties/departments - RIC	N/A	**MoUs & MoAs: 9** (June 2024 - March 2025) **Services: 19 + 8 sponsorships** (June 2024 - March 2025) **Revenue: 2024 revenue doubled compared to 2023.**

Perspectives of UIL for 2025-2026

Table 7: Proposed main activities/outputs of UIL's perspective 2025-2026

No.	Result indicators for UIL	Timeframe	Budget	Strategy
1	Develop marketing promotion materials related to ITC's services (e.g., posters for each available training courses, videos, training catalogs).	2025-2026 (ongoing with each short course launch)	- ITC Budget (from services) and others	Meet and discuss with stakeholders, collaborate with marketing professionals for designs. **Need budget to produce hard-copy for the training catalog.*
2	Visit **10 industries** to discuss industry needs, promote ITC services, and explore potential collaborations.	2025-2026	- ITC Budget (from services) and others	Contact potential companies, set up visits, and engage industry representatives.

No.	Result indicators for UIL	Timeframe	Budget	Strategy
3	Organize promotion events to promote research collaboration linked with industry, focusing on product prototypes, start-ups, and commercialization.	April 2025	- ARES-CCD Project (R1)	• Meet and discuss with stakeholders, leverage the Cambodia Chamber of Commerce connections to reach investors.
4	Organize annual ITC-Industries consortium meeting to collect feedback from industries for ITC improvement, establish an **Industry Advisory Board**, and strengthen internships and cooperative education programs.	December 2025	INACON, S4C	Organize an attractive consortium meeting, work with projects like INACON/S4C to engage companies, gather feedback from industrial partners.
5	Improve consultancy services by cooperating with a consultancy agency to promote ITC's expert solutions to businesses.	Jun- Dec 2025	- ITC Budget (from services) and others	• Meet with stakeholders, develop partnerships with consultancy agencies, and promote ITC's consultancy services.

4.10 Promote Library and Cambodian Cyber University Network

- **STEM Library**

Perspective of STEM Library in two academic years 2025 – 2027

Table 8: Proposed main activities/outputs of STEM Library's perspective 2025 – 2027

No.	Target outputs for Library	Activities	Funding support
1	Develop the culture of open science among ITC researchers and teachers, support teachers and researchers to publish in open access	1.1 E-resource subscription 1.2 Strengthening relationship between librarians and teachers 1.3 Building staff competency (south-south training) 1.4 Create complete digital library platform 1.5 Create Open Access guideline, tutorial and policy. 1.6 Building institutional repository	- ARES-CCD - Others
2	Build the institutional repository to preserve and distribute the knowledge	2.1 Purchase and Develop institutional repository (IR) system 2.2 Create and IR policy in collaboration with ITC authority 2.3 Create IR standard input rules and do a pilot with departments to insert the data 2.4 Training from expert on how to use IR system	- ARES-CCD - Others

No.	Target outputs for Library	Activities	Funding support
		2.5 Introduce IR to teachers, researchers, students and other HEIs	
3	Physical and digital infrastructure development	3.1 Design and construct 6-floor building library at ITC main campus 3.2 Enhance self-learning and long-life learning for students (hard skills and soft skills) 3.3 Modern physical infrastructure and upgrade digital infrastructure 3.4 Robust ITC resources and open-access digital content 3.5 Promote collaboration with local and global libraries 3.6 Enhance access for all users	- World Bank - HEIP2

- **Cambodian Cyber University Network (CCUN)**

In 2022, ITC supports the Directorate General of Higher Education of the Ministry of Education, Youth and Sport (DGHE/MoEYS) to prepare the concept note for the CCUN project. This project aims to improve higher education quality by using online and digital Teaching and Learning (T&L) materials. The project will connect the Higher Education Institutes (HEIs) in Cambodia through a common network infrastructure and LMS (Moodle). And through this common infrastructure and platform, Member Institutes (MIs) can share their digital content among each other's. The project will also promote the credit transfer among MIs and allow them to connect to global cyber universities network.

In the pilot phase of this project, the CCUN involves six HEIs as MIs

1) Institute of Technology of Cambodia (ITC)
2) Royal University of Phnom Penh (RUPP)
3) Royal University of Agriculture (RUA)
4) National University of Battambang (NUBB)
5) Svay Rieng University (SRU)
6) University of Heng Samrin Tbong Khmum (UHST)

With the experience ITC gained from ACU project, ITC will play a role as technical lead and support other five HEIs to development their e-learning activities.

On June 25th, 2024, CCUN was officially launched under the high presidency of His Excellency Samdech Maha Bovorathei Hun Manet, Prime Minister of the Kingdom of Cambodia, and His Excellency Dr. Hang Chuon Naron, Deputy Prime Minister and Minister of the Ministry of Education, Youth and Sport, with 12 member universities. By the end of 2024, CCUN has total 18 member universities joining the network. The new members are listed as follow:

1) National University of Cheasim Kamchaymear
2) University of Kratie
3) Royal School of Administration
4) Phnom Penh Teacher Education College
5) Battambang Teacher Education College / Regional Teacher Training Center
6) National University of Management
7) Royal University of Law And Economics
8) Angkor University
9) Phnom Penh international university
10) University of Management and Economics
11) Cambodian University for Specialties
12) University of South-East Asia

Action Plan 2025– 2026

- Convert 20 courses in ITC into e-learning (focuses on master program)
- Create / convert 3 common courses into e-learning (the number is subjected to the discussion among CCUN's member) to use among CCUN's member
- Support CCUN's members in development of e-learning activities through capacity building, support and monitoring mission
- Operate all ITC's 340+ courses (e-learning and non e-learning) on CCUN's platform
- Partnership with UNESCO-ICHEI
- Organize a seminar (June or July 2025) for ITC staff in using AI to support Teaching and Learning, School Administration, and Research
- Organize a seminar (October or November 2025) for CCUN's members in using AI to support Teaching and Learning, School Administration, and Research

4.11 Promotion of Soft Skills

Soft skill is an essential course which promotes personal attributions that sit outside the professional qualifications and work experience. Soft skills will be mainstreamed into technician and engineering program at ITC for building students' soft capacities. Among the other skills, Team Work is one of the principle skills to be considered. 2 Trainings on Teamwork will be given to ITC students annually.

Teamwork involves building relationships and working with other people using a number of important skills and habits:

- Working cooperatively
- Contributing to groups with ideas, suggestions, and effort
- Communication (both giving and receiving)
- Sense of responsibility
- Healthy respect for different opinions, customs, and individual preferences
- Ability to participate in group decision-making

5 CHALLENGES

- Managing capacity building projects and collaborative projects requires more time and effort which need more capable administrative staffs to help.
- Number of staffs to support all ITC operation.
- Low number of available scholarships and research grants for research students, making it difficult to promote research activities and to attract outstanding students to work and study at ITC.
- Research facilities such as laboratories are not advance enough for research link with industries for product development to meet market needs.

ANNEXES

Annex 1:

Detail of proposed modification of Electronics and Automation Engineering Program

1. BACKGROUND

At the national level, the Royal Government of Cambodia aims to reach a country with a high middle-income economy by 2030 and a high-income economy by 2050. Human resource development is one of the pillars of the Pentagonal Strategy Phase 1 (PS1) intending to strengthen the quality of education, science, and technology. Cambodia's recent economic success (average 7.6% growth for the last two decades) has been built largely on the expansion of relatively low technology, low wage/skill production in industries such as textiles, apparel, and basic electronics, and sustained by a steady flow of foreign investment. To remain competitive, Cambodia must address an increasingly serious human resource constraint in the form of rising shortages in Science, Technology, Engineering, and Mathematics (STEM) produced by the universities. Improvement of higher education in STEM will produce highly skilled graduates who can fill leadership roles in Cambodia's technological transformation.

As cited in the 10-year strategy of ITC, program modernisation is one of the priority missions to support fast-changing growth and to fulfill the requirement of new skills in the market. Department of Electrical and Energy Engineering (GEE), one of the oldest departments at ITC, currently offers four programs which are:

1. Electronics and Automation (Engineering Program)
2. Electrical Energy (Engineering Program)
3. Installation and maintenance of mechatronics (Associate Degree Program)
4. Installation and maintenance power and control system in building (Associate Degree Program)

2. Proposed Curriculum Modifications of Electronics and Automation

For the academic year 2025-2026, the modifications to the Electronics and Automation Engineering program curriculum. These changes include course shifts between semesters and credit adjustments to balance course loads. The proposed modifications are summarized in Table 1.

Table 1: Summary of Proposed Curriculum Modifications (2025-2026)

Course	Current Situation	Proposed Modification
Analog Electronic (C:16; TD:16; TP:16)	3rd Semester 1	Combine with Analog filter and named Fundamental of Electronics (C:32; TD:16; TP:16)
Analog Filter (C:16; TD:0; TP:16)	3rd Semester 1	Combine with Analog Electronics and named Fundamental of Electronics
Mastering skills by using IA Tool	New course	New course for 3rd Year semester 1 (C:16; TD:0; TP:0)

3. Updated Curriculum for Electronics and Automation Engineering Program

The revised curriculum for the 2025-2026 academic year is detailed below.

3rd Year-I3GEE

	Subject	Code	Instructor	C	TD	TP	Credit
S1	French	GEEI31FRE	English section	0	32	0	1
	English	GEEI31ENG	French Section	0	32	0	1
	Computer Programming	GEEI31COP	Bun Menghorng	16	0	32	2
	Signal and Systems	GEEI31SAS	Seng Theara	16	0	32	2
	Statistics	GEEI31STA	Pok Ponna	16	32	0	2
	Electrical Circuit	GEEI31ELC	Lim Vanthien	32	16	16	3
	Fundamental Electronics	GEEI31FEL	Lim Phing	32	32	32	4
	Mastering skills by using AI tools	GEEI31MSA	Chou Koksal	0	0	32	2
S2	French	GEEI32FRE	English section	0	32	0	1
	English	GEEI32ENG	French Section	0	32	0	1
	Feedback control systems	GEEI32FCS	IT Chivorn	16	16	16	2
	Numerical Method and Optimization	GEEI32NMO	Min Taingliv	16	16	16	2
	Digital Electronics	GEEI32DIE	Kim Bunthern	32	0	32	3
	Microprocessor Architecture	GEEI32MIA	Seng Theara	16	16	16	2
	Communication and Interpersonal Relations	GEEI32CIR	Am Sokchea	0	32	0	1
	Electrical Machine	GEEI32ELM	Sean Piseth	32	16	16	3
Total				**224**	**304**	**240**	**32**

4th Year-I4EA

	Subject	Code	Instructor	C	TD	TP	Credit
S1	English	GEEI41ENG	English section	0	32	0	1
	French	GEEI41FRE	French Section	0	32	0	1
	Power Electronics	GEEI41PEL	Am Sok Chea	32	16	32	3.5
	Research Methodology	GEEI41REM	Am Sok Chea	0	32	0	1
	Motor Drive	GEEI41MOD	Chrin Phok	32	16	32	3
	Modern Control Systems	GEEI41MCS	IT Chivorn	16	16	16	3
	Industrial Network Protocol	GEEI41INP	Kim Bunthern	32	0	32	3
	Internship Report	GEEI41INP	Chrin Phok	0	0	16	2
	Student Project Part I	GEEI41SPP	Chou Koksal	0	0	32	1
S2	French	GEEI42FRE	English section	0	32	0	1
	English	GEEI42ENG	French Section	0	32	0	1
	Student Project Part II	GEEI42SPP	Chou Koksal	0	0	32	1
	Sensor and Actuators	GEEI42SAA	Sum Rithea	32	0	32	3
	Programmable Logic Controller	GEEI42PLC	Chan Tola	32	0	32	3
	Electronic Circuit Design and Manufacturing	GEEI42ECD	Seng Theara	32	0	32	3
	Digital Circuit Design	GEEI42DCD		32	0	32	3
Total				**240**	**208**	**320**	**33**

5th Year-I5EA

	Subject	Code	Instructor	C	TD	TP	Credit
S1	English for Work	GEEI51ENG	English section	0	32	0	1
	Module d'Insertion Profesionnel	GEEI51MIP	French Section	0	32	0	1
	Project Management	GEEI51PRM	Chheng Monyvathna	32	0	0	2
	Student Project Part III	GEEI51SPP	Chou Koksal	0	0	64	2

	Embedded Electronics	GEEI51EME	Lim Phing	32	0	32	3
	Industrial Automation	GEEI51INA	Kim Bunthern	32	0	32	3
	Technopreneurship	GEEI51TEC	Chou Koksal	16	0	0	1
	Extra-low Voltage Design	GEEI51ELV	Chan Tola	32	0	32	3
	Work-life and Social Psychology	GEEI51WSP	Chan Tola	16	0	0	1
S2	Final Year Internship	GEEI52FYI					9
Total				**160**	**64**	**160**	**26**

Annex 2:

Detail of Proposed Modifications to the Electrical Energy Engineering Program

1. Background

At the national level, the Royal Government of Cambodia aims to reach a country with a high middle-income economy by 2030 and a high-income economy by 2050. Human resource development is one of the pillars of the Pentagonal Strategy Phase 1 (PS1) intending to strengthen the quality of education, science, and technology. Cambodia's recent economic success (average 7.6% growth for the last two decades) has been built largely on the expansion of relatively low technology, low wage/skill production in industries such as textiles, apparel, and basic electronics, and sustained by a steady flow of foreign investment. To remain competitive, Cambodia must address an increasingly serious human resource constraint in the form of rising shortages in Science, Technology, Engineering, and Mathematics (STEM) produced by the universities. Improvement of higher education in STEM will produce highly skilled graduates who can fill leadership roles in Cambodia's technological transformation.

As cited in the 10-year strategy of ITC, programme modernisation is one of the priority missions to support fast-changing growth and to fulfill the requirement of new skills in the market. Department of Electrical and Energy Engineering (GEE), one of the oldest departments at ITC, currently offers four programmes which are:

Engineering level: 1. Electronics and Automation
2. Electrical Energy

Technician level: 1. Installation and maintenance of mechatronics
2. Installation and maintenance power and control system in building

2. Proposed Curriculum Modifications of Electrical Energy

For the academic year 2025-2026, the modifications to the ***Electrical Energy Engineering program*** curriculum. These changes include course shifts between semesters and credit adjustments to balance course loads. The proposed modifications are summarized in Table 1.

Table 1: Summary of Proposed Curriculum Modifications (2025-2026)

Course	Current Situation	Proposed Modification
Energy Conversion (C:32 ; TD:16 ;TP:32)	4th Year Smester 1	Move to 4th Year Semester II (C:32 ; TD:16 ;TP:32)
Power System Analysis and Optimization (C:32 ; TD:16 ;TP:32)	4th Year Smester 1I	Move to 4th Year Semester I (C:32 ; TD:16 ;TP:32)
Analog Electronic (C:16 ; TD:16 ;TP:16)	3rd Year Smester 1	Combine with Analog filter and named Fundamental of Electronics (C:32 ; TD:16 ;TP:16)
Analog Filter (C:16 ; TD:0 ;TP:16)	3rd Year Smester 1	Combine with Analog Electronics and named Fundamental of Electronics

		(C:32 ; TD:16 ;TP:16)
Mastering skills by using IA Tool	Not previously included	New course for 3rd Year semester 1 (C:16 ; TD:0 ;TP:0)

3. Updated Curriculum for Electrical Energy Engineering Program

The revised curriculum of EE program for the 2025-2026 academic year is detailed below.

3rd Year-I3GEE

	Subject	Code	Instructor	C	TD	TP	Credit
S1	French	GEEI31FRE	English section	0	32	0	1
	English	GEEI31ENG	French Section	0	32	0	1
	Computer Programming	GEEI31COP	Bun Menghorng	16	0	32	2
	Signal and Systems	GEEI31SAS	Seng Theara	16	0	32	2
	Statistics	GEEI31STA	Pok Ponna	16	32	0	2
	Electrical Circuit	GEEI31ELC	Lim Vanthien	32	16	16	3
	Fundamental Electronics	GEEI31FEL	Lim Phing	32	32	32	4
	Mastering skills by using AI tools	GEEI31MSA	Chou Koksal	0	0	32	2
S2	French	GEEI32FRE	English section	0	32	0	1
	English	GEEI32ENG	French Section	0	32	0	1
	Feedback control systems	GEEI32FCS	IT Chivorn	16	16	16	2
	Numerical Method and Optimization	GEEI32NMO	Min Taingliv	16	16	16	2
	Digital Electronics	GEEI32DIE	Kim Bunthern	32	0	32	3
	Microprocessor Architecture	GEEI32MIA	Seng Theara	16	16	16	2
	Communication and Interpersonal Relations	GEEI32CIR	Am Sokchea	0	32	0	1
	Electrical Machine	GEEI32ELM	Sean Piseth	32	16	16	3
Total				**224**	**304**	**240**	**32**

4th Year-I4EE

	Subject	Code	Instructor	C	TD	TP	Credit
S1	English	GEEI41ENG	English section	0	32	0	1
	French	GEEI41FRE	French Section	0	32	0	1
	Engineering Economics	GEEI41ENE	Sean Piseth	16	16	32	2.5
	Internship Report	GEEI41INR	Vai Vannak	0	0	16	2
	Power Electronics	GEEI41POE	Am Sokchea	32	16	32	3.5
	Power System Analysis and Optimization	GEEI41PSA	Vai Vannak	32	16	32	3.5
	Research Methodology	GEEI41REM	Am Sokchea	32	0	0	2
	Student Project Part I	GEEI41STP	Chou Koksal	0	0	32	1
S2	French	GEEI42FRE	English section	0	32	0	1
	English	GEEI42ENG	French Section	0	32	0	1
	Electrical System Design	GEEI42ESD	Chheng Monyvathna	32	16	32	3.5
	Energy Conversion	GEEI42ENC	Vai Vannak	32	16	32	3.5
	Power Electronics for Energy Conversion	GEEI42PEE	Khorn Kimsrornn	32	0	32	3
	Power System Architecture and Protection	GEEI42PSP	Suk Sievlong	32	16	32	3.5
	Student Project Part II	GEEI42STP	Chhlonh Chhith	0	0	32	2
Total				**240**	**224**	**304**	**34**

5th Year-I5EE

	Subject	Code	Instructor	C	TD	TP	Credit
S1	English for Work	GEEI51ENG	English section	0	32	0	1
	Module d'Insertion Profesionnel	GEEI51MIP	French Section	0	32	0	1
	Project Management	GEEI51PRM	Chheng Monyvathna	32	0	0	2
	Student Project Part III	GEEI51SPP	Chhlonh Chhith	0	0	32	2
	Energy Efficiency and Conservation	GEEI51EEC	Khorn Kimsrornn	32	16	32	3.5
	Power System Quality and Reliability	GEEI51PSR	Chhlonh Chhith	32	16	32	3.5
	Technologies for Sustainable Energy	GEEI51TSE	Vai Vannak	32	0	32	3
	Technopreneurship	GEEI51TES	Chou Koksal	16	0	0	1
	Work-life and Social Psychology	GEEI51WSP	Chan Tola	16	0	0	1
S2	Final Year Internship	GEEI52FYI					9
Total				**160**	**96**	**128**	**27**

Annex 3:

Detail of proposed modification of Transport and Infrastructure Engineering program of Faculty of Civil Engineering

1. Background

Transport sector plays a very important role for the overall economic growth of a society. It integrates mobility of people and goods at both domestic and international levels (e.g., transport by roads, railway, maritime, river, and air transport networks). The continuous population growth and their daily activities pose significant challenges to the development of transport systems and infrastructures in many countries, including Cambodia. Particularly, the number of qualified people with specialization in the transport and infrastructure related fields remains quite limited to respond to Cambodia's development. This is due to the fact that there is very little educational training program in these fields. Certain existing courses related to buildings and public works are often included in civil engineering program.

2. Name of this Program

- Name in French: Génie des Transports et des Infrastructures
- Name in English: Transport and Infrastructure Engineering
- Name in Khmer: ដេប៉ាតឺម៉ង់ទេពកោសល្យហេដ្ឋារចនាសម្ព័ន្ធ និងដឹកជញ្ជូន

3. Objective of this Program

This program was launched in 2022, for the first time in Cambodia, to educate more specialists and qualified engineers in respond to needed human resources in the fields of transport and infrastructure engineering. It allows students to acquire specific technical skills such as the study on road traffic, the design of construction plans, planning, construction techniques, maintenance and repair of infrastructure, management of goods flows, etc. After their studies, students can work either in design offices, on construction sites, or in administration responsible for different tasks related to transport and logistics and with different responsibilities. They also have the opportunity to continue their studies at higher degrees, including master and doctoral degrees.

4. Proposed Updated Curriculum of this Program

In response to the current job markets and digital society transformation, the curriculum of this program “Transport and Infrastructure Engineering” should be updated accordingly. We propose to revise three courses as shown in Table 1. Table 2 shows the full curriculum of Transport and Infrastructure Engineering program at Institute of Technology of Cambodia, after this update.

Table 1: Proposed Updated Courses in the Transport and Infrastructure Engineering Program

No.	Year/ Semester	Previous Course	Revised Course	Descriptions
1	GTI-I3-S2	Traffic Management and Modeling	Traffic Engineering, Management, and Simulation	We slightly revise this course name to cover traffic engineering aspects, including traffic characteristics, issues, simulation, and management; while keeping the same teaching hours (i.e., Lecture (C) of 32 hours or 2 credits)
2	GTI-I3-S2	Transport Systems of Freights and Traveler	Transport Modeling and Planning	We are replacing the previous course with a revised one to provide students with a strong foundation in transport planning. The current course overlaps with other subjects, while the existing curriculum lacks essential topics in transport planning, particularly macro-scale transport modeling. This new course is designed to introduce students to transportation demand modeling and its interrelationship with land use. It will equip them with the necessary skills to forecast future transportation demand and develop transport master plans. Additionally, students will gain hands-on experience with macro-simulation software such as STRADA or PTV VISUM, enhancing their ability to analyze and plan large-scale transportation systems effectively.
3	GTI-I5-S1	Railways	Railways	Based on feedbacks from students, this course requires additional 16 hours of Exercises (TD) for calculation in Railway engineering and design.

Table 2: Updated Curriculum of Transport and Infrastructure Engineering Program

No.	Course Name	C	TD	TP	Credit
GTI-I3-S1					
1	English			32	1
2	French			64	2
3	C.A.D. 1 (AutoCAD)	16		32	2
4	Strength of Materials 1	16	32		2
5	Statistics	32	32		3
6	Surveying	32		32	3
7	Choice of Transport Infrastructures and Sustainability	16			1
8	Life Cycle Analysis	16			1
9	Transport Economies	16			1
10	Fundamental Notions of Logistics	16			1
	Sub-total	**160**	**64**	**160**	**17**
GTI-I3-S2					
1	English			64	2
2	French			32	1
3	Geology	16			1
4	Hydrology	32			2
5	Construction Materials (concrete)	16		16	1.5
6	Strength of Materials 2	16	32		2
7	Transport Engineering	32			2
8	Traffic Management and Modelling Traffic Engineering and Management	32			2
9	Transport Systems of Freights and Travelers Transport Modeling and Planning	16 32	16		1.5 2

10	Cross-Border and Road Transport	16	16		1.5
11	Management of supply chains	16	16		1.5
12	Final year internship				2
	Sub-total	**208**	**64**	**112**	**20.5**
GTI-I4-S1					
1	English			32	1
2	French			32	1
3	Structural analysis for construction and public works 1	32			2
4	Reinforced concrete	32	32		3
5	Steel design and construction	16	32		2
6	Soil mechanics 1	32	16	16	3
7	Road design 1	48			3
8	Urban drainage system	32			2
9	Air transport	32			2
	Sub-total	**224**	**80**	**80**	**19**
GTI-I4-S2					
1	English			32	1
2	French			32	1
3	Structural analysis for construction and public works 2	16	32		2
4	Pre-stressed concrete	16	32		2
5	Soil mechanics 2	16	32		2
6	Road design 2	16	16	16	2
7	Site management	32			2
8	C.A.D. 2 (Civil 3D)	16			1
9	Maritime ports	16	32		2
10	Digital Technologies for Transport and Infrastructure	32			2

	Sub-total	**160**	**144**	**80**	**17**
GTI-I5-S1					
1	English			32	1
2	French			32	1
3	Calculation of structures (Plaxis 2D)	16	32		2
4	Laws	32			2
5	Marketing	16			1
6	Cost and quantity estimation	32			2
7	Planning	16	16		1.5
8	Bridge design	48	32		4
9	Railways	32	16		2
10	Underground structures	16	16		1.5
	Sub-total	**208**	**112**	**64**	**18.5**
GTI-I5-S2					
1	Final year internship				9
	Sub-total	**0**	**0**	**0**	**9**
	Total	**960**	**464**	**496**	**101**
		C	**TD**	**TP**	**Credit**

Note: C: Lecture (1 credit = 16 hours); TD: Exercise (1 credit = 32 hours); TP: Practice (1 credit = 32 hours)

Annex 4:

Detail of proposed modification of Data Science program in the Department of Applied Mathematics and Statistics, Faculty of Electrical Engineering

1. Background

The Data Science program at the Institute of Technology of Cambodia, established in 2021 concurrently with the Department of Applied Mathematics and Statistics, has experienced remarkable growth and popularity. This program was designed to address the burgeoning demand for skilled data scientists in Cambodia and the wider region, providing a robust foundation in mathematical and statistical principles alongside practical applications in data analysis, machine learning, and artificial intelligence.

Since its inception, the field of data science has rapidly evolved, driven by technological advancements and the increasing availability of data. Emerging trends such as deep learning, generative AI, and the expanding applications of data science in specialized domains necessitate a continuous reassessment and refinement of our curriculum. To ensure our graduates remain at the forefront of this dynamic field, we have undertaken a comprehensive review and modification of the Data Science program.

This revision is driven by several key factors. Firstly, we aim to incorporate the latest advancements in data science methodologies and technologies, ensuring students are equipped with cutting-edge skills. Secondly, we seek to strengthen the program's focus on practical application and industry relevance, enhancing students' ability to solve real-world problems. Thirdly, we are integrating a more flexible and adaptable curriculum structure, allowing students to tailor their learning paths to specific areas of interest within data science. Finally, we are enhancing the program's emphasis on ethical considerations and responsible data practices, preparing students to navigate the complex social and ethical dimensions of data science.

By implementing these modifications, we are confident that the Data Science program will continue to produce highly skilled and adaptable graduates who are well-prepared to contribute to the advancement of data-driven innovation in Cambodia and beyond.

2. Propose modification of the curriculum of data science program

For the upcoming academic year, the program of Data Science requested to modify 7 courses in total, in which 4 courses modified names, 1 course is moved to semester 2, 1 course is modified the duration, and 1 course is a new course.

Table 1: Summary of proposed modification of 7 courses in Data Science Program

Gr	No.	Name of course	Current Situation				New Proposal			
			C	TD	TP	Credit	C	TD	TP	Credit
I3AMS-S1	1	Statistics	16	32	0	2	0	0	32	1
	2	Object-Oriented Programming	16	0	32	2	0	0	32	1

	3	Mathematical Modeling	16	32	0	2	Move to Year 3, Semester 2			
	4	Computer Programming in Data Science (Modified name to Programming for Data Science)	Move from Year 3, Semester 2				16	32	0	2
	5	Introduction to Data Science	16	0	32	2	48	0	0	3
	6	Discrete Mathematics	32	0	0	2	16	0	32	2
	7	Optimization	32	32	0	3	32	32	0	3
	8	French	0	0	64	2	0	0	64	2
	9	English	0	0	32	1	0	0	32	1
I3AMS-S2	10	Numerical Analysis	32	0	32	3	32	0	32	3
	11	Introduction to Machine Learning	32	0	32	3	32	0	32	3
	12	Database	16	16	16	2	16	16	16	2
	13	Mathematical Modeling	Move from Year 3, Semester 1				16	32	0	2
	14	Computer Programming in Data Science (Modified name to Programming for Data Science)	16	0	32	2	Move to Year 3, Semester 1			
	15	Introduction to Networks	0	0	32	1	0	0	32	1
	16	Minor project modified name to Mini Project	0	0	32	1	0	0	32	1
	17	French	0	0	32	1	0	0	32	1
	18	English	0	0	64	2	0	0	64	2
I4AMS-S1	19	Graph Theory	32	0	32	3	32	0	32	3
	20	Artificial Intelligence	32	0	32	3	32	0	32	3
	21	Statistical Models	32	0	32	3	32	0	32	3

	22	Data Ethics and Privacy (Modified credit)	32	0	32	3	32	0	0	2
	23	Research Methodology	New				32	0	0	2
	24	Operating Systems	32	16	16	3	32	16	16	3
	25	French	0	0	32	1	0	0	32	1
	26	English	0	0	32	1	0	0	32	1
I4AMS-S2	27	Economics for Engineers	32	0	0	2	32	0	0	2
	28	Introduction to Parallel and Distributed Programming	32	0	32	3	32	0	32	3
	29	Probabilistic Graphical Models	32	16	16	3	32	16	16	3
	30	Data Visualization	32	0	32	3	32	0	32	3
	31	Large-scale Distributed System (Modified name to Data Engineering)	32	0	16	2.5	32	0	16	2.5
	32	Database Design and Administration	32	0	16	2.5	32	0	16	2.5
	33	French	0	0	32	1	0	0	32	1
	34	English	0	0	32	1	0	0	32	1
I5AMS-S1	35	Internship Report	0	0	0	3	0	0	0	3
	36	Project Management	32	0	0	2	32	0	0	2
	37	Programming for Data Science (Modified name to Advanced Programming for Data Science)	32	0	32	3	32	0	32	3
	38	Information Retrieval Web Analytics	32	0	32	3	32	0	32	3
	39	Exploratory Data Analysis and Unsupervised Learning	16	16	16	2	16	16	16	2

	40	Time Series Analysis and Forecasting	32	16	16	3	32	16	16	3
	41	Natural Language Processing	16	0	32	2	16	0	32	2
	42	French	0	0	32	1	0	0	32	1
	43	English	0	0	32	1	0	0	32	1

3. Curriculum of the modified program

This curriculum is designed for an engineering degree that illustrates the whole three years program of Data Science from 3rd -year to 5th – year.

The curriculum of the Data Science Program in the academic year 2025 -2026 is shown below:

Table 2: Curriculum for 3rd year (I3) semester 1:

No.	Name of subject	Code	Instructor	Cours	TD	TP	Total	Credit
1	Statistics	AMSI31STA		32	0	32	64	3
2	Object-Oriented Programming	AMSI31OOP		32	0	32	64	3
3	Programming for Data Science	AMSI31PDS		16	16	16	48	2
4	Introduction to Data Science	AMSI31IDS		16	0	32	48	2
5	Discrete Mathematics	AMSI31DIS		0	0	32	32	1
6	Optimization	AMSI31OPT		0	0	32	32	1
7	French	AMSI31FRA		0	0	32	32	1
8	English	AMSI31ANG		0	0	64	64	2
Total for 1st semester, Year 3				**96**	**16**	**272**	**384**	**15**

Table 3: Curriculum for 3rd year (I3) semester 2:

No.	Name of subject	Code	Instructor	Cours	TD	TP	Total	Credit
1	Numerical Analysis	AMSI32NUM		32	0	32	64	3
2	Introduction to Machine Learning	AMSI32IML		32	0	32	64	3
3	Database	AMSI32DAT		32	0	32	64	3
4	Mathematical Modeling	AMSI32MAM		32	0	0	32	2
5	Introduction to Networks	AMSI32INN		32	0	0	32	2
6	Mini project	AMSI32MPR		32	16	16	64	3
7	French	AMSI32FRA		0	0	32	32	1
8	English	AMSI32ANG		0	0	32	32	1
Total for 2nd semester, Year 3				**192**	**16**	**176**	**384**	**18**

Table 4: Curriculum for 4th year (I4) semester 1:

No.	Name of subject	Code	Instructor	Cours	TD	TP	Total	Credit
1	Graph Theory	AMSI41GTH		32	0	32	64	**3**
2	Artificial Intelligence	AMSI41AIN		32	0	32	64	**3**
3	Statistical Models	AMSI41STM		32	0	32	64	**3**
4	Data Ethics and Privacy	AMSI41EDP		32	0	0	32	**2**
5	Research Methodology	AMSI41REM		32	0	0	32	**2**
6	Operating Systems	AMSI41OSY		32	16	16	64	**3**
7	French	AMSI41FRA		0	0	32	32	**1**
8	English	AMSI41ANG		0	0	32	32	**1**
Total for 1st semester, Year 4				**192**	**16**	**176**	**384**	**18**

Table 5: Curriculum for 4th year (I4) semester 2:

No.	Name of subject	Code	Instructor	Cours	TD	TP	Total	Credit
1	Economics for Engineers	AMSI42ECO		32	0	0	32	**2**
2	Introduction to Parallel and Distributed Programming	AMSI42IPD		32	0	32	64	**3**
3	Probabilistic Graphical Models	AMSI42PGM		32	16	16	64	**3**
4	Data Visualization	AMSI52DVI		32	0	32	64	**3**
5	Data Engineering	AMSI42DAE		32	0	16	48	**2.5**
6	Database Design and Administration	AMSI42DDA		32	0	16	48	**2.5**
7	French	AMSI42FRA		0	0	32	32	**1**
8	English	AMSI42ANG		0	0	32	32	**1**
Total for 2nd semester, Year 4				**192**	**16**	**176**	**384**	**18**

Table 6: Curriculum for 5th year (I5) semester 1:

No.	Name of subject	Code	Instructor	Cours	TD	TP	Total	Credit
1	Internship Report	AMSI51INT		0	0	0	0	**3**
2	Project Management	AMSI51PMA		32	0	0	32	**2**
3	Advanced Programming for Data Science	AMSI51APD		32	0	32	64	**3**
4	Information Retrieval Web Analytics	AMSI51IRW		32	0	32	64	**3**
5	Exploratory Data Analysis and Unsupervised Learning	AMSI51EDA		16	16	16	48	**2**
6	Time Series Analysis and Forecasting	AMSI51TSA		32	16	16	64	**3**
7	Natural Language Processing	AMSI51NLP		16	0	32	48	**2**

8	French	AMSI51FRA		0	0	32	32	**1**
9	English	AMSI51ANG		0	0	32	32	**1**
Total for 1st semester, Year 5				**160**	**32**	**192**	**384**	**20**

Table 7: Curriculum for 5th year (I5) semester 2:

No.	Name of subject	Code	Instructor	Cours	TD	TP	Total	Credit
1	Final Year Internship			0	0	288	0	**9**
Total for 2nd semester, Year 5				**0**	**0**	**288**	**0**	**9**

Annex 5:

Detail of proposed modification of Financial Engineering program in the Department of Applied Mathematics and Statistics, Faculty of Electrical Engineering

1. Background

The Financial Engineering program, slated to commence in 2026 at the Institute of Technology of Cambodia, was initially conceived in 2021 alongside the establishment of the Department of Applied Mathematics and Statistics. This program aimed to address the growing demand for professionals skilled in applying advanced mathematical and computational techniques to financial problems. However, a thorough review has revealed a significant overlap in coursework with our established Data Science program, necessitating a comprehensive revision to ensure its distinct value proposition and alignment with the evolving financial landscape.

The initial program structure, while grounded in sound mathematical principles, exhibited a substantial reliance on data analysis and machine learning methodologies, mirroring the core competencies of our Data Science curriculum. This overlap raised concerns about potential redundancy and the program's ability to offer a truly specialized educational experience in financial engineering.

The financial sector is undergoing rapid transformation, driven by technological innovations such as algorithmic trading, blockchain technology, and the increasing sophistication of risk management models. To effectively prepare our students for this dynamic environment, we are restructuring the Financial Engineering program to emphasize specialized areas such as quantitative finance, computational finance, and financial risk management.

This modification involves a significant shift towards a more focused curriculum that integrates advanced mathematical modeling, stochastic calculus, and financial econometrics. We are incorporating courses that delve into derivative pricing, portfolio optimization, and the development of sophisticated financial algorithms. Furthermore, we are emphasizing practical applications through industry collaborations, case studies, and hands-on projects that simulate real-world financial challenges.

By refining the Financial Engineering program, we aim to create a distinct educational pathway that equips students with the specialized knowledge and skills required to excel in the complex and rapidly evolving financial industry, while also distinguishing itself from the Data Science program.

2. Curriculum of the modified program

This curriculum is designed for an engineering degree that illustrates the whole three years program at Department of Applied Mathematics and Statistics, Faculty of Electrical Engineering from 3rd -year to 5th – year.

The curriculum of the Financial Engineering Program in the academic year 2025 -2026 is shown below

Table 1: Curriculum for 3rd year (I3) semester 1:

No.	Name of subject	Code	Instructor	Cours	TD	TP	Total	Credit
1	Statistics	AMSI31STA		32	0	32	64	3
2	Object-Oriented Programming	AMSI31OOP		32	0	32	64	3
3	Programming for Data Science	AMSI31PDS		16	16	16	48	2
4	Introduction to Data Science	AMSI31IDS		16	0	32	48	2
5	Discrete Mathematics	AMSI31DIS		0	0	32	32	1
6	Optimization	AMSI31OPT		0	0	32	32	1
7	French	AMSI31FRA		0	0	32	32	1
8	English	AMSI31ANG		0	0	64	64	2
Total for 1st semester, Year 3				**96**	**16**	**272**	**384**	**15**

Table 2: Curriculum for 3rd year (I3) semester 2:

No.	Name of subject	Code	Instructor	Cours	TD	TP	Total	Credit
1	Numerical Analysis	AMSI32NUM		32	0	32	64	3
2	Introduction to Machine Learning	AMSI32IML		32	0	32	64	3
3	Database	AMSI32DAT		32	0	32	64	3
4	Mathematical Modeling	AMSI32MAM		32	0	0	32	2
5	Introduction to Networks	AMSI32INN		32	0	0	32	2
6	Mini project	AMSI32MPR		32	16	16	64	3
7	French	AMSI32FRA		0	0	32	32	1
8	English	AMSI32ANG		0	0	32	32	1
Total for 2nd semester, Year 3				**192**	**16**	**176**	**384**	**18**

Table 3: Curriculum for 4th year (I4) semester 1:

No.	Name of subject	Code	Instructor	Cours	TD	TP	Total	Credit
1	PDE and Numerical Methods	AMSI41PNM		32	0	32	64	3
2	Advance Probability	AMSI41ADP		32	0	32	64	3
3	Statistical Models	AMSI41STM		32	32	0	64	3
4	Operation Research	AMSI41OPR		32	32	0	64	3
5	Introduction to financial models and actuarial sciences	AMSI41IFA		32	32	0	64	3
6	French	AMSI41ANG		0	0	32	32	1
7	English	AMSI41FRA		0	0	32	32	1
Total for 1st semester, Year 4				**160**	**96**	**128**	**384**	**17**

Table 4: Curriculum for 4th year (I4) semester 2:

No.	Name of subject	Code	Instructor	Cours	TD	TP	Total	Credit
1	Economics for Engineers	AMSI42ECO		32	0	0	32	2
2	Probabilistic Graphical Models	AMSI42PGM		32	16	16	64	3
3	Data Visualization	AMSI42TSA		32	0	32	64	3
4	Data Engineering	AMSI42DAE		32	0	16	48	2.5
5	Risk Management	AMSI42RIS		32	0	16	48	2.5
6	Stochastic Processes	AMSI42STP		32	0	32	64	3
7	French	AMSI42ANG		0	0	32	32	1
8	English	AMSI42FRA		0	0	32	32	1
Total for 2nd semester, Year 4				**192**	**16**	**176**	**384**	**18**

Table 5: Curriculum for 5th year (I5) semester 1:

No.	Name of subject	Code	Instructor	Cours	TD	TP	Total	Credit
1	Internship Report	AMSI51INT		0	0	0	0	**3**
2	Project Management	AMSI51PMA		32	0	0	32	**2**
3	Advance Programming for Data Science	AMSI51APD		32	0	32	64	**3**
4	Information Retrieval Web Analytics	AMSI51IRW		32	0	32	64	**3**
5	Exploratory Data Analysis and Unsupervised Learning	AMSI51EDA		16	16	16	48	**2**
6	Time Series Analysis and Forecasting	AMSI51TSA		32	16	16	64	**3**
7	Stochastic calculus and applications	AMSI51SCA		32	0	16	48	**2.5**
8	French	AMSI51FRA		0	0	32	32	**1**
9	English	AMSI51ANG		0	0	32	32	**1**
Total for 1st semester, Year 5				**176**	**32**	**176**	**384**	**20.5**

Table 6: Curriculum for 5th year (I5) semester 2:

No.	Name of subject	Code	Instructor	Cours	TD	TP	Total	Credit
1	Final Year Internship			0	0	288	0	**9**
Total for 2nd semester, Year 5				**0**	**0**	**288**	**0**	**9**

Annex 6:

Research projects implementing in 2025-2026

- **List of on-going research projects implementing in 2025**

No.	Name of PI	Sex	Title	Period	Budget
1	Dr. OR Chanmoly	M	Accelerating Digital Transformation for Higher Education Institutions in Southeast Asia (DX.SEA)	2023-2025	42,534
2	Dr. CHAN Sarin	M	Training Programme to Promote Low Carbon Buildings in Cambodia	2024-2027	89,970
3	Dr.KHON Kimsrornn	M	Platform for research and training on Power System	2023-2027	1,048,685
4	Dr. VAI Vannak	M	Python-Based LV Microgrid Planning Strategies: Clustered Topology and PV Hosting Capacity	2024-2025	3,000
5	Dr. VONGCHAN Kinnaleth	F	Capacity for Cambodian Energy Efficiency (CapCEE)	2025-2026	552,322
6	Dr. HOUNG Peany	F	Agroecology and Safe Food System Transitions (ASSET)	2020-2025	231,000
7	Dr. MITH Hasika	M	Development of high nutritional value farmed fish and safe processed products (smoked and fermented fish) in Cambodia	2022-2027	200,000
8	Mrs. SIENG Sreyvich	F	Assessment of air quality and impact in potential areas in Cambodia	2023-2026	NA
9	Dr. SUONG Malyna	F	Laboratory of Excellence in co-engineering for Sustainable Agrosystems (acronym: LMI LEAD)	2024-2028	70,000
10	Dr. SUONG Malyna	F	Promoting integrated pest management and sustainability of the fragrant rice quality in Cambodia by valorization of native microbiota (acronym: Healthyrice- FEF)	2024-2025	280,000
11	Dr. SUONG Malyna	F	Training in the use of molecular tools for diagnosis of rice diseases to support the transition towards integrated pest management (Acronym: DiagnoPathoRice)	2024-2026	3,000
12	Dr. PHAT Chanvorleak	F	Pesticide Analysis in irrigation water of different rice practices_WAT4CAM	2024-2025	24,000

13	Dr. PHAT Chanvorleak	F	The development of functional beverages with improved nutritional and sensorial properties toward local economic growth through diversifying Cambodia's agriculture products	2025-2029	148,8000
14	Dr. MITH Hasika	M	Improvement of quality of Kimchi and garlic/ginger in honey	2025	8,000
15	Dr. SRANG Sarot	M	Integrating the Electrification and Smart Mechanisation of Two-Wheel Tractors with Precision Agriculture for Improved Productivity and Sustainability	2024-2029	200,000
16	Mr. SREY Sokserey	M	Development of Two Mobile Robots for Joining a Robocon Competition in 2025	2024-2025	7,000
17	Dr. NGETH Rithea	M	Design and Implementation of Health Monitoring for Older People	2024-2025	5,000
18	Dr. SRANG Sarot	M	Autonomous Land-Leveling Robot Tractor	2024-2025	20,000
19	Dr. VALY Dona	M	User Identification through Online Khmer Handwriting Analysis Using Deep Learning	2025	13,812
20	Mr. KUY Movsun	M	Investigation of configuration issues related to SDN/NFV deployments	2020-2024	80,000
21	Mr. CHIN Chan Daraly	M	The vehicle as an intelligent thing	2022-2025	N/A
22	Dr. VALY Dona	M	Integrated Decision Support System for Non-Communicable Ocular Diseases using Machine Intelligence	2023-2024	22,016
23	Mr. CHOU Koksal	M	"Kayvika" Khmer Sign Language Translation	2024-2026	1,500
24	Dr. Kuchvichea KAN	M	Enhanced Durability and Sustainability of Asphalt Concrete through Waste Plastic Recycling	2025-2026	14,950
25	Mrs. AUN Srean	F	Hybrid Coatings For The Photodynamic Inactivation Of Microbial Infections	2024-2027	42,500
26	Mr. Nuth Visal	M	Climate-resilient soil stabilization in cambodia's SUBGRADE: adapting to the challenge of flooding and seasonal variations.	2024-2027	42,500
27	Ms. Sreng Laymey	F	Natural Rubber Latex Powdered Gloves for Medical applications	2024-2025	4,990
28	Dr. Phun Veng Kheang	M	Evaluation technico-socio-économique des infrastructures routières au Cambodge	2023-2025	80,000

29	Mrs. AUN Srean	F	SATREPS Project: « Establishment of Risk Management Platform for Air Pollution in Cambodia, “Air sampling and traffic”	2022-2027	4,500,000
30	Mr. SOM Chansamnang	M	Effect of The Addition of Natural Fibers on Shrinkage, Cracking Risk and Healing Capacity of Cementitious Materials	2023-2026	32,076
31	Ms. KETH Kannary	F	Managing the collaboration between architect, structure, and MEP in service of construction 4.0: ITC's workshop case	2020-2025	102,000
32	Mr. LONG Makara	M	Sustainable building designs integrated life-cycle assessment (LCA), for best strategies to design the green residential building in Phnom Penh, Cambodia	2021-2025	102,000
33	Dr. DOUNG Piseth	M	Energy-based design for buildings and Steel ring damper for seismic application	2020-2025	20,000
34	Dr. OR Chanmoly	M	SATREPS: Establishment of Risk Management Platform for Air Pollution in Cambodia	2022-2027	5,000,000
35	Dr. THENG Voulay	F	Preventing zoonotic diseases emergency	2022-2027	N/A
36	Dr. THENG Vochlay	F	Photoproduction of radicals and their effects on carbon dynamics in tropical lakes (JSPS-Photochem)	2023-2027	700
37	Dr. SOK Ty	M	SATREPS: development and social implementation of greenhouse gas emission reduction technologies in paddy fields of west tonle sap lake by establishing a large paddy area water management system	2024-2028	250,000
38	Dr. SOK Ty	M	Integrated River Basin Management of the Mekong Basin Tributary for Adaptation to Climate Change	2024-2027	380,000
39	Dr. BUN Saret	M	Addressing Water Scarcity through Groundwater Use: Development of Solar-Powered Groundwater Treatment System for Remote Area of Cambodia	2024-2025	3,3000
40	Dr. SUONG Malyna	F	Laboratory of Excellence in co-engineering for Sustainable Agrosystems (LMI-LEAD)	2023-2028	5,2000
41	Dr. Ratha MUON	F	Réhabilitation et gestion durable de la fertilité des sols pour uneagriculture durable et résiliente au Cambodge (ReaSol)	2023-2025	130,000

42	Dr. THENG Vouchlay	F	Development of Eco-Friendly Microplastic Removal Filters from Seawater for Sea Salt Farms in Cambodia	2024-2025	39,000
43	Dr. EANG Khyeam	M	Establishment of Sustainable Groundwater Management Platform in the Lower Mekong Region	2025-2028	499,647
44	Dr. SOK Ty	M	Establishing an Evidence-based National Adaptation Plan (NAP): National Climate Report	2024-2025	60,000
45	Dr. PEN Sytharith	M	Sustaining the shared groundwater resources of the Transboundary Cambodia-Vietnam Mekong River Delta aquifer under climate change impacts through Strategic Gender equality, disability, and social inclusion (GEDSI) tools and suitable Nature-based Solution (SAGA)	2024-2025	5,000
46	Dr. PEN Sytharith	M	Evaluation of Nature-based solutions for the enhancement of urban water security in South-East Asian Cities	2024-2025	8,000
47	Dr. DUONG Ratha	M	Anticipating the inversions of the Tonle Sap river (INVERSAP)	2024-2025	100,000
48	Dr. MUON Ratha	F	ECOsystem services derived from TERmite mounds in the lower Mekong basin (in Cambodia and Laos) (ECOTER)	2023-2027	565,000
49	Dr. MUON Ratha	F	Development of IR technologies, and distribution of C in Chrey Bak catchement (FairCarbon)	2022-2028	120,000
50	Mr. SOK Kimhuy	M	Research collaboration on sustainable water resources management in Koh Ker heritage site	2024-2025	12,000
51	Mr. SOK Kimhuy	M	Restoration of the Preah Vihear Temple's Gopura V (Phase II)	2024-2025	51,500
52	Dr. PENG Chanthol	F	Mutual learning toward just-in-time information for grassroots climate adaptation in the lower Mekong countries	2024-2026	60,000